

Assam down town University

Curriculum and Syllabus

Bachelor of Dialysis Technology

OUTCOME BASED EDUCATION FRAMEWORK CHOICE BASED CREDIT SYSTEM

Version: 2.2

FACULTY OF PARAMEDICAL SCIENCES

July, 2024

PREAMBLE

Assam down town University is a premier higher educational institution which offers Bachelor,

Master, and Ph.D. degree Programmes across various faculties. These programmes, collectively

embodies the vision and mission of the university. In keeping with the vision of evolutionary

changes taking place in the educational landscape of the country, the university has restructured the

course curriculum as per the guidelines of National Education Policy 2020. This document contains

outline of teaching and learning framework and complete detailing of the courses. This document

is a guidebook for the students to choose desired courses for completing the programme and to be

eligible for the degree. This volume also includes the prescribed literature, study materials, texts,

and reference books under different courses as guidance for the students to follow.

Recommended by the Board of Studies (BOS) meeting of the Faculty of Paramedical Sciences held

on dated 20/06/2024 and approved by the 51st Academic Council (AC) meeting held on dated

26/07/2024.

Chairperson, Board of Studies

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Member Secretary, Academic Council

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Vision

To become a Globally Recognized University from North Eastern Region of India, Dedicated to the Holistic Development of Students and Making Society Better

Missions

- 1. Creation of curricula that address the local, regional, national, and international needs of graduates, providing them with diverse and well—rounded education.
- 2. Build a diverse student body from various socio-economic backgrounds, provide exceptional value-based education, and foster holistic personal development, strong academic careers, and confidence.
- 3. Achieve high placement success by offering students skill-based, innovative education and strong industry connections.
- 4. Become the premier destination of young people, desirous of becoming future professional leaders through multi disciplinary learning and serving society better.
- 5. Create a highly inspiring intellectual environment for exceptional learners, empowering them to aspire to join internationally acclaimed institutions and contribute to global efforts in addressing critical issues, such as sustainable development, Climate mitigation and fostering a conflict—free global society.
- 6. To be renowned for creating new knowledge through high quality inter disciplinary research for betterment of society.
- 7. Become a key hub for the growth and excellence of AdtU's stake holders including educators, researchers and innovators
- 8. Adapt to the evolving needs and changing realities of our students and community by incorporating national and global perspectives, while ensuring our actions are in harmony with our foundational values and objectives of serving the community.

Programme Details

Programme Overview:

The Bachelor of Dialysis Technology program provides a comprehensive foundation in renal anatomy, physiology, kidney diseases, and patient care, complemented by extensive clinical placements within hospital premises. Through hands-on experience, students become proficient in conducting hemodialysis and peritoneal dialysis for individuals with end-stage kidney disease or acute kidney injury. Graduates are well-prepared for employment in private and public hospitals, as well as dialysis units, where they maintain equipment and administer dialysis treatments both in clinical settings and at patients' residences. Additionally, opportunities for further academic advancement, such as pursuing MSc, MPhil, or PhD studies become available.

I. Specific Features of the Curriculum:

The curriculum provides skill enhancement and value-added courses along with the core papers.

II. Eligibility Criteria:

Minimum 45% in 10+2 with English, Biology & Chemistry. 5% relaxation for SC/ST, EWS, and Specially abled candidates.

III. Program Educational Objectives (PEOs):

PEO1. Graduates will be prepared for successful careers in dialysis technology of government/ corporate healthcare service sectors.

PEO2. Graduates will be academically prepared to contribute effectively to the growth and development of the healthcare service sectors.

PEO3. The graduates will be engaged in professional activities to enhance their competency and professional stature; and will be successful in higher education in interdisciplinary areas of dialysis and healthcare management if pursued.

IV. Program Specific Outcomes (PSOs):

PSO1: Clinical Proficiency: Ability to perform clinical assessment of patients and techniques of dialysis procedures in clinical practice during hospital posting and internship in the healthcare systems.

PSO2: Techno-Professional Efficiency: Apply comprehensive knowledge to operate modern dialysis equipment, employ various techniques, and maintain high standards in diverse medical settings to enhance health outcomes.

PSO3: International Competency: Attain global competency through interdisciplinary and industry-oriented certification courses.

V. Program Outcome (POs):

PO1: Healthcare Knowledge: Apply knowledge of kidney transplant, pharmacological, anatomical, physiological, biochemistry, pathology, microbiology, nutrition, and pathophysiological knowledge to navigate the complexities of renal dysfunction in dialysis care.

PO2: Patient Care: Demonstrate hospital practices in dialysis units including dialysis procedures, maintaining a sterile environment to prevent infections, monitoring the patient, and handling complications during dialysis.

PO3: Equipment Proficiency: Operate patient monitoring systems and devices including hemodialysis, peritoneal dialysis, and dialyzer reprocessing machine.

PO4: Procedure and Quality Assurance: Demonstrate proficiency in managing dialysis treatments, including hemodialysis, peritoneal dialysis, plasmapheresis, and specialized dialysis methods using vascular access sites to improve quality outcomes.

PO5: Clinical Ethics: Demonstrate clinical ethics in healthcare activities, adhere to codes of conduct at the workplace, maintain patient privacy and confidentiality, displaying professionalism, and compassion.

PO6: Teamwork: Demonstrate functional proficiency to practice independently and collaboratively within the multidisciplinary healthcare team.

PO7: Communication: Execute effective communication to educate them about dialysis procedures and lifestyle modifications to patients and healthcare professionals.

PO8: Lifelong Learning: Engage in continuous learning to be updated with advancements in dialysis technology.

VI. Total Credits to be Earned: 133

VII. Career Prospects:

The Bachelor of Dialysis Technology ProgramME provides a comprehensive foundation in renal anatomy, physiology, kidney diseases, and patient care, complemented by extensive clinical placements within hospital premises. Through hands-on experience, students become proficient in conducting hemodialysis and peritoneal dialysis for individuals with end-stage kidney disease or acute kidney injury. Graduates are well-prepared for employment in private and public hospitals, as well as dialysis units, where they maintain equipment and administer dialysis treatments both in clinical settings and at patients' residences. Additionally, opportunities for further academic advancement, such as pursuing MSc, MPhil, or PhD studies become available.

EVALUATION METHODS

The student performance shall be evaluated through In-semester (Sessional) and semester-end examinations. A weightage of 40% or as prescribed by the programme shall be added to the score of the end-semester examination.

A. INTERNAL ASSESSMENT:

The teacher who offers the course shall be responsible for internal assessment by conducting insemester (sessional) examination and evaluating the performance of the students pursuing that course. The components for internal assessment are illustrated in the table given below.

SN	Components/ Examinations	Marks Allotted
1.	In-Sem Exam – I (ISE-I) (Written Examination)*	30
2.	In-Sem Exam – II (ISE-II) (Written Examination)*	30
3.	Assignment	10
4.	Presentation (SP)	10
5.	Quiz	5
6.	Class Performance based score*	5

^{*}are compulsory

Note: Total Internal assessment should be out of 40

INSTRUCTION

- 1. If a student fails to appear in the any of the component without any valid reason he/she shall be marked zero in that component. However, the course teacher at his discretion may arrange for the missed test on an alternate date for the absentee students after determining ground with genuine/valid reasons for the absent.
- 2. The report of evaluation of an activity towards the in-semester (sessional) component of a course shall be duly notified by the concerned course teacher within a week of completion.
- 3. The Program ME coordinators should upload the in-semester marks to the ERP and forward acknowledgement of all the courses of the Program ME to the Controller of Examinations before the start of the End-semester examination.

B. SEMESTER END EXAMINATION:

Time table for end semester examination is published at least 25 days prior to the start of Examination.

I. Pre-Examination:

Eligibility Criteria for a student to appear in University Examinations:

The student shall only be allowed to appear in a University Examination, if:

- i) He/ She is a registered student of the University;
- ii) He/ She is of good conduct and character;
- iii) He/ She has completed the prescribed me of study with minimum percentage of attendance as laid down in the Regulations of the Programme concerned.

Under special cases, a student may be allowed to appear for an examination without being registered in the University but the result of the said student will be kept on hold till the registration of the concerned student is completed.

II. Admit Card:

Admit card for the examination may be downloaded through ERP where the system will generate a Unique ID Cards through online.

The University shall have the right to cancel admission for examination of any candidate on valid grounds.

III. Pattern of Question Papers:

The question paper shall follow the principles of Bloom's Taxonomy.

Table

S. N.	Level	Questions /verbs for test
1	Remember	List, Define, tell, describe, recite, recall, identify, show who, when, where,
1	Kemember	etc.
2	Understand	Describe, explain, contrast, summarize, differentiate, discuss, etc.
3	Apply	Predict, apply, solve, illustrate, determine, examine, modify
4	Analyze	Classify, outline, categorize, analyze, diagrams, illustrate, infer, etc.
5	Evaluate	Assess, summarize, choose, evaluate, recommend, justify, compare etc.
6	Create	Design, Formulate, Modify, Develop, integrate, etc.

Note: No course is to be evaluated on basis of all 6 knowledge levels.

The format of the question paper across all the ProgramME follow a unique pattern and the total marks is 60

Table 1: Question paper pattern for End semester examination

S.N.	Question pattern	Total marks
1	MCQs (10 Questions)	10
2	2 Marks questions (10 Questions)	20
3	4 Marks questions (5 Questions)	20
4	10 Marks questions (1 Question)	10

IV. Examination Duration:

Each paper of 60 marks shall ordinarily be of two hours duration.

V. Practical Examinations, Viva-Voce etc.:

- i) Practical examination shall be conducted in the presence of one external expert and one or more internal examiners.
- ii) Viva-Voce, Oral examinations of the Project report, Dissertation etc. shall be undertaken by a Board of Examiners constituted by the respective Dean of ProgramME with the advice of Supervisor(s).

VI. Procedure of Expulsion:

If any candidate is found to be using any unfair-means during the examination, the invigilator may cease his/her answer sheet and report it directly to the Officer-in-Charge. The Office-in-Charge of the center may take appropriate decisions as per the rules and procedure of the examination. The Officer-in-Charge may allow the students to write the exam with new answer sheet or may expel the student from appearing the paper depending on the nature of unfair-means. In case of Computer based test, the students may be directed to write an apology letter and sign in the prescribe expulsion form. The student may not be allowed to write that examination.

VII. Instruction to the Students:

- (i) The students shall not bring to the Examination Hall, any electronic gadget used as a means of communication or record except electronic calculator, if required.
- (ii) The students shall not receive any book or printed or hand written or photo copy (Xerox) or blank-paper from any other person while he/she is in the examination-room or in laboratory or in any other place to which he/she is allowed to have access during course of examination.
- (iii) The students shall not communicate with any other candidate in the examination room or with any other person in and outside the examination-room.

- (iv) The students shall not see, read or copy anything written by any other candidate, nor shall he/she knowingly or negligently permit any other candidate to see, read or copy anything written by him/her or conveyed by him/her.
- (v) The students shall not write anything on the Question Paper or in other paper or materials during the examination, or pass any kind of paper to any other candidate in the examination-room, or to any person outside the room.
- (vi) The students shall not disclose his/her identity to the examiner by writing his/her name or putting any sign / symbol in any part of his answer-script.
- (vii) The students shall not use any abusive language or write any objectionable remark or make any appeal to examiner by writing in any part of his answer-script.
- (viii) The students shall not detach any page from the answer-script or insert any authorized or unauthorized loose sheet into it. He /she shall also not insert any other answer-script / loose sheet by removing the pins of the origin answer-scripts and re-fixing it.
- (ix) The students shall not resort to any disorderly conduct inside the examination-room or misbehave with the invigilator or any other examination official.

VIII. Provision for an Amanuensis (writer):

- (i) A candidate may be provided with an Amanuensis (writer) to write down on dictation on his / her behalf on ground of his / her physical disability to write down by himself / herself due to accident or any other reason. The amanuensis may be provided till he / she recovers from the physical disability. The physical disability to write down by himself / herself must be supported by Medical Certificate from a competent Medical Officer.
- (ii) The qualifications of the amanuensis so provided must not be equal or higher than that of the candidate. This is also to be supported by Certificate from the Faculty of Study where the Amanuensis is provided.
- (iii) Such candidates are to be accommodated in a separate room under the supervision of an invigilator so that the fellow candidates are not disturbed in the process.

C. Credit Point:

It is the product of grade point and number of credits for a course, thus, CP = GP x CR

i. Credit:

A unit by which the course work is measured. It determines the number of hours of instructions required per week. 'Credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. Credits assigned for a single course always pay attention to how many hours it would take for an average learner to complete a single course successfully.

ii. Grade Point:

Grade Point is a numerical weight allotted to each Grade Letter on a 10-point scale.

iii. Letter Grade:

Letter Grade is an index of the performance of students in a said paper of a particular course. Grades are denoted by letters O, A+, A, B+, B, C, P, F and Abs. Student obtaining Grade F / Grade Abs shall be considered failed/ absent and, will be required to appear in the subsequent ESE. The UGC recommends a 10-point grading system with the following (Table: 1) Letter Grades:

- (i) A Letter Grade shall signify the level of qualitative/quantitative academic achievement of a student in a Course, while the Grade Point shall indicate the numerical weight of the Letter Grade on a 10-point scale.
- (ii) There shall be 08 (eight) Letter Grades bearing specific Grade Points as listed in Table 1, where the Letter Grades 'O' to 'P' shall indicate successful completion of a course.
- (iii) Apart from the 08 (eight) regular Letter Grades listed in Table 1, there shall be 03 (three) additional Letter Grades, which shall be awarded if a Course is withdrawn or spanned over the next Semester or remains incomplete as stated in Table 2.

Table 2: Letter Grades and Grade Points

Letter Grade	Grade Points	Description
O	10	Outstanding
A+	9	Excellent
A	8	Very Good
B+	7	Good
В	6	Above Average
С	5	Average
P	4	Pass
F	0	Fail
Abs	0	Absent
UFM	0	Unfair Means

iv. Grade Point Average:

a. SGPA (Semester Grade Point Average)

The SGPA of a student in a Semester shall be the weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered in that Semester, irrespective of whether he/she could or could not complete the Courses. More specifically, the calculation of SGPA shall take into account the Courses graded with Letter

Grades 'O' to 'F' as given in Table 1.

$$SGPA = \frac{\sum_{i=1}^{n} C_{i}G_{i}}{\sum_{i=1}^{n} C_{i}}$$
 (1.1)

The SGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.1) up to two decimal places, where n is the total number of Credit Courses registered by the student in that Semester, Gi is the Grade Point secured in the ith registered Course and Ci is the Credit (weight) of that Course.

b. CGPA (Cumulative Grade Point Average)

- (i) The CGPA of a student in a Semester of a Programme shall be the accumulated weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered and successfully completed so far starting from the enrollment in the Programme. In other words,taking into account all the Courses graded with 'O' to 'P' as given in Table 1.1, generally the CGPA of a student shall be calculated starting from the first Semester of his/her enrolled Programme, while the CGPA of a lateral-entry student shall be calculated starting from the Semester of his/her enrollment.
- (ii) The CGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.2) up to two decimal places, where N is the total number of Credit Courses registered and successfully completed so far by the student, Gi is the Grade Point secured in the ith completed Course and Ci is the Credit (weight) of that Course.

CGPA =
$$\frac{\sum_{i=1}^{N} C_{i}G_{i}}{\sum_{i=1}^{N} C_{i}}$$
 (1.2)

(iii) The CGPA shall be convertible into equivalent percentage of marks using Equation Conversion of CGPA to percentage marks: = CGPA*10

D. Post-Examination

i. Transcript or Grade Card or Certificate:

A marking certificate shall be issued to all the registered students after every Semester. The Semester mark sheet will display the course details (code, title, number of credits, grade secured) along with total credit earned in that Semester.

ii. Grievance Readdress Mechanism:

Students with any dissatisfaction or grievance regarding the marks awarded in any of the Papers / Courses may appeal to the Controller of Examinations for remedial action such as Reevaluation within 10 days of the declaration of result.

- (i) A student has options to appeal for re-evaluation of his /her answer script to the Controller of Examination.
- (ii) Application for re-evaluation / re-scrutiny of answer scripts shall be made in the definite proforma available with the Examination Office through the head of the respective departments within 10 days of declaration of the results of the respective examinations.
- (iii) The Controller of Examination may appoint an examiner for re-evaluation and will consider and recognize the evaluation done by a University appointed examiner.
- (iv) There shall be no provision for re-evaluation of the Practical Papers, Project Work, and Dissertation etc. However, the students fail in practical examination or viva voce and wish to appear again may apply to be evaluated can do so with the next schedule.
- (v) After screening the application for re-evaluation, the CoE may send the answer scripts of the student to the examiners appointed by the CoE with the approval of Vice Chancellor.
- (vi) The marks/grades achieved by the students after the re-evaluation shall be final and binding.
- (vii) Fresh Marks sheets / Grade Card shall be issued only if the candidate secures pass marks / passing grade in the re-evaluated paper.
- (viii) Revaluation of answer scripts shall be deemed to be an additional facility provided to the students with a view to improving upon their results at the preceding examination result for any reason whatsoever shall not confer any right upon them for admission to next higher class which matters always be regulated in accordance with the relevant rules or regulations framed by the University.
- (ix) If as a result of revaluation of the candidate attracts the provision of condonation of deficiency, the same may be applied to his/her only for fresh attempt.

INSTRUCTION TO TEACHERS AND STUDENTS

(Teaching and Learning Methods)

In all the courses the teacher has to select topics for teacher-method which should not be less than 20 percent. The approach will be direct classroom teaching through a series of lectures delivering concepts using ITC facilities, white or blackboard. Notes may also be circulated to the students; however, the students are to be involved in the preparation of the notes. The teacher will be responsible for selecting the best note for circulation. The teacher-centric methodology has recently fallen out of favour because this strategy for teaching is seen to favour passive students.

1. Student- centric / Constructivist Approach:

The topics of the courses may be selected at the start of the class and assigned one topic to each of the students for studying by themselves, prepare presentations, notes, etc., and present at respective class time after consultation and discussion with the course teachers. The teacher facilitates the learning of the students by guiding and providing input and explaining concepts. 60 percent of the course contents may be selected for this purpose. To avoid behaviour problems, teachers must lay a lot of groundwork in student-centric classrooms. Typically, it involves instilling a sense of responsibility in students. In addition, students must learn internal motivation.

- **a. Project-Based Learning:** The teacher may select 5 percent of topics for the purpose and may conduct visits to the laboratory for experiments or field surveys. The selection of the topic may be done considering the available facility for the purpose. However, in the final semester of each of the programme the student has to undergo project-based learning at least 4 months duration. This approach will help the student to think critically, evaluate, analyze, make decisions, collaborate, and more.
- **b. Inquiry-Based Learning:** The teacher/ students are supposed to list at least five questions in each contact hour and student solve these question or search for answer which becomes the home work for the students "question-driven" learning approach. The teacher may look for the correctness of the solution or the best possible answer and discuss in the successive class. This will help in the preparation for various competitive examination and develop a habit for search for solutions.
- **c. Flipped Classroom:** About 10 percent of the course content has to be completed by this method. In this approach the students are asked to watch video or lecture prepared by the teacher or any

video available (relevant to the course). A set of questions may be given to the students for searching answers by the students. The idea is that students should have more time in-classroom focusing on achieving these higher levels of thinking and learning. The Flipped classroom is also an acronym. The letters FLIP represent the four pillars included in this type of learning: Flexible environment, Learning culture shift, Intentional content, and Professional educator. As you can see, the second pillar refers to a culture shift from the traditional approach where students are more passive to an approach where students are active participants. As a result, this approach is also a student-centric teaching method.

d. Cooperative Learning: The remaining five percent has to be completed by cooperative learning approach. In this approach, the students are allotted problems. During library hours the students along with the teacher visit the library and search for probable solutions for the assigned problem. The same has to be done in groups so that the students discuss among themselves for the appropriate answers. Essentially, cooperative learning believes that social interactions can improve learning. In addition, the approach recreates real-world work situations in which collaboration and cooperation are required.

The percentage categorization for the completion of a theory course

Teacher-centric or Direct Classroom Teaching: Delivery by series of lectures	20%
Student-centric Approach, Students present and deliver lectures in the presence of teacher and supervised by teacher	60%
Students visit fields or perform experiments or teachers perform demonstration	05%
Flipped Classroom approach	10%
Cooperative learning approach	05%

Inquiry-based approach has to be followed in all of the classes

The teacher has to distribute the topics to be considered for teaching by the above-mentioned approaches and prepare a lesson plan for execution and maintain a file.

Breakdown of Credits

Sl.	Category		Total number of
No			Credits
		Skill Enhancement Course (SEC)	0
		Ability Enhancement Course (AEC)	2
1	University Core (UC)	Field Training	0
		Discipline Specific Elective (DSE)	0
		Value Added Course (VAC)	0
2	University Elective (UE)	Multidisciplinary Course (MDC)	8
2	Offiversity Elective (OE)	Value Added Course (VAC)	6
		Discipline Specific Core (DSC)	80
3	Duo anama Cana (DC)	Field Training	1
3	Programme Core (PC)	Research /Industry Internship	6
		Summer Internship	4
4	Programme Elective (PE)	Discipline Specific Elective (DSE)	20
4	Trogramme Elective (LE)	Value Added Course (VAC)	0
5	Faculty Core (FC)	Skill Enhancement Course (SEC)	6
<i>J</i>	racuity Core (rC)	Ability Enhancement Course (AEC)	0
	T	otal	133

Breakdown by categories of courses

S.N.	Category	Credits	%
1	Paramedical Sciences	129	97%
2	Engineering	1	0.75%
3	Humanities and Social Sciences	3	2.25%
	Total	133	100%

SEMESTER WISE COURSE DISTRIBUTION

	S.	Course Code	Course Title	Course		E	nga	ger	nen	ıt					ks for
	N.	Course Coue		Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total
	1	24BDIT1101R	Human Anatomy & Physiology -I	DSC (Major)	4	0	4	4	0	0	6	40	60	100	200
	2	24BDIT1101R	General Biochemistry-I	DSC (Minor)	3	0	2	0	0	0	4	40	60	100	200
r I	3	24BDIT1102R	Basic Principles of Hospital Practice & Patient Care	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	100
Semester	4	24BDIT1103R	Basic Communicative English	AEC	0	0	2	0	0	0	1	0	0	100	100
Sen	5	24UBPD1101R	Clinical Dialysis-I	SEC	0	0	2	0	0	0	1	0	0	100	100
	6	24BDIT1105R	Communication Skills for University Success	VAC	2	0	0	0	0	0	2	0	0	100	100
	7	24BDIT1101M	Medical Psychology	MDC	3	0	0	0	0	0	3	40	60	0	100
	8	24BDIT1104R	Extra-Curricular Activities	Extra- Curricular	0	0	0	4	0	0	1	0	0	100	100
	Total						10	8	0	0	20	160	240	600	1000
	S. Course Code Course Title		Course			nga	_	_						ks for	
	N.	Course Cour	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total
	1	24BDIT1201R	Human Anatomy & Physiology - II	DSC (Major)	4	0	4	0	0	0	6	40	60	100	200
	2	24BDIT1202R	Biochemistry : Biomolecules And their metabolism	DSC (Minor)	3	0	2	0	0	0	4	40	60	100	200
ester II	3	24BDIT1203R	Fundamentals of patient Care And Safety	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	100
	4	24UBPD1202R	Functional English	AEC	0	0	2	0	0	0	1	0	0	100	100
Sem	5	24BDIT1204R	Self-Study Seminar	AEC	0	0	2	0	0	0	1	0	0	100	100
	6	24BOTT2105R	Infection Control and Sterile Technique Procedure	MDC	3	0	0	0	0	0	3	40	60	0	100
	7	24UBES1201R	Environmental Studies	VAC	2	0	0	0	0	0	2	40	60	0	100
	8	24UBCC1201	Co-Curricular	Co- Curricular	0	0	0	4	0	0	1	0	0	100	100
		Total						4	0	0	20	200	300	500	1000

	S.	Course Code	Course Title	Course		E	ngag	gen	en	t		Maxi	imum	Mark	s for
	N.	Course Coue	course cour		L	T	P	S	R	0	C	IA*	SEE*	PE*	Total
	1	24BDIT2101R	Applied Anatomy	DSC (Major)	4	0	0	0	0	0	4	40	60	0	100
	2	24BDIT2102R	Applied Physiology	DSC (Major)	4	0	0	0	0	0	4	40	60	0	100
	3	24BDIT2103R	TZ103R Pathology		2	0	4	0	0	0	4	40	60	100	200
III	4	24BDIT2104R	Pharmacology	DSC (Minor)	4	0	0	0	0	0	4	40	60	0	100
Semester	5	24BCIC2206R	Patient Safety and quality Care	MDC	1	0	0	0	0	0	1	40	60	0	100
Sen	6		DISA	SEC	0	0	2	0	0	0	1	0	0	100	100
	7	24UBPD2101R	Executive English	AEC	0	0	2	0	0	0	1	0	0	100	100
	8	24UDLS201R	Digital Literacy	VAC	0	0	2	0	0	0	1	0	0	100	100
	9	24UULS2102R	Basic Acclimatizing Skills (BAS)	MDC	0	0	2	0	0	0	1	0	0	100	100
	10	24BDIT2105R	Field Training	FT	0	0	0	0	0	8	1	0	0	100	100
	11	24BDIT1204R	Clinical Dialysis- II	SEC	0	0	2	0	0	0	1	0	0	100	100
		To		15	0	14	0	0	8	23	200	300	700	1200	

	S.	Course Code	Course Title	Course		E	nga	ger	nen	ıt		Maxi	mum l	Mark	s for
	N	Course Code	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total
	1	24BDIT2201R	Applied Pharmacology	DSC (MAJOR)	4	0	0	0	0	0	4	40	60	0	100
	2	24BDIT2202R	Basic of Dialysis Technology	DSC (MAJOR)	2	0	4	0	0	0	4	40	60	100	200
IV	3	24B DIT2203R	Applied Dialysis Technology- I	DSC (MAJOR)	2	0	4	0	0	0	4	40	60	100	200
, ,	4	24BDIT2204R	Concept of Renal Disease	DSC (MAJOR)	2	0	0	0	0	0	2	40	60	0	100
Semester	5	24BDIT2205R	Nutrition in Dialysis	DSC (MAJOR)	2	0	0	0	0	0	2	40	60	0	100
Se	6	24UBPD2202R	Enhanced Professional Skills	AEC	0	0	2	0	0	0	1	0	0	100	100
	7	24UUFL2201R	Financial Literacy	MDC	0	0	2	0	0	0	1	0	0	100	100
	8	24UULS2201R	Basic Life Support Skills (BLSS)	VAC	0	0	2	0	0	0	1	0	0	100	100
	9	24BDIT2206R	Clinical Dialysis III	SEC	0	0	4	0	0	0	2	0	0	100	100
	10	24BDIT2207R	Self-Study Seminar	AEC	0	0	2	0	0	0	1	0	0	100	100
		To		12	0	20	0	0	0	22	200	300	700	1200	

	S.	Commo Codo	C T:41.	Course			En	gager	nent			Maximum Marks for			
	N.	Course Code	Course Title	Category	L	T	P	S	R	O	C	IA*	SEE*	PE*	Total
	1	24BDIT3101R	Clinical Observation I	DSC (Major)	0	0	0	24	0	0	4	0	0	100	100
Λ	2	24BDIT3102R	Clinical Observation II	DSC (Major)	0	0	0	24	0	0	4	0	0	100	100
Semester	3	24BDIT3103R	Clinical Observation III	DSC (Major)	0	0	0	24	0	0	4	0	0	100	100
Sem	4	24BDIT3104R	Case Study Report	DSC (Major)	0	0	0	32	0	0	4	0	0	100	100
	5	24BDIT3105R	Summer Internship	Internship	0	0	2	0	0	24	4	0	0	100	100
	6	24BDIT3107R	Research	Research	0	0	0	0	18	0	2	0	0	100	100
		Tota	al		0	0	2	104	18	24	22	0	0	600	600
	S. Course Code Course Title		Course Title	Course	_	TD.			gement S R O C			Maximum Marl IA* SEE* PE*			
	N.			Category	L	T	P	S	K	O	C	IA*	SEE*	PE*	Total
	1	24BDIT3201R	Applied Dialysis Technology II	DSC (Major)	3	0	4	0	0	0	5	40	60	100	200
	2	24BDIT3202R	Applied Dialysis Technology III	DSC (Major)	3	0	4	0	0	0	5	40	60	100	200
VI	3	24BDIT3203R	Renal Transplant	DSC (Major)	3	0	0	0	0	0	3	40	60	0	100
Semester	4	24BDIT3204R	Medical Ethics in Dialysis	DSC (Major)	3	0	0	0	0	0	3	40	60	0	100
Sem	5	24BDIT3105R	Advanced Emergency Management Skills in Dialysis Care	SEC	0	0	6	0	0	0	3	0	0	100	100
	6	24BDIT3206R	Comprehensive Research in Dialysis and Renal Care	Research	0	0	4	0	24	0	4	0	0	100	100
	7	7 24BDIT3201R Finishing School AEC		AEC	0	0	4	0	0	0	2	0	0	100	100
		<u> </u>	12	0	22	0	24	0	25	160	240	500	900		

^{*}IA: Internal Assessment, SEE: Semester End Examination, PE: Practical Examination

			Semo	ester – I										
Cour	se Title		Human .	Anatomy	and	Physic	ology-l							
Cours	se Code	24BDIT1101R	Total Credits:		L	T	P	S	R	O/F	C			
			Total Hours: 90		6	0	4	0	0	0	6			
	equisite	Nil Co-requisite Nil												
	ramme		Bachelor of Dialysis Technology Fall/ I Semester of First Year of the Programme											
Sen	nester	1. To study the basic anatomical structure of the human body.												
Course Objectives		2. To learn about the anatomical positions and gross and microscopic structure of the organs and skeleton in the human body. 3. To assist students in developing a better grasp of the anatomical structure and basic												
	CO1	physiological functions of various body regions. Able to explain the normal position, functional, and cross-sectional anatomy of various												
		structures of the be												
C	CO2	Able to explain the	•											
C	CO3	Learn about the di coagulating factor		s, differe	nt typ	pes of b	lood g	roups, a	ınd blo	ood				
C	CO4	Apply knowledge systems.	of the gross struc	ture of th	e dig	gestive,	respira	itory, ar	nd car	diovasc	cular			
C	CO5	Demonstrate a cor skeletal-system an	_		g of tl	he gross	s struct	ure of I	Muscu	ılo– the	;			
Unit- No.		Content		Contac Hour	t		KL							
I	Introduction To Anatomical Terms, Basic Structure and Function of Cell Level of Organization – Body Parts and Areas, Planes and Sections. Common anatomical terminology Structure and Function of Cell Membrane, Cellular Transport II Musculo – Skeletal -System and Bones Bones: Classification& types, according to morphology. Tissue and its types, Cartilage Joints: definition, classification, and movements of joints. Muscle and its types for Specific			10	th bo st	e organody's an ructure.	nization natomi , and co	rate, and the cal term ell functorate, and eletal sy	e humns, bation.	ain	1,8			
III	Digesti Anatom accesso	•				escribe e diges		rate, and stem.	l expl	ain	1,8			

IV	Respiratory System-	10	Describe, illustrate and explain	1,8
	Anatomy of the respiratory tract		the Respiratory system.	,
	Mechanisms and Regulation of		1 2 2	
	respiration. Gaseous exchange in lung and			
	tissues. Lung volumes and capacities.			
	Respiratory abnormalities: Hypoxia,			
	cyanosis, dyspnoea, Asphyxia,			
	hyperventilation, hypoventilation,			
	tachypnea and bradypnea			
	Specific Programme			
	ECC: Intrapleural and intrapulmonary			
	Pressures and their changes with			
	respiration, Hypoxia.			
	For Specific Programmes-			
	ECC: Description of the larynx, trachea,			
	and respiratory centers			
V	Cardiovascular System and Blood:	10	Describe, illustrate, and explain	1,8
•	Mediastinum-division	10	the basic knowledge of the	1,0
	Structure of heart and blood vessels.		cardiovascular system and blood.	
	Systemic circulation, pulmonary circulation,		cardio vascarar system and brood.	
	and coronary circulation. Cardiac output,			
	cardiac cycle, conducting system of the			
	heart.			
	Heart sounds, pulse, blood pressure, and			
	their regulation.			
	Composition and functions of blood,			
	Plasma, and body fluids.			
	Functions of RBC, WBC, and platelets.			
	Hemoglobin.			
	Blood hemostasis			
	Blood groups			
	Study of Skull Vertebrae, Ribs and bones	60	Describe, illustrate explain, and	1,8
	of upper limb.		apply anatomical plans, position,	
ह्य	Study of compound Microscope.		and study the bones of the human	
Practical	Measurement of blood pressure, Arterial		body.	
Pra	pulse		_	
	Bleeding time (BT), Clotting time (CT),			
	Hemoglobin estimation			

- T1: Fundamentals of Anatomy By Pamela K Levangie, Cynthia C Norkin, JP Bros Medical Publishers, New Delhi.
- T2: Fundamentals of Medical Anatomy by Duane Knudson, 2nd ed. 2007 Publisher Springer
- T3: A book of Physiology, Dr, Khurana Medical Physiology, Guyton and Hall

REFERENCE BOOKS:

- R1: Medical anatomy, JP Bros Medical Publishers, Bangalore, 1st Indian Ed1997.
- R2: Clinical Anatomy, JP Bros Medical Publishers, Bangalore, 5th Ed 1996, 1st Indian Ed1998.
- R3: Review of Medical Physiology–Ganong William F. Physiological basis of medical practice–Best & Taylor

RELATIONSHIP BETWEEN COURSE OUTCOMES (CO) AND PROGRAMM OUTCOMES (PO)

CO PO Mapping					
S.N.	Course Outcome (CO)	Mapped Programme Outcome			
1	Able to explain the normal position, functional, and cross-sectional anatomy of various structures of the body.	1,8			
2	Able to explain the cell, organs, and organ system and their function.	1,8			
3	Learn about the different blood cells, different types of blood groups, and blood coagulating factors.	1,8			
4	Apply knowledge of the gross structure of the digestive system, respiratory, and cardiovascular systems.	1,8			
5	Demonstrate a comprehensive understanding of the gross structure of Musculo– the skeletal-system and bones in the body.	1,8			

			Semester –							
Course	Title			Biochemi		1	1	1	1	
Course	Code	24BDIT1102R	Total Credits: 4 Total Hours: 45T+30	$\frac{L}{3}$	T 0	P 2	S	R	0/F 0	C 4
Pre-req	uisite	Nil	Co-requisite	3	U	2	Nil	U	U	7
Program		1 122	Bachelor of Di	ialysis Te	chnolo	gy	- 1			
Semester Fall/ I Semester of First Year of the Programme										
Course Objectives 1.To impart knowledge in the technical aspects of biochemical studies especial on the clinical findings in various body metabolites. 2.To explain the energy flow in the form of ATP in the human body and cells. 3.To demonstrate practical knowledge of the qualitative determination of caproteins, and lipids.										
CO	1	Able to explain car	bohydrates, their types,	and variou	is roles	in the	humai	n bod	y and l	health.
CO	2	Able to explain the	proteins.							
CO	3	Learn the basic know	owledge of lipids.							
CO	4	Apply knowledge	of the nucleic acid.							
CO	5	Demonstrate a con	nprehensive understandir	ng of acid-	base b	alance.				
Unit-		Cont	tent	Contact	L	earnir	g Out	come	;	KL
No.				Hour						
I	• De: • Exa (Gl	ample of some co	cation of carbohydrates ommon Carbohydrates arch, Glycogen, Starch) ture.	8		ribe, ain the		-	and es	1,2
П	• Des	OTEINS: finition of Proteins nificance, nino acids and their ntial and non-essent		7	expla		illustra the of prot	b	and asic	1,2
III	• De: • Cla	PIDS: finition and classification of Fatty amples and function tospholipids, Glyco	7	Desc expla	ribe, ain the	illustra lipids	ate,	and	1,2	
• Ba		NUCLEICACIDS: • Basic idea of the structure of DNA and RNA. Function of DNA and RNA.			Desc expla	ribe, ain the	illustra nuclei	-	and	1,2
V AO		CID-BASEBUFFE sic idea of acids, baffer. id-base balance.	RS: ses, pH, pOH, pKa, and	8	Desc expla buffe	nin t	illustra he	ate, acid-l	and	1,2

	• To identify and demonstration of	22	Demonstration of	1,8
	biochemistry laboratory glassware's and		biochemistry laboratory	
	apparatus.		glassware's and apparatus,	
	• To identify and demonstration of		Principle and Applications,	
	biochemistry laboratory instruments		Benedict's test, and	
	(Principle and Applications)		Molisch's test.	
Practical	To perform Fehling's test for determination			
rac	of reducing and non- reducing sugar in an			
<u> </u>	unknown sample.			
	• To perform Benedict's test for			
	determination of reducing and non-reducing			
	sugar in an unknown sample.			
	To perform Molisch's test for determination			
	of sugar in an unknown sample.			

T1: Lehninger Principles of Biochemistry by David L Nelson and Michael M Cox.

T2: Biochemistry by U Satyanaryana and U Chakrapani.

REFERENCE BOOKS:

R1: Haper's Illustrated Biochemistry by Robert Murray, Daryl K Granner et al.

R2: Biochemistry by Lubert Stryer, Jeremy M Berg, et al.

R3: Biochemistry by David E Metzler.

RELATIONSHIP BETWEEN COURSE OUTCOMES (CO) AND PROGRAMME OUTCOMES

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Programme Outcome				
1	Able to explain the carbohydrates, its types and various roles in the human body and health.	1,8				
2	Able to explain the proteins.	1,8				
3	Learn the basic knowledge of lipids.	1,8				
4	Apply knowledge of the nucleic acid.	1,8				
5	Demonstrate a comprehensive understanding of acid – base balance.	1,8				

			Semester – I									
Cou	rse Title	Ba	asic Principle of Hospit	al P	ractice an	d Patie	nt Ca	re				
Com	rse Code	24BDIT1103R	Total Credits: 2	L	T	P	S	R	O/F	C		
			Total Hours: 30T	2	0	0	0	0	0	2		
	requisite	Nil	Co-requisite				Nil					
	gramme		Bachelor of Di									
Sei	mester		all/ I Semester of Firs									
		_	owledge in patient in a	hol	listic appı	roach fo	or the	over	all well	being		
		of the patient.	1 ' 1 1 1		1: 1	.1 *	1.1		1			
	ourse		orehensive knowledge	on 1	medical e	ethics ai	nd the	qual	lity and	Į.		
Ob	jectives	functions of medi	•	1	1 1	.	. 12 1	c		1		
		hyper and hypogl	s knowledge on the le	gai	nazardou	is of me	eaicai	proi	ession,	ana		
	CO1		•	cnit	tal racord	and r	norta					
	CO2	_	pasic knowledge on ho nedical professional a				_		ofession	n		
	CO2	•	vledge of maintenance			uus OI I	incuic	ai pr	0168810	и.		
	CO4		the about safety in th									
	CO5	***	rehensive understandi			vital si	gns of	f pati	ents.			
Unit-		Conten		_	Contact				come	KL		
No.					Hour	••		,	· - ====			
Ι	Hospital	records & reports:			6	Descr	ibe, il	llustr	ate and	1 1,2		
	Definition	n and functions of H	and functions of Hospitals, Classification,				in	the	basic			
	Organiza	ation and Departments of Hospitals.				knowledge of hospital						
	Managen	gement of Hospital.			records and reports.							
		_	f records and reports, Different types of									
	records	-	1									
		nce of records. Prin		ord								
***		Difference of records a		1	10	D.	.:1 '1	11		1 12		
II	Medical Profession	Professional and Leg	gai Hazards of Medi	cai	10			nustr	ate and basic			
		Aims & objectives of	first aid			explai		of L	basio Iospita			
		•	ies		And	_		_				
			f first aid. Golden rules of first aid qualities ibilities of the first aider. Simple first aid					-				
	_	in selected condition	•			Liepoi						
		e, Scorpion bite, Dog	_	_								
		rgans, Burns & scalda	-									
III		and Basic Care Need			8	Descr	ibe, il	llustr	ate and	1 1,2		
		Hygiene and Ma		ne		explai	in	the	basic			
	Maintain	ing therapeutic enviro	nment. Safety factors	for		know	ledge	of 1	medica	1		
	patients such as safety from Mechanical injury, thermal professional					l an	d lega	1				
		mical injury, radiation & bacteriological injury,				hazar		of 1	medica	1		
		om allergens. Differer	-	-		profes	ssion.					
	Supine position, Prone Position, Cardiac position,											
TX 7	Lateral Position, Fowler's position						1.0					
IV	_	the Laboratory			8	Learn		.:	the	1,2		
		on laboratory accident	ts from			comp			Jugior			
	•	al injuries					_		Hygiene Needs			
	Electric	cal shock							Persona			
						Oi F	aueil	is P	CISUIIA	1		

	Chemical injury		Hygiene And	
	Bleeding		Maintenance.	
	• Burn			
	Eye accidents			
	Biological hazards.			
V	Vital signs of Patients:	8	Describe, illustrate and	1,2
	Body temperature		explain the Safety in	
	Maintenance of body temperature		The Laboratory.	
	Factors influencing body temperature			
	Different types of fever			
	Stages of rigor			
	Management of pyrexia			
	Pulse			
	Common pulse sites			
	Factors influencing pulse rate			
	Characteristics of Pulse			
	Abnormal pulses			
	Reading of pulse			
	Blood Pressure			
	Definition			
	• Factors influencing B.P.			
	Abnormalities of B.P.			
	• Recording of B.P.			
	Respiration			
	Regulation of respiration			
	Factors causing variation in respiration			
	Abnormal respirations			
	Reading of respiratory rate.			
	Different methods of Artificial Respiration			

T1: Fundamentals of Hospital Practice and Patients care by Vyakarnam Nageshwer

REFERENCE BOOKS:

R1: Primary Health Care People, Practice, Place by <u>Valorie A. Crooks</u>, Gavin J. Andrews. <u>Ashgate</u>, Farnham, United Kingdom

RELATIONSHIP BETWEEN COURSE OUTCOMES (CO) AND PROGRAMME OUTCOMES (PO)

	CO PO Mapping					
S.N.	Course Outcome (CO)	Mapped Programme Outcome				
1	Able to explain the basic knowledge on hospital records and reports.	1, 3, 5, 8				
2	Able to explain the medical professional and legal hazards of medical profession.	1, 2, 3, 5, 6, 8				
3	Learn the basic knowledge of maintenance of hygiene	1, 2, 8				
4	Apply knowledge of the about safety in the laboratory.	1,8				
5	Demonstrate a comprehensive understanding about the vital signs of patients.	1, 2, 8				

			Semester	– I							
Cours	se Title		Basic Com	munica	tive	English					
Cours	o Codo	2/LIDDD1101D	Total Credits: 1	L	T	P	S	R	O/F	С	
Cours	e Code	24UBPD1101R	Total Hours: 30P	0	0	2	0	0	0	1	
	quisite	Nil	Co-requisite				Nil				
	amme		Bachelor of			<u> </u>					
Sem	ester	1.50		of First Year of the Programme							
Cor	urse	1.To introduce the students to the basics of English grammar and their application. 2.To enhance communication skills through list ending and speaking exercises.							1.		
Obje	ctives			_		-	_	-	icises.		
	3. To learn and understand the importance of pronunciation of words. Able to explain the application of grammatical rules will enable the student's a						ent's to				
C	01	_	iking and writing skills								
C	02	Able to explain t	he language effectively	7.							
	03		knowledge of both liste			eaking sk	ills.				
C	04		eir vocabulary and use								
C	05		omprehensive understa	nding th	ne co	ncept of	comm	unicat	ion, its		
Unit-		importance and b		Conta	ot	Τ	mina	Outoo	mo	KL	
No.		Conte	ciit	Hou		Lea	rung	Outco	me	KL	
I I	Gramn	nar		6		Describe	, ill	lustrate	e and	1,2	
		s of Speech			explain						
	ii. Artio					parts of	f spe	ech,	articles,		
	Affirm	mative and Negative Sentences				affirmati	ve a	ınd r	negative		
				6		sentence	S				
II	Gramn					Describe	•	lustrate		1,2	
		Determiners				explain the basic knowledge					
		entence Construction from jumbled words			of Determiners, Sentence Construction from jumbled						
		es of Sentences ertive, Imperative etc.)				words.	tion i	iioiii j	Julilolea		
	(713301	irve, imperative e	ic.)			Types	of	se	entences		
						(Assertiv					
III	Buildir	ng Vocabulary		8 Learn the comprehen						1,2	
	i. Syno	onyms				knowled	ge of S	Synony	yms and		
	ii. Anto	onyms				Antonyn	ns				
IV	Speaki	ng Skills		6		Able to	applv	the s	peaking	1,2	
	_	oduction and gree	tings			skills.	I I -J	- 2		,-	
		nunciation	-								
	iii. Asl	king and offering i	n formation								
	iv. Vic	leo Recording for	self-analysis								
V	Comm	unication Skills		8		Describe	*	lustrate		1,2	
		oduction to Comr				explain	the C	ommu	nication		
		ortance of Comm				skills.					
		pose of Communi									
		bes of Communica									
		riers to Communi									
	How	to improve/ nunication skills	tips to improve								
	Comm	unication skills									

- T1: Wren & Martin. (2017). High School English Grammar and Composition. S. Chand Publishing.
- T2: Pal, Rajendra. Suri, Premlata (2022). English Grammar & Composition. Sultan Chandand Sons Publishing.
- T3: Debnath, Adhir.(2018). A Textbook of English Grammar and Composition. Bina Library

REFERENCE BOOKS:

R1: Mitra, Barun. (2016) Personality Development and Soft Skills 2/E, Oxford University Press

R2: Murphy, Raymond, (2012) English Grammar in Use Book with Answers: A Self-Study and Practice Book for Intermediate Learners of English, Cambridge University Press

OTHER LEARNING RESOURCES:

Topic related journals from PubMed, Google Scholar, etc.

Youtube videos

E-learning materials

RELATIONSHIP BETWEEN COURSE OUTCOMES (CO) AND PROGRAMME OUTCOMES (PO)

S.N.	Course Outcome (CO)	Mapped Programme Outcome
1	Able to explain the application of grammatical rules will enable the students to improve the speaking and writing skills.	1, 7, 8
2	Able to explain the language effectively.	1, 7, 8
3	Apply the basic knowledge of both listening and speaking skills.	1, 7,8
4	Able to apply their vocabulary and use of words.	1, 7, 8
5	Demonstrate a comprehensive understanding the concept of communication, its importance and barriers.	1, 7, 8

			Semester -	- I							
Course	Title			ical Dialysi		· -	l =	-	· -	T = -	
Course	e code	24BDIT1105R	Total Credits: 1 Total Hours: 15P		$\frac{\mathbf{L}}{0}$	T 0	P 2	S 0	R 0	0/F 0	C 1
Pre-rec	quisite	Nil	Co-requis	site				Nil			
Progra	Programme Bachelor of Dialysis Technology										
Seme	Semester Fall/ I Semester of First Year of the Programme										
Cou Objec		2. Compare and diff	ey function, renal fail ferentiate between he ments and operation of	emodialysis	and pe	riton	eal di	•		S.	
CC) 1	Understand how the	kidneys work, what o	causes kidne	y failu	re, an	d wh	y dial	lysis i	s need	led.
СО)2	Describe the differe each type is used.	nces between hemoo	dialysis and	perito	neal	dialy	sis ar	nd kn	ow w	hen
CO	3	Identify the main pa	rts of a dialysis macl	nine and lea	rn how	to se	t it u	p and	oper	ate it.	
СО)4	Check patients' vita educating patients.	l signs, and fluid le	vels, and pr	ovide	care	after	dial	ysis,	includ	ling
СО	5	Practice good hand I prevent infections in			PE), ar	nd fol	low s	safety	proc	edure	s to
Unit- No.		Content	t	Contact Hours	L	earni	ng O	utco	me	ŀ	KL
I	• Ove	duction to Dialysis: erview of kidney fundaments of acute and cl		4	Descri expla- dialys	in bas					1,8
II	• Co	of Dialysis: mparisons between itoneal dialysis.	hemodialysis and	2	Descrieved a construction of the construction	in the ledge	basi	С		1	1,8
III	Here Pur	Inodialysis Machine & Equipment: Hemodialysis machine components: Pumps, monitors, and alarms. Dialyzer membranes and types. 4 Learn the comprehensive knowledge of hemodialysis machines & equipment.							1,8		
IV	• Pat	Patient Care During ient assessment: Vita blood tests. at-dialysis care and page	l signs, fluid status,	3	Able to apply basic patient care during dialysis.					t 1,	,7,8
V		ion Control and Saf nd hygiene and PPE _I		2	expl	cribe, ain th rol ar ysis.	e inf	ection	n	1,	,7,8

- T1: Handbook of Dialysis" by John T. Daugirdas, Peter G. Blake, and Todd S. Ing
- T2: Core Curriculum for Nephrology Nursing" by Caroline S. Counts
- T3: Clinical Dialysis" by Allen R. Nissenson and Richard N. Fine
- T4: The Essentials of Hemodialysis" by Norbert Lameire and Raymond Vanholder
- T5: Principles and Practice of Dialysis" by William L. Henrich

RELATIONSHIP BETWEEN COURSE OUTCOMES (CO) AND PROGRAMME OUTCOMES (PO)

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Programme Outcome					
1	Understand how the kidneys work, what causes kidney failure, and why dialysis is needed.	1,2,3,4, 8					
2	Describe the differences between hemodialysis and peritoneal dialysis and know when each type is used.	1,2,3,4, 8					
3	Identify the main parts of a dialysis machine and learn how to set it up and operate it.	1,2,3,4, 8					
4	Check patients' vital signs, and fluid levels, and provide care after dialysis, including educating patients.	1,2,3,4, 8					
5	Practice good hand hygiene, wear protective gear (PPE), and follow safety procedures to prevent infections in the dialysis unit.	1,2,3,4, 8					

			Semester -	- I							
Course	Title			cal Psycholo	gy						
Course	Code	24BDIT1101M	Total Credits: 3 Total Hours: 45P		<u>L</u>	T 0	P 0	S	R 0	0/F 0	<u>C</u>
Pre-rec	uisite	Nil	Co-requis	site	3	U	U	Nil	U	U	
Progra		2.1	Bachelor of		chnolo	ogy					
Seme		- F	Fall/ I Semester of F				amm	e			
		1. Aims to provid	le students with a co	omprehensiv	e unde	erstar	ding	of hu	ıman	behav	viour
Course Objectives		 and mental processes. Explore various psychological domains such as cognitive, developmental, social, and abnormal psychology, gaining insights into how individuals think, feel, and act. To be equipped with critical thinking skills and an appreciation for the complexities of human behaviour, enabling them to apply psychological concepts to real-world situations. 									
CO)1	Understand the sign	ificance, history, sco	pe and bran	ches of	f psyc	cholo	gy.			
CO	2	Discuss the biology	of human behavior a	and concetion	n						
						ont =	nd 41-	foct		fl	in~
CO	3	it.	t stages of human gro	wui and de\	ciobiu	iciit di	nu uit	raci(AS III	muenc	mg
СО	4	Understand the commanagement of stress	ncept and types of	motivation	n, emo	otion,	stre	ss al	ong	with	the
СО	5		ss mental health and i	identify the	warnin	ng sig	ns of	poor	men	al hea	lth.
Unit- No.		Conten	t	Contact Hours	L	earni	ing O	utcoi	me	K	KL
I	• D	uction to Psychology Definition of psychology Volution of modern paranch of psychology	ogy	7	Introduces the knowledge of psychology its evolution in modern world and different branches of it.						,2
П	Biology of Behavior • Body mind relationship modulation process in health and illness • Brain and behavior: nervous system, neurons and synapse, Association cortex, Right and Left			10	Expla behav all the	iour	the r	ninds	et an		2,3
Ш	hemispheres. II Growth and Development Life span: different stages of development (Infancy, childhood, adolescence, adulthood, middle age, old age) Heredity and environment: role of heredity and environment in physical and psychological development.			10	Describes the growth and development of a person.					d 2	2,3
IV	• M tl • E c a il	ation and Emotional Motivation: meaning neories, motives and motion: definition hanges in emotions, djustments, emotional lness. tress: stressors, cycle to coping and manage	maintaining emotion processes.						d	2,3	

	Conflicts and frustration, conflict resolution.			
V	 Mental Hygiene and Mental Health Concepts of mental hygiene and mental health. Characteristics of mentally healthy person Warning signs of poor mental health, Promotive and preventive mental health – strategies and services. Guidance counselling and Rehabilitation. 	10	Explain the warning sign of poor mental health ways of preventing it and characteristics of a healthy person.	2,3

T1: Introduction to Psychology" by Atkinson and Hilgard

T2: Fundamentals of Psychology" by Michael W. Eysenck

T3: Abnormal Psychology" by Ronald J. Comer

T4: Development Through the Lifespan" by Laura E. Berk

T5: Biological Psychology" by James W. Kalat

T6: Health Psychology: Biopsychosocial Interactions" by Edward P. Sarafino and Timothy W. Smith

RELATIONSHIP BETWEEN COURSE OUTCOMES (CO) AND PROGRAMME OUTCOMES (PO)

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Programme Outcome					
1	Understand the significance, history, scope and branches of psychology.	1, 8					
2	Discuss the biology of human behavior and sensation.	1, 8					
3	Identify the different stages of human growth and development and the factors influencing it.	1, 8					
4	Understand the concept and types of motivation, emotion, stress along with the management of stress and conflict.	1, 8					
5	Apply skills to assess mental health and identify the warning signs of poor mental health.	1, 8					

			SEMESTER – I								
Cours	se Title		Extra-Curricular								
Cours	se Code	24UBEC1101	L	T	P	S	R	O/F	C		
			0	0	0	4	0	0	1		
	equisite	Nil	Co-requisite				Ni	<u>l</u>			
	amme		Bachelor of Dialysis Tec								
Sem	ester		ll / I Semester of First Year of						1	1	
Course Objectives		 To develop skills and interests through participation in diverse extracurricular and co-curricular activities. To learn about teamwork and leadership abilities by engaging students in club-led events and competitions. To provide opportunities for personal growth and practical learning beyond the academic curriculum. 									
C	01	Explore different a photography, drama	activities organized by vario , and literacy.	ous clu	ıbs,	such	n as	dar	nce, m	usic,	
C	O2	Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests.									
C	03	Apply knowledge and skills to represent ADTU in inter-university, state, and national level competitions.									
C	O4	Explore new platfor	m to learn from invited experts	in their	r res	pecti	ve fi	elds.			
C	O5	Evaluate overall growth alongside academic development.									
Unit- No.		Con	tent	Contact Learning Hour Outcome						KL	
		ncourages a range of lum intended to meet le	activities outside the regular earner's interest.								
			develop the social and soft development of the learners.								
	student differer	Keeping in mind the 360 degree learning methodology the students are engaged in different activities headed under different clubs viz. Dance, music, photography, drama, literary etc.				xplai `he ncou	n a stud rage	nd a lents d	trate, apply are to		
I	activitie	The students are encouraged to participate in regular club activities, workshops, competitions as per their interest and hobbies.		regular clu						1,2	
	AdtU ii	The students members of the club are trained represent as per their in and hobbies. as per their in and hobbies.				terest					
	that bei	nefit the members and	vited to conduct workshops students by giving them the in the respective fields.								

RELATIONSHIP BETWEEN COURSE OUTCOMES (CO) AND PROGRAMME OUTCOMES

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Programme Outcome						
1	Explore different activities organized by various clubs, such as dance, music, photography, drama, and literacy.	7						
2	Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests.	7						
3	Apply knowledge and skills to represent ADTU in inter-university, state, and national level competitions.	7						
4	Explore new platform to learn from invited experts in their respective fields.	7						
5	Evaluate overall growth alongside academic development.	7						

			Semester – II							
Cour	rse Title		Human Anatomy	and Phys	iology-l	Ι				
Cour	rse Code	24BDIT1201R	Total Credits: 6			P	S	R	O/F	C
			Total Hours: 60T+30	P '	1 0	4	0	0	0	6
	requisite	Nil	Co-requisite		1		Nil			
	gramme	C	Bachelor of Dia	•		Duce				
Sei	nester		g/ II Semester of the Se				gram	me		
_	ourse lectives	2. To provide a cophysiological fu	ic anatomical structure of mprehensive concept of nction. ne underlined mechani	f the huma	n body'	s ana		_		
(C O1	Able to explain the	urinary system.							
(CO2	Able to explain the	nervous system.							
(CO3	Learn the comprehe	ensive knowledge of lyn	nphatic an	d immur	olog	ical s	ysten	ns.	
	CO4	Apply knowledge of	of the reproductive system	m.						
	CO5		prehensive understanding		ndocrine	syst	em.			
Unit-		Content			Lea	rnin	g Ou	tcom	e l	KL
No.			Hour							
I	Urinary System Structure of kidney, ureter, urinary bladder, male and female urethra. Functions of kidneys, nephron. Urine formation.			7	Descr explai system	in	illustr the	ate, a urina		1,2
TT		<u> </u>	ii. Offiic formation.	12	Descr	ihe	illnet	rate a	nd	1,2
	II Nervous System Classification of Nervous system. Central Nervous system—Brain and Spinal cord, the blood supply of brain. Cranial nerves and spinal nerves Introduction of the motor system, sensory system and Autonomic Nervous System. Functions of the brain, and spinal cord Synapse, reflex arc cerebro spinal fluid				explaireprod	n th	e pel	vis a		1,2
III	Sensory Organs: Skin, Ear, Nose, Tongue Eye Lymphatic and Immunological System Structure of lymphatic system and functions. Immunity—Antigen, Antibody, and Immune response. Acquired immunity				Descr explai syster	n t	he	nervo	ous	1,2
IV	Reproductive System Structure of male and female reproductive organs. Structure of breast Changes during puberty Ovulation, Menstrual cycle Pelvic cavity with its boundaries autontents.				Descr explai organ	in t	illust the	rate a senso		1,2
V	Different Hormone	ne System endocrine glands es and functions of er on of secretion horme	-	10	Descr explai system	in th				1,2

	Study of pelvic bones and bones of lower limbs of	30	Describe, illustrate, and	1, 8
	human body, organs: Brain, heart, lung, liver,		explain the human	
-	kidney, blood group, DLC, total count of RBC and		bones, human organs,	
Practical	WBC		Brain, heart, Lung,	
rac			liver, kidney, and	
Pı			Spleen, blood group,	
			DLC, the total count of	
			RBC and WBC	

T1: Text Book of Anatomy and Physiology By Ross and Wilson

REFERENCE BOOKS:

R1: Anatomy and Physiology By Inderbir Singh

OTHER LEARNING RESOURCES:

https://www.khanacademy.org/science/biology/human-biology https://open.oregonstate.education/

RELATIONSHIP BETWEEN COURSE OUTCOME (CO) AND PROGRAMME OUTCOME (PO)

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Programme Outcome						
1	Able to explain the urinary system.	1, 8						
2	Able to explain the nervous system.	1,8						
3	Learn the comprehensive knowledge of lymphatic and immunological system.	1,8						
4	Apply knowledge of reproductive system.	1,8						
5	Demonstrate a comprehensive understanding the endocrine system.	1,8						

	SEMESTER – II											
Cours	e Title	В	iochemistry: 1						· _	1		
Cours	e Code	24BDIT1202R	Total Credit Total Hours		1 3	T 0	P 2	S 0	R	0/F 0	C 4	
Pre-re	quisite	Nil		quisite				Nil				
	amme		Bachelor of Dialysis Technology									
Sem	ester	Sprii	ng/ II Semeste	er of Second Year of the Programme								
Course Objectives		 To impart the knowledge in the technical aspects of biochemical studies specially focusing on the clinical findings in various body metabolites. To explain about the energy flow in the form on ATP in the human body and cells. To provide information and understanding on the basic idea about the enzymes, nomenclature functions, regulations and their significance in biological processes. 										
C	01	Able to explain the	enzymes.									
C	02	Able to explain the	carbohydrate a	nd enzymes	S							
C	CO3 Learn the basic knowledge of the				abolism.							
C	CO4 Apply knowledge of lipid metabo			ism.								
C	05	Express a comprehe	nsive understa	nding the vi	itamins	and m	inera	ls.				
Unit- No.		Content		Contact Hour	Learning Outcome						KL	
I	Basics Mecha	tion and classification of co-enzyme, iso-en nism of enzyme Actions affecting enzyme ac	zyme.		8 Describe, illustrate and explation basic knowledge of enzymes.					s.	1,2	
П	Carbohydrates Metabolism: Glycolysis Kreb's Cycle Gluconeogenesis Glycgenesis Glycogenolysis			7	7 Describe, illustrate and expl the basic knowledge carbohydrates metabolism					olain of	1,2	
III	Protein Metabolism: Transamination Deamination Urea Cycle and its Significance RFT (Renal Function Tests)			7	Learn the comprehensive knowledge of protein metabolism.						1,2	
IV	β-oxioKetorKetos	Ietabolism: dation of Fatty Acids. ne bodies is and keto acidosis Liver Function Tests		9	Descri the lip				d exp	olain	1,2	

V	Vitamins and minerals:	12	Describe, illustrate and explain	1,2
	Definition and classification of vitamins		the vitamins and minerals	
	according to solubility.			
	Sources and functions of individual			
	vitamins. Deficiency. Individual minerals			
	(calcium, phosphorus, iron, Magnesium			
	flu slide, copper, selenium, molybdenum			
	etc.)-their sources, function and			
	properties.			
	To perform precipitation test to determine	5	Describe, illustrate and explain	1,8
	the presence of proteins in an unknown	3	and apply the knowledge of	1,0
	urine sample.		monodi- saccharides, proteins,	
	To perform heat and acetic acid test to		precipitation reaction, lipids and	
ca	determine the presence of proteins in an		heller's test, heat and acidic test.	
Practical	unknown urine sample			
Pra	To perform Heller's test to determine the			
	presence of proteins in an unknown urine			
	sample			
	To perform lipid solubility test.			

T1: Lehninger Principles of Biochemistry" by David L Nelson and Michael M Cox Biochemistry" by U Satyanaryana and U Chakrapani

REFERENCE BOOKS:

R1: Haper's Illustrated Biochemistry by Robert Murray, Daryl K Granner et al. Biochemistry by Lubert Stryer, Jeremy M Berg, Biochemistry by David E Metzler.

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Programme Outcome							
1	Able to explain the enzymes.	1,8							
2	Able to explain the carbohydrate and enzymes.	1,8							
3	Learn the basic knowledge of the protein metabolism.	1,8							
4	Apply knowledge of lipid metabolism.	1,8							
5	Express a comprehensive understanding the vitamins and minerals.	1,8							

			Semester	- II						
Cours	se Title		Fundamental o	of Patio	ent car	e and	Safety			
Course Code		24BDIT1203R	Total Credits: 2	L	T	P	S	R	O/F	C
			Total Hours: 30T	2	0	0	0	0	0	2
Pre-re	equisite	Nil	Co-requisite				Nil			
Progr	ramme	Bachelor of Dialysis Technology								
Sem	ester		pring/ II Semester of							
Course Objectives		 The study of HDPC is aimed at imparting a knowledge in providing patientcare, meeting the highest standards of professional level of quality and efficiency prevailing in the society To provide comprehensive knowledge about hospital and patient management. To have a comprehensive understanding the laboratory investigation and laboratory setup. 								
C	01	Able to explain the	ne basic knowledge of	poiso	ning.					
C	O2	Able to explain the	ne medical professiona	al and	legal l	nazard	s of medi	cal pro	ofession	
C	03	Learn the basic knowledge of shock.								
C	04	Apply knowledge of hyperglycemia and hypoglycaemia.								
C	O5	Demonstrate a cosetup.	mprehensive understa	nding	the lal	borato	ry invest	igation	and lab	oratory
Unit- No.			ontent			ntact our	Learni	ng Ou	tcome	KL
I	Definit Sympto Antido							1,2		
П	Medical Professional and legal Hazards Of Medical profession: Qualities and Function of medical Professional Ethic of Medical Profession Malpractice Civil Negligent Clinical negligence Corporate negligence Consumer protection Act for medical Professional Act of commission, rashness, negligence & damage Advantage & disadvantage of the act.					12	Describ and exp knowled medical and leg medical	lain the dge profes al haza	of ssional ards of	1,2
III	Shock: Definition Types of shock General Features of shock Investigations of shock, Initial management & first aid of shock Learn the comprehensive knowledge of shock.					1,2				
IV	Hyperglycemia And Hypoglycemia: Definition Clinical features Diabetes laboratory tes for diabetes Different types of glycosuria Ketor bodies. Glucose tolerances. Definition, Etiology, Clinical Features, Investigation and Management for Hypoglycemia				8	12	Describ and e hypergl hypogly	xplain ycemia	a and	1,2

V	Laboratory investigation and laboratory Setup:	12	Describe, illustrate	1,2
	Preparation of patients and equipment's		and explain the	
	• Collection of specimens of urine, stool, sputum,		laboratory	
	blood, CSF, Pericardial fluid, Peritoneal fluid,		investigation and	
	Pleural fluid, etc.		laboratory setup.	
	Laboratory designing and management			
	Different laboratories			
	Disposal of wastes			
	Reporting of tests of laboratory			
	• Quality control and accreditation control of fire,			
	infection, corrosive chemicals, toxic fumes,			
	broken glasses, carcinogen. Legal and ethical			
	regulation. Characteristics of Pulse			
			l l	

T1: Fundamentals of Hospital Practice and Patients care by Vyakarnam Nageshwer

REFERENCE BOOKS:

R1: Primary Health Care People, Practice, Place by Valorie A. Crooks, Gavin J. Andrews. Ashgate, Farnham, United Kingdom

	CO PO Mapping	
S.N.	Course Outcome (CO)	Mapped Programme Outcome
1	Able to explain the basic knowledge of poisoning.	c
2	Able to explain the medical professional and legal hazards of medical profession.	1, 5, 8
3	Learn the basic knowledge of shock.	1, 8
4	Apply knowledge of hyperglycemia and hypoglycaemia.	1, 8
5	Demonstrate a comprehensive understanding the laboratory investigation and laboratory setup.	1, 3, 5, 8

SEMESTER – II											
Course	e Title		Fun	ctional E	nglish	1					
Course	. Codo	24UBPD1201R	ATTROPOLAÇÃO						O/F	C	
			Total Hours: 30	P	0	0	2	0	0	0	1
Pre-rec		Nil	Co-requisite	of Dialygia	Took	nolo	OTV	Ni	1		
Progra		g .	Bachelor o								
Seme	ester	-	ng/ II Semester o								
Cou Objec		 To enable students to learn and understand the different types of sentences. To strengthens vocabulary of the students which will help in their writing and speaking. To introduce with the Time Management technique. 									
C	01	Able to explain the b	oasic knowledge of	f grammar.							
C	02	Able to explain the v	ocabulary.								
C	03	Learn the basic know	Learn the basic knowledge of reading skills.								
C	04	Apply knowledge of	conflicts management.								
C	05	Demonstrate a comprehensive understanding the time management skills.									
Unit- No.		Content		Contact Hour	Learning Outcome						KL
I	Asserti Asserti	we Sentences, Exve Sentences of Tenses Common E	sclamatory and	6						apply ge use.	1,2
II	Vocabulary: Homonyms Homophones				the Con	bas nmun skill	sic icatio	know on an	ledge d be	xplain e of have ir self-	1,2
III		ng Skills: Technique g Gathering ideas text.		8		wledg			ffectiv	ensive ve and time.	1,2
IV	IV Conflict Management: Definition Type of conflict management effects of conflict management				the s		gthen	their		xplain bulary	1,2
V		Management Skills: Management, Basic		8	the o	conce	ept o		munio	xplain cation,	1,2

- T1: Wren, P. C and Martin, H.1995. High School English Grammar and Composition, SC hand publishing.
- T2: Barrett, Grant. 2016. Perfect English Grammar: The Indispensable Guide to Excellent Writing and Speaking, Zephyrus Press.

REFERENCE BOOKS:

R1: Swan, Michael, (2014) Practical English Usage, Cambridge University Press

R2: Taylor J. and Wright, J., IELTS Advantage Reading Skills: A step-by-step guide to a high IELTS

reading score, Delta Publishing by Klett.

OTHER LEARNING RESOURCES:

- > https://clockify.me/time-management-techniques
- > https://www.peoplehum.com/glossary/conflict-management

S.N.	Course Outcome (CO)	Mapped Programme Outcome
1	Able to explain the basic knowledge of grammar.	1, 8
2	Able to explain the vocabulary.	1, 7,8
3	Learn the basic knowledge of reading skills.	1, 8
4	Apply knowledge of conflicts management.	1, 8
5	Demonstrate a comprehensive understanding the time management skills.	1, 8

		SEMESTER – II							
Course Title		Self-Study Seminar	/ Pres	sentat	ion				
Course Code	24BDIT1204R	Total Credits: 1 Total Hours: 30P	L 0	T 0	P 2	S 0	R 0	O/F 0	C 1
Pre-requisite	Nil								
Programme		Bachelor of Dialysi	s Tec	hnolo	gy				
Semester	\$	Spring/ II Semester of First \	Year (of the	Progr	ramn	ne		
Course Objectives	and research and 2. Improve Research synthesiz 3. Enhance Pre	 Develop Independent Learning Skills – Enhance self-motivation, time management, and research abilities to explore topics independently. Improve Research and Analytical Abilities – Strengthen the ability to gather, analyse, and synthesize information from various sources critically. Enhance Presentation and Communication Skills – Develop written and verbal communication skills through reports, discussions, and presentations 							
CO1	Develop the abili with minimal guid	ty to learn independently, mandance.	age t	ime e	ffectiv	ely, a	nd ex	plore to	pics
CO2	Strengthen resear	rch and analytical skills by credible sources.	gathe	ring, e	evalua	ting,	and s	ynthesi	zing
CO3	Enhance written a and discussions.	and oral communication skills	hroug	gh stru	ictured	l repo	rts, pr	esentati	ons,
CO4	Improve critical the proposing logical	hinking and problem-solving a solutions.	bilitio	es by a	analyzi	ing co	mple	x issues	and
CO5	Learn to how to n	nake presentation.							
S.N.		CONTE	NT						
1.	Reflex actions as	nd their significance.							
2.	Effect of hormon	nal imbalance in the body.							
3.	DNA replication	: How genetic information is	copie	1.					
4.	Importance of hy	ygiene and infection control in	hosp	itals.					
5.	Use of personal	protective equipment (PPEs) i	n pati	ents' c	care.				
6.	Enzymes: Mecha	anism of Action and Regulation	n.						
7.	Gene Regulation	and Expression							
8.	Cellular Respira	tion and ATP Production							
9.	Biochemical Bas	sis of Diabetes Mellitus							
10.	Liver Function T	Tests and Their Biochemical B	asis						
11.	Renal Function	Tests and Clinical Significance	·						
12.	Biochemistry of	Anemia and Hemoglobinopat	hies						
13.	Skeletal System:	Bones, Joints, and Their Fund	ctions						
14.	Muscular System	n: Types of Muscles and Their	Mov	emen	ts				
15.	Cardiovascular S	System: Anatomy of the Heart	and I	Blood	Circul	ation			

16.	Respiratory System: Anatomy of Lungs and Mechanism of Breathing
17.	Digestive System: Structure and Function of Major Organs
18.	Urinary System: Anatomy of Kidneys and Excretion Process
19.	Endocrine System: Glands and Hormonal Regulation
20.	Anatomy of the Human Brain and Cranial Nerves
21.	Lymphatic System and Immunity
22.	Anatomy of the Eye and Visual Pathway
23.	Anatomy of the Ear and Mechanism of Hearing
24.	Anatomy of the Skin and Its Functions
25.	Types of Bones and Bone Formation (Ossification)
26.	Functional Areas of the Brain and Their Roles
27.	Reflex Actions and Neural Pathways
28.	Spinal Cord: Anatomy and Functions
29.	Structure of Arteries, Veins, and Capillaries
30.	Heart Valves and Blood Flow Through the Heart
31.	Blood Composition and Functions
32.	Lymphatic Circulation and Its Role in Immunity
33.	Lungs and Their Lobes: Structure and Function
34.	Mechanism of Gas Exchange in the Lungs
35.	Control of Breathing by the Brain
36.	Structure and Function of the Diaphragm
37.	Oxygen Transport in Blood and Tissue Respiration
38.	Role of Salivary Glands and Digestion of Food
39.	Small Intestine: Structure and Absorption of Nutrients
40.	Large Intestine and the Process of Waste Elimination
41.	Nephron: Structure and Function in Urine Formation
42.	Adrenal Glands and Their Hormonal Functions
43.	Thyroid Gland: Anatomy and Hormonal Regulation
44.	Pituitary Gland: Master Gland of the Body
45.	Male vs Female Reproductive Anatomy
46.	Anatomy of the Tongue and Sense of Taste
47.	Olfactory System: Anatomy of the Nose and Sense of Smell
48.	Structure of the Retina and Vision Processing
49.	Anatomy of the Ear: Hearing and Balance Mechanism

50.	Skin Receptors and the Sense of Touch
51.	Roles and Responsibilities of Healthcare Professionals in a Hospital
52.	Basic Patient Care Skills: Hygiene, Mobility, and Nutrition
53.	Effective Communication with Patients and Families
54.	Infection Control and Hospital Hygiene Practices
55.	Medical Ethics and Patient Rights in Healthcare
56.	Hospital Waste Management and Biohazard Disposal
57.	Vital Signs Monitoring and Interpretation
58.	Handling Patients in Shock and Trauma Cases
59.	Intensive Care Unit (ICU) Patient Management
60.	Hospital Acquired Infections (HAIs) and Their Prevention
61.	Body Fluid Compartments and Electrolyte Balance
62.	Acid-Base Balance and Its Regulation
63.	Synaptic Transmission and Neurotransmitters
64.	Heart Sounds and ECG Interpretation
65.	Microcirculation and Capillary Exchange
66.	Shock and Its Physiological Mechanisms
67.	Role of Enzymes in Digestion and Absorption
68.	Liver Physiology and Detoxification
69.	Renal Clearance and Glomerular Filtration Rate (GFR)
70.	Adrenal Gland Hormones and Their Effects
71.	Physiology of Growth Hormone and Development
72.	Menstrual Cycle and Hormonal Regulation
73.	Lipoproteins and Their Role in Atherosclerosis
74.	Allosteric Enzymes and Their Regulation
75.	Glycogen Metabolism: Glycogenesis and Glycogenolysis
76.	Ketogenesis and Its Role in Starvation and Diabetes
77.	Electron Transport Chain and Oxidative Phosphorylation
78.	Lipid Profile and Its Clinical Significance
79.	General Management and First Aid for Poisoning Cases
80.	Medical Negligence and Malpractice: Causes, Consequences, and Prevention
81.	Occupational Hazards in Hospitals: Safety and Legal Considerations
82.	Essentials of Setting Up a Clinical Laboratory
83.	Good Laboratory Practices (GLP) and Quality Control

84.	Laboratory Accreditation and Certification Standards (NABL, CAP, ISO 15189)
85.	Waste Disposal and Biohazard Management in Laboratories
86.	Chemical Spill Management and Emergency Protocols
87.	Consumer Protection Act and Its Impact on Medical Laboratories
88.	Pulse Rate and Its Variations: Normal vs. Abnormal Conditions
89.	Ketone Bodies: Formation, Functions, and Role in Diabetes
90.	Diabetic Ketoacidosis (DKA): Causes, Symptoms, and Treatment
91.	Diabetes Mellitus: Definition, Causes, and Risk Factors
92.	Management and Treatment Strategies for Hypoglycemia
93.	Essential Minerals in Human Nutrition: Macro and Microminerals
94.	Deficiency Disorders Related to Vitamins and Minerals
95.	Vitamin A: Functions, Deficiency Disorders, and Sources
96.	Vitamin D: Role in Bone Health and Calcium Absorption
97.	Vitamin E: Antioxidant Properties and Health Benefits
98.	Vitamin K: Role in Blood Clotting and Bone Metabolism
99.	Role of Vitamins and Minerals in Preventing Chronic Diseases
100.	Dietary Sources and Bioavailability of Vitamins and Minerals
101.	Vitamin and Mineral Deficiencies in Special Populations (Pregnancy, Elderly, Athletes)

			Semester –	II								
Cours	e Title	Infection Control and Sterile Technique										
Course	e Code	24UICSI201R	Total Credits: 3 Total Hours: 45T	L 3	T 0	P 0	S 0	R	O/F 0	C 3		
Pre-re	quisite	Nil	Co-requisite					Nil		<u> </u>		
Progr	amme		Bachelor of D	Dialysi	is Tec	hnology	7					
Sem	ester		Spring/ II Semester of First Year of the Programme									
	ırse ctives	2. Apply knowle	 Understand the knowledge of infection control. Apply knowledge on understand aseptic and sterile techniques. Learn about disinfection, sterilization, and waste management in healthcare settings. 									
C	01	Understand basic	infection control princip	oles.								
CO)2	Learn proper han	d hygiene and use of PP	Е.								
CC)3	Understand asept	ic and sterile techniques	•								
CC)4	Learn about disinfection, sterilization, and waste management.										
CC)5		tion prevention in health			s.						
Unit- No.		Cont	tent	Con Ho		Lea	rning	g Outc	come	:	KL	
I	• D • M • H	Duction to Infection Control Definition and importance Modes of infection transmission Healthcare-associated infections (HAIs) tandard precautions			ļ	Describe, illustrate, and explain basic knowledge on infection control.					1,3	
II	• H	Hygiene and Pers ment (PPE) andwashing techn ypes of PPE (glov coper donning and	iques es, masks, gowns, etc.)	2		Describe, illustrate and explain the basic knowledge of hand hygiene and personal protective equipment (PPE).					1,3	
III	• D as	c and Sterile Tec ifference between sepsis laintaining a sterile terile gloving and	medical and surgical e field	surgical 4 Learn the comprehensive knowledge of aseptic and sterile techniques.						1,3		
IV	Manag	• Methods of sterilization (autoclaving, chemicals, etc.)				Able to apply the knowledge of disinfection, sterilization, and waste management.					1,3	
V	• In ur	fection control in nits	hospitals and dialysis non infections (UTIs, ntrol teams	2						and tion care	1,3	

- T1: Handbook of Dialysis" by John T. Daugirdas, Peter G. Blake, and Todd S. Ing
- T2: Core Curriculum for Nephrology Nursing" by Caroline S. Counts
- T3: Clinical Dialysis" by Allen R. Nissenson and Richard N. Fine
- T4: The Essentials of Hemodialysis" by Norbert Lameire and Raymond Vanholder

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Programme Outcome						
1	Understand basic infection control principles.	1, 8						
2	Learn proper hand hygiene and use of PPE.	1, 8						
3	Understand aseptic and sterile techniques.	1, 8						
4	Learn about disinfection, sterilization, and waste management.	1, 8						
5	Understand infection prevention in healthcare settings.	1, 8						

			Semester – II									
Cours	e Title		Environme	ental	Stud	ies						
Course	e Code	24UBES1201R	Total Credits: 2 Total Hours: 30T	L 2	T	P 0	S 0	R	O/F	C 2		
Pre-re	quisite	Nil	Co-requisite		0	U	U N		0			
	amme	1111	Bachelor of Dia	lvsis	Tech	nology		11				
	ester			nd year of the programme								
Course Objectives		 Understand key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions. Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving. Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems. 										
C	01	Able to explain the	ne multidisciplinary nature	of er	ıviroı	nmenta	stud	ies.				
C	02	Able to explain the	ne natural resources.									
C	03	Learn the basic k	nowledge of ecosystem.									
C	04	Apply knowledge	Apply knowledge of environmental pollution.									
C	05	Apply knowledge	of field trip									
Unit-		Con	tent	Con	tact	Le	come	KL				
No.				Ho								
I	Definit	isciplinary nature of the conference of public awarenes		2	Describe, illustrate and apply the knowledge of multidisciplinary nature of environmental studies.							
II		l Resources:		1	.0		,	illustra		_,_		
	Natura Forest Use a studies effects Water Use an water, benefit Minera environ minera Food 1 caused modern water I Energy renewa	enewable and non- renewable resources atural resources and associated problems orest resources: see and overexploitation, deforestation, addies. Timber extraction, mining, dams and the fects on forest and tribal people. See and overutilization of surface and growth atter, floods, drought, conflicts over water, dannefits and problems. Sineral resources: Use and exploitate vironmental effects of extracting and understand the food problems, characteristic conflicts are studies. See and overutilization of surface and growth and problems. Sineral resources: Use and exploitate vironmental effects of extracting and understand the food problems, characteristic description of surface and problems. See and overutilization of surface and growth and problems. Sineral resources: Use and exploitate vironmental effects of extracting and understand the food problems, characteristic problems. See and overutilization of surface and growth and problems. See and overutilization of surface and growth and problems. Sineral resources: Use and exploitate vironmental effects of extracting and understand the food problems, characteristic problems. See and overutilization of surface and growth and problems. See and overutilization of surface and growth and problems. Sineral resources: Use and exploitate vironmental effects of extracting and understand the surface and growth and g						knowle	edge of			

	Land resources: Land as a resource, land			
	degradation, man induced landslides, soil erosion			
	and desertification. Role of an individual in			
	conservation of natural resources. Equitable use of			
	resources for sustainable lifestyles.			
III	<u> </u>	8	Describe, illustrate and	1.2
1111	Ecosystems: Concept of an ecosystem; Structure	0	· ·	1,2
	and function of an ecosystems; Producers,		apply the knowledge of	
	consumers and decomposers; Energy flow in the		ecosystem	
	ecosystem; Ecological succession; Food chains,			
	food webs and ecological pyramids; Introduction,			
	types, characteristic features, structure and function			
	of the following ecosystem:-			
	Forest ecosystem, Grassland ecosystem, Desert			
	ecosystem, Aquatic ecosystems (ponds, streams,			
	lakes, rivers, oceans, estuaries) Biodiversity and its			
	conservation:			
	Introduction – Definition : genetic, species and			
	ecosystem diversity; Bio-geographical			
	classification of India; Value of biodiversity			
	:consumptive use, productive use, social, ethical,			
	aesthetic and option values; Biodiversity at global,			
	National and local levels; India as a mega-diversity			
	nation; Hot-sports of biodiversity;			
	Threats to biodiversity: habitat loss, poaching of			
	wildlife, man-wild life conflicts; Endangered and			
	endemic species of India; Conservation of			
	biodiversity: In-situ and Ex-situ conservation of			
	biodiversity.			
IV	Environmental Pollution:	8	Describe, illustrate and	1,2
	Definition: Cause, effects and control measures of:-		apply the knowledge of	
	Air pollution, Water pollution, Soil pollution,		environmental pollution	
	Marine pollution, Noise pollution, Thermal			
	pollution, Nuclear hazards;			
	Solid waste Management: Causes, effects and			
	control measures of urban and industrial wastes;			
	Role of an individual in prevention of pollution;			
	Pollution case studies;			
	Disaster management: floods, earthquake, cyclone			
	and landslides. Human Population and the			
	Environment: Population growth, variation among			
	nations; Population explosion – Family Welfare			
	Programme; Environment and human health;			
	Human Rights; Value Education; HIV/AIDS;			
	Women and			
1				
	Child Welfare; Role of Information Technology in			
	Child Welfare; Role of Information Technology in Environment and human health; Case Studies.			
V	Child Welfare; Role of Information Technology in Environment and human health; Case Studies. Field trip: Visit to a local area to document	4	Describe, illustrate and	1,2
V	Child Welfare; Role of Information Technology in Environment and human health; Case Studies. Field trip: Visit to a local area to document environmental assets river/forest/grassland/hill/	4	apply the knowledge of	1,2
V	Child Welfare; Role of Information Technology in Environment and human health; Case Studies. Field trip: Visit to a local area to document environmental assets river/forest/grassland/hill/mountain Visit to a local polluted site-	4	*	1,2
V	Child Welfare; Role of Information Technology in Environment and human health; Case Studies. Field trip: Visit to a local area to document environmental assets river/forest/grassland/hill/	4	apply the knowledge of	1,2

Study of simple ecosystems-pond, river, hill slopes,		
etc. (Field work Equal to 5 lecture hours)		

T1: Textbook of environmental studies by Erach Bharucha, UGC

T2: A textbook of environmental studies by DKA sthana, Meera Asthana, S Chand.

REFERENCE BOOKS:

R1: Environmental studies by RB Singh, Dr. DK Thakur and Dr. JPS Chauhan.

R2: Perspective in environmental studies by Anubha Loushik, CP Kaushik

	CO PO Mapping									
S.N.	Course Outcome (CO)	Mapped Programme Outcome								
1	Able to explain the multidisciplinary nature of environmental studies	1, 8								
2	Able to explain the natural resources	1, 8								
3	Learn the basic knowledge of ecosystem	1, 8								
4	Apply knowledge of Environmental Pollution	1, 8								
5	Apply knowledge of field trip	1, 8								

			SEMESTER	-II								
	ourse Title		Co-(Curricula	ar							
Co	ourse		Total Credits: 1	L	T	P	S	R	O/F	С		
	Code	24UBCC1201	Total Hours: 60S	0	0	0	4	0	0	1		
	Pre- Juisite	Nil	Co-requisite				Ni	il				
Prog	ramme	Bachelor of Dialysis Technology										
Sen	nester	Sp	Spring/ II Semester of First Year of the Programme									
	ourse ectives	 To develop skills and interests through participation in diverse extracurricular and co-curricular activities. To learn about teamwork and leadership abilities by engaging students in club-led events and competitions. To provide opportunities for personal growth and practical learning beyond the 										
academic curriculum. Explore different activities organized by various clubs, such as dance, must photography, drama, and literacy. Develop confidence to participate in regular club activities, including workshops as												
competitions, according to individual interests. Apply knowledge and skills to represent ADTU in inter-university, state, and level competitions.							nte, and r	national				
C	CO4	Explore new platfo	rm to learn from invit	ed expert	s in th	neir re	espec	tive fi	elds.			
C	CO5	Evaluate overall gr	owth alongside acade	mic devel	lopme	ent.						
Unit- No.		Conten	t	Contact Hour		Lear	ning	Outc	ome	KL		
I	the relearne These and development of the service. The service of	J encourages a range egular curriculum r's interest. activities are aimed soft skills and popment of the learnering in mind the 3 dology the student activities headed ance, music, photogratudents are encouraged reliable activities as per their intudent members of ent AdtU in various at and national level eved personalities are hops that benefit its by giving them the experts in the respect	60	and enco regu wor per	appl ourag ılar kshop	y The ed to club os, co	e stud partic	explain ents are cipate in ctivities, itions as st and	1,2,3,4			

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Programme Outcome							
1	Explore different activities organized by various clubs, such as dance, music, photography, drama, and literacy.	7							
2	Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests.	7							
3	Apply knowledge and skills to represent ADTU in inter-university, state, and national level competitions.	7							
4	Explore new platform to learn from invited experts in their respective fields.	7							
5	Evaluate overall growth alongside academic development.	7							

			SEMESTE	R – III									
Cours	se Title		Ap	plied Ana	tomy	7							
Cours	se Code	24BDIT2101R	Total Credits: 4		L	T	P	S	R	O/F	'	C	
			Total Hours: 60P		4	0	0	0	0	0		4	
	equisite	Nil	Co-requisit		Tool	ala	~	Ni	<u> </u>				
	ramme	,	Bachelor of										
Sem	ester		Fall/ III Semester of				`	,		lenor	100	100	
	urse ectives	 Able to apply the knowledge of applied anatomy is aimed at imparting a knowledge in anatomy and its clinical importance's. Able to explain the microscopic structure and histology of kidney. Apply knowledge of peritoneum with its anatomical distribution and abdominal hernias. 											
C	01	Able to explain the basic knowledge of anatomy of urinary system gross structural anatomy of kidney ureter, `bladder, urethra, prostate.											
C	O2	Able to explain	Able to explain the microscopic structure and histology of kidney.										
C	03	Learn the basic 1	knowledge of basic B	lood suppl	y of 1	kidne	y						
	04		e of peritoneum with				-	2024	hdor-	ainal L		nice	
	04	11 0											
	O5	Demonstrate a comprehensive understanding the Anatomy of cardiovascular sanatomy of heart.											
Unit- No.		Conte	nt	Contact Hour	Learning Outcome K								
I	anatomy Prostate Surface	y of kidney Urete	•	12	Describe, illustrate and explain basic knowledge of anatomy of urinary system gross structural anatomy of kidney ureter, bladder, and urethra, prostate.					1,8			
II	Microsokidney.	copic structure	and histology of	12	Describe, illustrate and explain the basic knowledge of microscopic structure and histology of kidney.					f	1,8		
III	Blood s	upply of kidney		12	kno	arn owled Iney	the ge of		_	ensive		1,8	
IV	Peritoneum with its anatomical distribution and abdominal hernias.			12	Describe, illustrate and explain the Peritoneum with its anatomical distribution and abdominal hernias.						1,8		
V	Anatomy of Cardiovascular System Anatomy of Heart (in detail) areas of auscultation. Upper Limb vessels and branches—origin, course, distribution, and abnormalities. Neck vessels and branches—origin, course, distribution, and abnormalities. Lower limb vessels: Femoral triangle and contents, Femoral vessels: origin, branches, course, distribution and abnormalities (sites of)			12	the	anat	omy anato	of ca	rdiova of hea	explain ascular art (in	r	1,8	

- T1: Fundamentals of Anatomy By Pamela K Levangie, Cynthia C Norkin, JP Bros Medical Publishers, New Delhi.
- T2: Fundamentals of Medical Anatomy by **Duane Knudson**, 2nd ed. 2007 Publisher Springer

REFERENCE BOOKS:

- R1: Medical anatomy, JP Bros Medical Publishers, Bangalore, 1st Indian Ed 1997.
- R2: Clinical Anatomy, JP Bros Medical Publishers, Bangalore, 5th Ed 1996,1st Indian Ed1998.

	CO PO Mapping									
S.N.	Course Outcome (CO)	Mapped Programme Outcome								
1	Able to explain the basic knowledge of anatomy of urinary system gross structural anatomy of kidney ureter, bladder, urethra, prostate.	1, 8								
2	Able to explain the microscopic structure and histology of kidney.	1,8								
3	Learn the basic knowledge of basic blood supply of kidney	1,8								
4	Apply knowledge of peritoneum with its anatomical distribution and abdominal hernias.	1, 8								
5	Demonstrate a comprehensive understanding the anatomy of cardiovascular system anatomy of heart.	1, 8								

			SEMESTE	R – III								
Course	e Title			lied Phys			-		T			
Course	Code	24BDIT2102R	Total Credits: 3 Total Hours: 60P	L 4	T 0	P 0	S 0	R	O/F 0	C		
Pre-ree	quisite	Nil	Co-requisite	- 1			N					
Progra	_		Bachelor o	f Dialysis	Tecl	nnolog						
Semo		Fs	all/ III Semester of					amme				
		1. Able to apply the knowledge of physiology is aimed at imparting a knowledge in renal										
Course Objectives		physiology and fluid homeostasis. 2. Able to explain the basic knowledge of renal circulation. 3. Able to explain the mechanisms of urine formation and micturition,										
CC)1	Able to explain the	basic knowledge of	renal circ	culatio	on.						
CO)2	Able to explain the	mechanisms of urin	ne formati	on an	d mict	urition	1,				
CO)3	Learn the basic known	owledge of physiolog	gy values.								
CO)4	Apply knowledge of	Apply knowledge of haemostasis.									
CO)5	Demonstrate a comphysiological effec	prehensive understats.	inding the	basio	princ	iples o	f acid	base balar	ice and		
Unit- No.		Conten	t	Contact Hour		Le	arning	g Outc	ome	KL		
I		Circulation – Factor ying and Autoreg ation.	•	12	ba	Describe, illustrate and explain basic knowledge of renal circulation						
II	Mictu	anisms of Urine rition –Factors tion Glomerular Filti	Formation and affecting urine ration (GFR),	12	Describe, illustrate and explain the basic knowledge of Mechanisms of Urin Formation and Micturition.					1.2		
Ш	Physiology Values: Composition of Urine and 24 hours indices – urea, creatinine electrolytes, calcium, magnesium. Values of Urea, creatinine, electrolytes, calcium, phosphorous, uric acid, magnesium, glucose in blood.			Composition of Urine and 24 hours indices – urea, creatinine electrolytes, calcium, magnesium. Values of Urea, creatinine, electrolytes, calcium, phosphorous, uric acid, magnesium, 12 Learn the com knowledge of physiol				prehensiv ogy value	1 1 7			
IV	_	stasis: Coagula lation factors, autoro fT, Thrombine time.	egulation, BT, CT,	12		escribe e haem			nd explair	1,2		
V	hyperl hypoc hyperg	principles of Acid on abnormalities dealemia, hyponatremalcemia, hypercalcerglycemia, PH. Horny and their physiological principles of the physiological principles of Acid	like hypokalemia, nia, hypernatremia, nia, hypoglycemia, nones produced by	12	the ba	e basi	c prii	nciples	nd explain of Acid	12		

T1: A book of Physiology, Dr. Khurana

T2: Medical Physiology, Guyton and Hall

REFERENCE BOOKS:

R1: Review of Medical Physiology–Ganong William F.

R2: Physiological basis of medical practice—Best & Taylor.

OTHER LEARNING RESOURCES:

Topic related journals from PubMed, Google Scholar, etc.

Youtube videos

E-learning materials

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Programme Outcome							
1	Able to explain the basic knowledge of renal circulation.	1, 8							
2	Able to explain the mechanisms of urine formation and micturition,	1, ,8							
3	Learn the basic knowledge of physiology values.	1, 8							
4	Apply knowledge of haemostasis.	1, 8							
5	Demonstrate a comprehensive understanding the basic principles of acid base balance and physiological effects.	1, 8							

			Sl	EMESTER	- III	[
Cours	se Title			P	Pathol	logy						
Cours	e Code	24BDIT2103R	Total Cree		_	L	T	P	S	R	O/F	C
				rs: 30T+60)P	2	0	4	0	0	0	4
	quisite	Nil		requisite	D:-l-		1 1		Nil			
	ester		Fall/ III Ser	achelor of						•		
Sem	ester	1. To impart the							•		l death	
	urse ctives	 To learn about the technical aspects of pathological studies specially focusing on the clinical findings in various body fluids. To impart of renal function test. Able to explain the basic knowledge of pathology cellular adaptation. cell injury & cell 										
death							•				cell	
C	O2	Able to explain the	ne haemodyr	namic disord	der, th	romb	o emb	olic di	sease s	shock		
C	03	Learn the basic k	nowledge of	neoplasia.								
C	04	Apply knowledge	e of renal fur	nction test.								
	05	Demonstrate a co			ding t	he bas	sic prin	nciples	of blo	od ba	ınk.	
Unit-						tact	1					T /T
No.		Cont	ent		Ho	our	Learning Outcome				1e	KL
	Introduction To Pathology Cellular Adaptation. Cell Injury & Cell Death: Cell Injury and Cell Death. Cellular Adaptation of Growth and Differentiation. Causes And Mechanisms of Cell Injury. Classification Of Cell Injury-Reversible and Irreversible. Morphology Of Cell Injury and Necrosis. Examples of Cell Injury and Necrosis. Apoptosis. Intercellular Accumulation, Pathologic Calcification Cellular Aging Inflammation Definition, Classification, Classification of Inflammation Acute Inflammation, Chemical Mediator, Outcome, And Morphologic Patterns of Acute Inflammation Chronic Inflammation, Systemic Effects of				6	patho cell	in ba	ellula	r adap	and dge of otation.	1,2	
II	Diseas Hyper	mmation, Consequences of Defective or assive Inflammation odynamic Disorder, Thromboembolic ase Shock: eremia/Ischemia and Hemorrhage na Thrombosis and Emboli Infraction k				6	of 1	nin the hemod nbo-en	basic ynami	c di	and wledge sorder, disease	1,2
III	Neopl Agents	asia: Nomancl s Tumors Grading		rcinogenic	(6	Leari	n the		_	nensive	1,2

IV	Renal Function Test: Overview of kidney	6	Describe, illustrate and	1,2
	function of kidney indication of renal function		explain the renal function test	
	test based on glomerular filtration rate.			
	Urinary disorders: congenital abnormalities			
	of urinary system classification of renal			
	diseases glomerular disease- cause, type &			
	pathology tubule interstitial diseases			
	renal vascular disorders end stage renal disease-			
	causes & pathology of kidney in hypertension			
	diabetes mellitus, pregnancy pathology of			
	peritoneum-peritonitis- bacterial tubular &			
	sclerosing peritonitis pathology of urinary tract			
	infections pyelonephritis & tuberculous			
	pyelonephritis			
1	pycronepinies			
V	Blood Bank: Blood grouping and Rh typing (in	6	Students will understand	1,8
V	1	6	Students will understand blood bank operations, use of	1,8
V	Blood Bank: Blood grouping and Rh typing (in	6		1,8
V	Blood Bank: Blood grouping and Rh typing (in details) Landsteiner Law Indication of Blood	6	blood bank operations, use of	1,8
V	Blood Bank: Blood grouping and Rh typing (in details) Landsteiner Law Indication of Blood Transfusion Contra indication of Blood	6	blood bank operations, use of laboratory wares, hemoglobin	1,8
V	Blood Bank: Blood grouping and Rh typing (in details) Landsteiner Law Indication of Blood Transfusion Contra indication of Blood transfusion Side effects of blood transfusions	6	blood bank operations, use of laboratory wares, hemoglobin estimation, and kidney	1,8
V	Blood Bank: Blood grouping and Rh typing (in details) Landsteiner Law Indication of Blood Transfusion Contra indication of Blood transfusion Side effects of blood transfusions Introduction to Glassware's, plastic wares and	6	blood bank operations, use of laboratory wares, hemoglobin estimation, and kidney function tests to diagnose	1,8
V	Blood Bank: Blood grouping and Rh typing (in details) Landsteiner Law Indication of Blood Transfusion Contra indication of Blood transfusion Side effects of blood transfusions Introduction to Glassware's, plastic wares and laboratory wares	6	blood bank operations, use of laboratory wares, hemoglobin estimation, and kidney function tests to diagnose renal disorders and other	1,8
V	Blood Bank: Blood grouping and Rh typing (in details) Landsteiner Law Indication of Blood Transfusion Contra indication of Blood transfusion Side effects of blood transfusions Introduction to Glassware's, plastic wares and laboratory wares Introduction on Microscope	6	blood bank operations, use of laboratory wares, hemoglobin estimation, and kidney function tests to diagnose renal disorders and other	1,8
V	Blood Bank: Blood grouping and Rh typing (in details) Landsteiner Law Indication of Blood Transfusion Contra indication of Blood transfusion Side effects of blood transfusions Introduction to Glassware's, plastic wares and laboratory wares Introduction on Microscope Hemoglobin Estimation	6	blood bank operations, use of laboratory wares, hemoglobin estimation, and kidney function tests to diagnose renal disorders and other	1,8
V	Blood Bank: Blood grouping and Rh typing (in details) Landsteiner Law Indication of Blood Transfusion Contra indication of Blood transfusion Side effects of blood transfusions Introduction to Glassware's, plastic wares and laboratory wares Introduction on Microscope Hemoglobin Estimation Analysis of normal urine	6	blood bank operations, use of laboratory wares, hemoglobin estimation, and kidney function tests to diagnose renal disorders and other	1,8
V	Blood Bank: Blood grouping and Rh typing (in details) Landsteiner Law Indication of Blood Transfusion Contra indication of Blood transfusion Side effects of blood transfusions Introduction to Glassware's, plastic wares and laboratory wares Introduction on Microscope Hemoglobin Estimation Analysis of normal urine Routine and Microscopical examination of	6	blood bank operations, use of laboratory wares, hemoglobin estimation, and kidney function tests to diagnose renal disorders and other	1,8

- T1: Text book pathology Harsh Mohans Basic Pathology Edward Arnold
- T2: Pathologic Basis of Disease-Robbin Text books
- T3: Text book pathology Harsh Mohans Basic Pathology Edward Arnold Pathologic Basis of Disease-Robbina and Cotran

REFERENCE BOOK

- R1: Handbook of Pathology For Postgraduate Students, 2 Nd Edition by Sandhya Sundaram, CBS Publishers and Distributors
- R1: Comprehensive Pathology by Parmeshwar Goswami (Author), Anand Raj Kalla (Author), Kishore Khatri (Author), Scientific Publishers (India)

OTHER LEARNING RESOURCES:

ERP notes

Online study materials

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Programme Outcome					
1	Able to explain the basic knowledge of pathology cellular adaptation. cell injury & cell death	1, 8					
2	Able to explain the Haemodynamic disorder, thromboembolic disease shock	1, ,8					
3	Learn the basic knowledge of neoplasia	1, 8					
4	Apply knowledge of renal function test	1, 8					
5	Demonstrate a comprehensive understanding the basic principles of blood bank.	1, 8					

SEMESTER – III										
S	R	O/F	C							
	0	0	4							
Nil										
~~~~										
		1: 1 :								
al dise	eases.									
Outco	ome		KL							
toto or	nd ov	nloin	1.2							
	•	•	1,2							
IV Fluid Therapy with special emphasis in renal diseases.  Describe, illustrate and expl basic knowledge of IV therapy with special emphasis renal diseases.										
Learn the comprehensive knowledge of diuretics										
neucs										
to cm.d	avels:	n tha	1.2							
ite and	explai	n the	1,2							
te and			1,2							
	o Nil grammaterven ts phare and disection of phare and ge of ecial ecom	o Nil  gramme  Intervention in the spharmacod stand diseases.  Goutcome  The and explained of pharmacod stand explained of IV lecial emphasis	gramme  Intervention in dialysis  Its pharmacodynamic  Its pharmacodynam							

T1: Textbook of Modern Pharmacology 3rd Edition by Muniappan M, CBS Publishers

T2: Basic and Clinical Pharmacology 15 Ed, Mcgraw-Hill

# **REFERENCE BOOK:**

R1: Essential of Pharmacology by K. D Tripathi

R2: Pharmacology for Allied Health Science by Padmaja Uday Kumar

# **OTHER LEARNING RESOURCES:**

**ERP** notes

Online study materials

CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Programme Outcome				
1	Able to explain the basic knowledge of pharmacology.	1, 8				
2	Able to explain the IV Fluid therapy with special emphasis in renal diseases.	1, ,8				
3	Learn the basic knowledge of diuretics.	1, 8				
4	Apply knowledge of antihypertensive.	1, 8				
5	Able to explain the basic knowledge of pharmacology.	1, 8				

			SEMESTER -	– III							
Cours	e Title			ıtive Eı	nglish						
Course	e Code	24UBPD2101R	Total credits: 1	L	T	P	S	R	O/F		C
		Nil	Total hours: 30P Co-requisite	0	0	2	0	0	0		1
Pre-re					Nil						
Progr	amme		Bachelor of 1								
Semo	ester		ll/ III Semester of Se				_				
Course Objectives		<ol> <li>To enable students to learn and comprehend about the proficiency of the English language.</li> <li>To improve the writing skill of the learners and enable them to prepare CV and cover letter for professional development.</li> <li>To evaluate certain attributes in a candidate that can be otherwise difficult for time consuming to ascertain.</li> </ol>									
C	01	Able to explain the	ne basic knowledge o	of deve	lop the	ir wr	iting s	skills t	hrough	ı va	rious
	<b>J1</b>	techniques of langu	_								
CO	02		mechanisms of learne	ers to m	anage be	ehavio	ours, t	hought	s, and	emo	otions
		in a conscious and	productive way. cal thinking ability an	nd davial	lon on in	ndono	ndana	v in th	oir pro	foce	ional
CO	03	career.	car unliking ability an	iu uevei	ор ан н	lucpe	nacne	y III tii	en pro	1033	oionai
	0.4		ideas clearly, particip	pate in	discussi	ons,	and gi	ve pre	sentati	ons	with
C	04	appropriate pronur	nciation and into natio	n.							
CO	05		omprehensive unders	_			deas,	details	s, and	im	plied
		_	rsations, lectures, and				• 6			Τ,	
Unit- No.		Content	'	Contac Hour	et	Leari	nng C	Outcon	ie	'	KL
I	Gramm	ar:		6	Desc	ribe,	illu	ıstrate	and		1,2
	Use of I	Prepositions		expla	ain ba	asic k	nowled	dge of			
	Tag que						lation				
II	Gramm		Direct and Indirect	6		ribe,		istrate	and		1,2
	Speech	and Passive voice	Direct and Indirect		of I	Mech	anism	c knows	Urine		
III	Writing	r Skille:		6	Lear			Micturi mpreh			1,2
111	_	•	oid ambiguity and	U		vledge		phys			±,4
	vaguene	_			value	_		1 3	23		
	•	oh Writing Resum	e, CV and Cover								
***	Letter	, 61 411				*1	*11		-		1.2
IV		nagement Skills: Analysis Goal Settii	ng .	6	Desc			istrate nostasi	and		1,2
		Anarysis Goar Settii l Hygiene	15		САРІ	4111 (11 <u>1</u> )	. mach	nostasi	3		
V	Non-Ve		ation-Sciences of	6	Desc	ribe,	illu	ıstrate	and		1,2
		anguage:						ic prir			,
			nunication & Body					balanc	e and		
		ge, Types of Body I			phys	iologi	cal ef	fects.			
	_	nce and Impact of E									
	• •		on through Body								
	1 20000120										
	Languag Body I		nd Don'ts, Doubt								

- T1: Lata, P., Kumar, S. (2015). Communication Skills, Second Edition. India: Oxford University Press.
- T2: Barrett, Grant. 2016. Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speaking, Zephyros Press.
- T3: Mc Dowell, Gayle Laakmann. 2008. Cracking the Coding Interview (Indian Edition).

#### **REFERENCE BOOKS:**

- R1: Zinsser, William. (2006) On Writing Well: The Classic Guide to Writing Nonfiction, Harper Perennial
- R2: Lacinai, Antonio. (2016) UnderstandingBodyLanguage:51gestures and what they signal, Book son Deman d

#### **OTHER LEARNING RESOURCES:**

- https://learning.shine.com/talenteconomy/career-help/top-group-discussion-skills/
- https://www.thoughtco.com/what-is-nonverbal-communication-1691351

CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Programme Outcome				
1	Able to explain the basic knowledge of develop their writing skills through various techniques of language use.	1, 8				
2	Able to explain the mechanisms of learners to manage behaviour's, thoughts, and emotions in a conscious and productive way.	1, ,8				
3	Develop their critical thinking ability and develop an independency in their professional career.	1, 8				
4	Able to express ideas clearly, participate in discussions, and give presentations with appropriate pronunciation and intonation.	1,7, 8				
5	Demonstrate a comprehensive understanding the main ideas, details, and implied meanings in conversations, lectures, and video materials.	1, 8				

			SEMESTER –	III								
Cour	se Title	al Lit	eracy									
Cours	se Code	24UDLS201R	Total Credits: 1	L	T	P	S	R	O/F	C		
			Total Hours: 30P	0	0	2	0	0	0	1		
	equisite ramme	Nil	Co-requisite  Bachelor of I	iolyci	ic Tool	molo	Nil					
	nester	Fe	all / III Semester of Se					mma				
Sell	ilestei								vare and	their		
		1. Students will be able to identify and analyse computer hardware, software and their uses.										
	ourse		2. Students will be able to use MS-Office suite for various purposes.									
Obje	ectives		3. Students will be able to use the Internet efficiently for required information as well									
		as for digital fir	nancial transactions.		·		-					
C	CO1	Understanding of	Computer Hardware, S	oftwa	re and	Comp	puter ha	ndling	Ţ <b>.</b>			
C	O2	Apply MS-Office	to solve basic informat	ion M	Ianage	ment	issues.					
C	O3	Operate the Intern	et, social media and e-	comm	erce si	tes ef	ficiently	and e	thically.			
C	O4	Analyse the cyber	crimes on digital paym	ents a	pplicat	ion.						
C	O5	Explore the functi	onality and use of cred	t card	ls, debi	t card	ls, net b	anking	g, and UP	Ι		
Unit-		Conte	nt	Co	ntact	I	_earnin	g Out	come	KL		
No.				_	lour							
I	Fundam		Computer Systems		4	_			lamental	1,2		
	_	<del>-</del>	er and their functions			of c	ompute	r syste	ms.			
		• •	omputers and their	·								
	applicat											
	_	eriment:										
		-	nts of a Computer and									
		Functions and	<b>7 1</b>									
		puters and their Ap	-									
		_	e of various storage rious operating system									
		nanagement comm										
II			e: Components of the		12	Des	cribe th	e func	tions on	1,2		
			documents with MS		12		erent	tool		1,2		
	Word.	ec suite. Of cuting	documents with wis						ike MS-			
		Presentations w	ith MS- PowerPoint.				el, MS-					
	_	Spreadsheets with					,	,				
	Lab Exp	eriment:										
	• Dem	onstrate how a do	cument to be prepared									
	and f	Formatted in MS W	ord.									
	• Crea	te casual applicat	ions for 3 days leave	:								
	becar	use of family man	rriage ceremony using									
	Word	d Processor.										
	• Crea	te a curriculum vita	ae using MS- Word.									
	• Crea	Creating a time table with MS – Word.										
			iter Components using									
different effects such as Insert, Design, Record												
		on slides.										
		-	er Components using									
	• diffe		ich as Transitions									
		nations etc., on slid										
	• Crea	ting the time table	with MS-Excel.									

	• Creating the 10 student's Mark sheet include			
	total, grade, percentage and results using MS-			
	Excel's formulas			
III	Introduction to Internet & Cyber World:	6	Explain the importance	1,2
	Introduction to Computer Networks and Internet.		and use of internet along	
	World Wide Web, Websites and Web portals, Web		with its adverse side.	
	browsing. Web Searching, Search engines,			
	Introduction to Google Search Engine; How to			
	search using Keywords, topics of Interest, etc.			
	Creation and use of Email Accounts. Cyber			
	Crimes. Lab Experiments:			
	Creating a professional Google account and			
	use various products of Google like drive,			
	photos. Study of computer network and			
	internet and			
	Demonstrate how to search information using			
	keywords in different search engines.			
IV	Introduction to social media:	4	Explain the power of	1,2
	The Power of social media, Relevance of social		social media their	
	media in present scenario. Creating accounts and		relevance and adverse	
	using some popular social media portals and Apps		effects to over using it.	
	like WhatsApp, Facebook, Twitter, Instagram, and			
	LinkedIn. Social Media Etiquettes.			
	Lab Experiments:			
	• Creating an account of some popular social			
	media portals and Apps like LinkedIn,			
	Facebook, Twitter and Instagram.			
	Creating an accounts of digital payment			
	systems			
	like credit cards, debit cards, net banking			
V	Introduction to Digital Payment Systems.	4	Illustrate the types of	1,2
	Creating accounts and using Digital Payment		digital payment and their	
	Systems like Credit Cards, Debit Cards, Net		risks.	
	banking, UPI.			
	Lab Experiments:			
	Create online Google form and learn how to			
	Give online test.			
	Creating an account of Online Shopping sites			
	like Amazon, flip kart, eBay etc. Understand			
	the			
	Journey of customer to buy and sell on online			
	shopping sites.			

- T1: Sinha Pradeep K. and Priti Sinha "Computer Fundamentals: Concepts Systems & Applications"  $3^{rd}$  Edition
- T2: Goel A "Computer Fundamentals" 2010

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Programme Outcome						
1	Understanding of Computer Hardware, Software and Computer handling.	2,7						
2	Apply MS-Office to solve basic information Management issues.	2,7						
3	Operate the Internet, social media and e-commerce sites efficiently and ethically.	2,7						
4	Analyse the cybercrimes on digital payments application.	2,7						
5	Explore the functionality and use of credit cards, debit cards, net banking, and UPI.	2,7						

Course Title Basic Acclimatizing Skills  Course Code 24UULS2102R Total Credits: 1 L T P S R O/I  Total Hours: 30P 0 0 2 0 0 0	F C 1
Course Code   24UULS2102R	
Total Hours: 30P   0   0   2   0   0   0	1
Pre-requisite Nil Co-requisite Nil	
Programme Bachelor of Dialysis Technology	
Semester Fall / III Semester of Second Year of the Programme	1
1. To impart knowledge of the fundamentals of Hospitality industry an applications.	d its
Course applications.  Objectives 2. Students will be able to familiarize with the cooking equipment's & Utensils.	
3. Students will be able to handle different modes of reservations.	
CO1 Students will have basic knowledge of cooking methods.	
CO2 Students will gain the knowledge of organizing & Cleaning of Rooms.	
CO3 Students will be able to gain the travel management concept.	
Students will be able to acquire the knowledge of basic household's amenities for	r dav-
to-day use.	
Students will develop an understanding of personal financial management	t and
budgeting skills.	
Unit- Content Contact Learning Outcome	KL
No. Hour	
I Introduction to Accommodation 8 Explains the techniques of	1,2
Management accommodation management.	
Telephone handling technique	
Organizing of Rooms.	
• Cleaning agents.	
Cleaning equipment's and uses.  Pad making Process.	
Bed making Process.      Fundamentals of Cooking     Introduces the fundamentals of	1.2
	1,2
Definition of cookery—Aim & cooking including efficient and safety methods.	
Use of basic Cooking equipment's	
Personal Hygiene and Safety	
• Use of Fire & Fuels	
III Methods of Cooking 6 Illustrates different methods of	1,2
Different Cuts.     cooking.	,-
Use of Herbs and Spices.	
Basic Food and Beverage Preparation.	
Regional food Habits	
IV Forms & Format's 8 Explains and illustrates various	1,2
C –form formats of writing forms like	
Reservation form     reservation, passport, etc.	
Registration form	
Passport Application form	
Legal Rent Agreement	

T1: Arora K "Theory of cookery" 2011

T2: Bruce H. Axler, Carol A. Litrides "Food and Beverage Service" 2010, Vol-1

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Programme Outcome					
1	Students will have basic knowledge of cooking methods.	7					
2	Students will gain the knowledge of organizing & Cleaning of Rooms.	6,7					
3	Students will be able to gain the travel management concept.	7					
4	Students will be able to acquire the knowledge of basic household's amenities for day- to-day use.	7					
5	Students will develop an understanding of personal financial management and budgeting skills.	7					

			Semester	r – IV								
Cours	e Title		Appli	ied Pharm	acology	7						
Cours	e Code	24BDIT2201R	<b>Total Credits:</b>	L	T	P	S	R	O/F	C		
			Total Hours: (		4	0	0	0	0	0	4	
	quisite	Nil	Co-requ					Ni	il			
	ramme		Bachelor									
Sem	ester		g/ IV Semester									
	urse ctives	<ol> <li>To impart the knowledge patients.</li> <li>Able to apply knowledge patients.</li> </ol>	ge on the comm	non medica	ations u	ised		•			ialysis	
C	01	Able to explain the di	rugs &dialysis D	ose								
C	O2	Able to explain the er	ythropoietin									
C	03	Apply the basic know	ledge of heparin	1								
C	04	Able to apply antisep	tic & disinfectan	ts								
C	05	Demonstrate a comprehensive understanding the hemodialysis concentrates										
Unit- No.		Content		Contact Hour	Learning Outcome						KL	
I	Admin analog & ot Phenol	& Dialysis Dose ar istration of drugs. Vi ue, Phosphate binders, her vitamins. Dial parbitone, Lithium, I nol, etc.	tamin D & its Iron Folic acid ysable drugs	14	Describe, illustrate and explain basic knowledge of drugs & dialysis dose						1,2,8	
II	Erythro	opoietin Indications ations& dosage.	Side effects,	10	Describe, illustrate and explain the basic knowledge of erythropoietin						1,2,8	
III	Hepari Antago	n: Indications, Side e	ffects, Dosage,	10	Learn the comprehensive knowledge of heparin						2,4,8	
IV	Antiseptic & disinfectants Formalin, sodium hypochlorite, Hydrogen peroxide. Role as disinfectant.  Residual effects.			12						2,4,8		
V	Concer Compo Peritor solutio Compo	•	(hypertonic	14	Descri explai concer	n t	he 1	strate	e a		2,4,8	

T1: Textbook Of Modern Pharmacology  $3^{\rm rd}$  Edition By Muniappan M, CBS Publishers

T2: Basic and Clinical Pharmacology 15Ed, Mcgraw-Hill

# **REFERENCE BOOK:**

R1: Essential of Pharmacology By K. D Tripathi

R2: Pharmacology for Allied Health Science by Padmaja Uday Kumar

# **OTHER LEARNING RESOURCES:**

**ERP** notes

Online study materials

CO PO Mapping					
S.N.	Course Outcome (CO)	Mapped Programme Outcome			
1	Able to explain the drugs & dialysis dose	1, 2, 8			
2	Able to explain the It enables to erythropoietin	1,2, 8			
3	Apply the basic knowledge of heparin	1, 2,4,8			
4	Able to apply antiseptic & disinfectants	1, 2,4,8			
5	Demonstrate a comprehensive understanding the haemodialysis concentrates	1, 2,48			

			Semester -	- IV						
Cou	rse Title	Basic of Dialysis Technology								
G 5: -		24DDVE2202D	<b>Total Credits: 4</b>		L T	P	S	R	O/F	С
Course Code		24BDIT2202R	Total Hours: 30		2 0	4	0	0	0	4
Pre-requisite		Nil	Co-requisite		Nil					
Programme Semester		Bachelor of Dialysis Technology Spring/ IV Semester of Second Year of the Programme								
Course Objectives		1. To have a comprehensive perception about working principle and mechanism of dialysis machines 2. Students will get a clear concept about the patient monitoring and specific clinical care 3. To provide adequate knowledge on hemodialysis.								
CO1		Able to explain the indications, types of dialysis, principles of dialysis.								
CO2		Able to explain the hemodialysis apparatus								
	CO3	Apply the basic knowledge of type of priming of dialysis apparatus, vascular access in Haemodialysis.  Able to apply dialyzer reuse.								
	CO5	Demonstrate a comp	orehensive understa	anding the	monito	ring of	patie	nts du	ring di	alysis.
Unit- No.		Content		Contact Hour	Le	arning	g Outo	come		KL
I	<ul> <li>Introduction to Dialysis</li> <li>Definition, indications, and types of dialysis.</li> <li>Principles of dialysis.</li> </ul>			8	Describe, illustrate and explain basic knowledge of dialysis.					1,2,3
II	• Introduc	alysis Apparatus ction to the haemodial on complications durir	10		be, n the dialysi		tionin		1,2,3	
III	• Types o	es of priming for dialysis apparatus.		10	Learn the comprehensive knowledge preparation for dialysis.				1,2	
IV	<ul> <li>Dialyzer Maintenance</li> <li>Reuse of dialyzers: Principles, methods, and safety considerations.</li> </ul>			8	Able to apply the dialyzer reuse					1,3
V	<ul> <li>Monitoring in Dialysis</li> <li>Monitoring and management of patients during dialysis.</li> <li>Addressing emergencies and troubleshooting during the procedure.</li> </ul>		12	Describe, illustrate and explain the monitor patients during dialysis.				1,3		
Practical	<ul> <li>Familiarization with Equipment</li> <li>Understanding parts and functions of a haemodialysis machine.</li> <li>Demonstration of machine setup.</li> <li>Priming Techniques</li> <li>Step-by-step process of priming dialysis apparatus.</li> <li>Vascular Access</li> <li>Hands-on practice with vascular access techniques.</li> <li>Care and maintenance of access points.</li> </ul>			60	includ primir access reuse effecti during	odialysi ing rang tech manag pro ve pat	in is e nachin nique gemen cedur ient r	equipr ne s s, vas nt, dia es, monito	ating ment, etup, cular lyzer and	1,2,3

Dialyzer Reuse	
• Demonstration of dialyzer cleaning and	
preparation for reuse.	
Patient Monitoring	
• Role-playing scenarios for monitoring patients.	
Handling dialysis-related emergencies.	

- T1: Daugirdas, J. T., Blake, P. G., & Ing, T. S. (Latest Edition). Handbook of Dialysis. Lippincott Williams & Wilkins.
- T2: Nissenson, A. R., & Fine, R. N. (Latest Edition). Clinical Dialysis. McGraw-Hill Education. T3: American Nephrology Nurses Association (ANNA). (Latest Edition). Core Curriculum for Nephrology Nursing. ANNA Publications.
- T4: Guest, S. (Latest Edition). Handbook of Peritoneal Dialysis. Springer.
- T5: Henrich, W. L. (Latest Edition). Principles and Practice of Dialysis. Lippincott Williams & Wilkins.
- T6: Feehally, J., Floege, J., & Johnson, R. J. (Latest Edition). Textbook of Clinical Nephrology. Elsevier.
- T7: El Kossi, M., & Blagg, C. R. (Latest Edition). The Essentials of Hemodialysis. Springer.

#### **OTHER LEARNING RESOURCES:**

Online resources Google scholar, PubMed, You tube, etc.

CO PO Mapping					
S.N.	Course Outcome (CO)	Mapped Programme Outcome			
1	Able to explain the indications. types of dialysis. principles of dialysis.	1, 2, 3,4,8			
2	Able to explain the hemodialysis apparatus	1,2,3,4 8			
3	Apply the basic knowledge of type of priming of dialysis apparatus, vascular access in haemodialysis.	1, 3,4,8			
4	Able to apply dialyser reuse.	1, 3,4,8			
5	Demonstrate a comprehensive understanding the monitoring of patients during dialysis.	1, 3,4,8			

	Semester-IV											
Cou	rse Title		Applied Dialysis T	Technolo	gy I							
Cour	rse Code	24BDIT2203R	Total Credits: 4 Total Hours: 30T+60P	L 2		P S 4 0	R	0/F 0	C 4			
Pre-1	requisite	Nil	Co-requisite	2	υ ,	+   U Ni		U	4			
	gramme	1411	Bachelor of Dialysi	  s Techno	nlogy	141						
	mester	Sp	ring/ IV Semester of Second			rograr	nme					
Course Objectives		<ol> <li>To provide a peritoneal dia</li> <li>To train sturn procedures.</li> </ol>	a comprehensive understand	ling of t	he pr	inciples	s and nt, so	olutions	s, and			
(	C <b>O</b> 1	Able to explain th	ne principles and techniques of	of periton	eal dia	alysis.						
(	CO2	Able to explain t patient outcomes.	he Gain proficiency in cathe	ter care,	PD ex	change						
Apply the comprehensive knowledge of conference of effectively.						and	specia	l scen	narios			
(	C <b>O4</b>	Able to apply the approaches.	familiarize with advanced Pl	O technol	ogies	and pa	tient-c	entered	l care			
	C <b>O</b> 5	_	r patient training and home-ba				rning					
Unit- No.		Cor	ntent	Contac Hour		KL						
I	<ul> <li>I Overview of peritoneal dialysis (PD):         <ul> <li>Historical background and development.</li> <li>Anatomy and physiology of the peritonea membrane:                 <ul> <li>Mechanism of solute transport and ultrafiltration</li> <li>Factors influencing PD efficiency.</li> <li>Indications and contraindications for PD.</li> <li>Types of peritoneal dialysis:</li></ul></li></ul></li></ul>				kno prii tecl	scribe, l expl owledge nciples hniques itoneal	ain b	of and of	1,2,3			
II	(CCPD).  Peritoneal Dialysis Solutions and Equipment:  Composition of PD solutions:  Dextrose-based, icodextrin based, and amino acid-based solutions.  Adjusting solutions for ultrafiltration and clearance.  Dialysis equipment:  Cycler machines for CCPD.  Accessories and consumables.  Preparation and storage of PD solutions.  Selecting appropriate solutions based on patien conditions.				bas per sol	scribe, l exp ic kno itoneal utions iipment	lain wledge dial	the e of	1,2,3			

III	Catheter Insertion, Maintenance, and	5	Learn the	1,2,3
	Complications:	~	comprehensive	-,-,0
	Peritoneal dialysis catheter:		knowledge of	
	<ul> <li>Types and placement techniques.</li> </ul>		catheter insertion,	
	<ul><li>Post-insertion care.</li></ul>		maintenance, and	
	Preventing and managing complications:		complications.	
	<ul> <li>Infection: peritonitis, exit site, and tunnel</li> </ul>			
	infections.			
	Mechanical issues: leaks, obstructions, hernias.			
	Catheter maintenance:			
	<ul> <li>Cleaning techniques and dressing protocols.</li> </ul>			
	Monitoring and troubleshooting common			
IV	problems.  Positoneal Dialysis Procedure and Manitorings	10	Able to engly the	122
1 1	<ul><li>Peritoneal Dialysis Procedure and Monitoring:</li><li>Steps in performing PD exchanges:</li></ul>	10	Able to apply the knowledge of	1,2,3,
	<ul> <li>Steps in performing PD exchanges:</li> <li>Manual and automated exchanges.</li> </ul>		peritoneal dialysis	
	<ul> <li>Connection, dwell, and drainage phases.</li> </ul>		procedure and	
	Monitoring patient outcomes:		monitoring.	
	<ul> <li>Monitoring patient outcomes.</li> <li>Assessing fluid balance, clearance, and</li> </ul>			
	ultrafiltration.			
	Laboratory tests: Kt/V, creatinine clearance,			
	glucose absorption.			
	Managing acute and chronic complications:			
	<ul> <li>Peritonitis protocols.</li> </ul>			
	<ul> <li>Fluid overload and ultrafiltration failure.</li> </ul>			
V	Special Scenarios and Innovations in Peritoneal	10	Describe, illustrate	1,2,3,
	Dialysis:		and explain the	, , ,
	PD in special populations:		special scenarios and	
	<ul><li>Pediatric and elderly patients.</li></ul>		innovations in	
	<ul><li>Patients with diabetes and cardiovascular</li></ul>		peritoneal dialysis.	
	conditions. iii.Pregnant patients.		peritonear diarysis.	
	Innovations in PD:			
	<ul> <li>Use of advanced biomaterials for PD catheters.</li> </ul>			
	<ul> <li>New PD solutions and technologies.</li> </ul>			
	<ul> <li>Portable and wearable PD systems.</li> </ul>			
	Patient training and home-based PD:  The last of the state of the			
	<ul> <li>Techniques for effective patient education.</li> </ul>			
	Psychosocial aspects and caregiver support.		A 1 4 1 1	100
	Demonstrating PD catheter types and placements.	60	Apply the basic	1,2,3
	Performing PD setup for CAPD and APD		knowledge of	
	Preparing and testing PD solutions.		principles and	
	Setting up and operating a PD cycler machine.		techniques of	
	Storage and handling of PD solutions and equipment		peritoneal dialysis,	
	Demonstrating catheter insertion techniques		peritoneal dialysis	
	(simulation).		solutions and	
ы	Cleaning and maintaining catheter exit sites.		equipment, technique	
tic	Identifying and addressing catheter-related		of catheter insertion,	
Practical	complications		maintenance, and	
Ь	Hands-on training for CAPD and APD exchanges.		·	
	Monitoring patient parameters during PD.  Concluded in the control of the co		complications,	
	Case-based simulations for managing complications  The initial and the second property of the second property		peritoneal dialysis	
	• Training patients and caregivers for home-based PD.		procedure and	
	Simulated scenarios for pediatric and elderly PD		monitoring, special	
	management.		scenarios and	
	Exploring advanced PD technologies and equipment		innovations in	
			peritoneal dialysis.	

- T1: Handbook of Dialysis-Jon T Daugirdas T2: Textbook of Dialysis Therapy-Nissenson
- T3: Textbook Peritoneal Dialysis-Ram Gokal NANT and Oxford-Textbook of Dialysis for Technologist

#### **REFERENCE BOOKS:**

- R1: The Essentials of Clinical Dialysis by Hideki Kawanishi (Editor), Yong-Lim Kim (Editor), Springer, USA
- R2: Essentials of Nephrology 3ed By Visweswaran RK (Author, CRS Publication, New Delhi, India

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Programme Outcome							
1	Able to explain the principles and techniques of peritoneal dialysis.	1,2,8							
2	Able to explain the Gain proficiency in catheter care, PD exchanges, and monitoring patient outcomes.	1,2,3,4,6, 8							
3	Apply the comprehensive knowledge of complications and special scenarios effectively.	1,2,3,4,6, 8							
4	Able to apply the familiarize with advanced PD technologies and patient-centered care approaches.	1,2,3,4,6, 8							
5	Develop skills for patient training and home-based PD Programmes.	1,2,3,4,6, 8							

			Sei	mester – F	V								
Course	e Title		(	Concept of	Rena	l Disea	ase						
Course	Codo	24BDIT2204R	Total Cred	its: 2	L	T	P	S	R	O/F	C		
Course	e Coue	24DD112204K	<b>Total Hour</b>	s: 30T	2	0	0	0	0	0	2		
Pre-re	quisite	Nil	Co-req	uisite				Ni	l				
Progra	amme			nelor of Di									
Semo	ester		ing/ IV Semo										
Cou Objec		disease 2. To have a compr	<ol> <li>To have a comprehensive perception about the cause, diagnosis and treatment of the disease</li> <li>To have a comprehensive knowledge of the different renal pathological conditions</li> <li>To have specific knowledge on congenital renal diseases.</li> </ol>										
CO	<b>D1</b>	Able to explain the acute and chronic renal failure, nephrotic syndrome.											
CO	02	Able to explain tabnormalities.	Able to explain the It enables to urinary tract infection, asymptomatic urinary abnormalities.										
CO3 Apply the basic knowledge of renal stone diseases, obstructive urop						uropa	thies.						
CO	04	Able to apply cong diseases.	enital renal	diseases, tu	ımors	of kid	lney. F	Pregna	ncy as	sociated	renal		
CC	<b>D</b> 5	Demonstrate a comp	Demonstrate a comprehensive understanding the renal vascular disorders.										
Unit- No.		Content		Contact Hour		Le	arning	g Outo	come		KL		
I		and Chronic Renal fortic Syndrome.	ailure.	6		cribe, i wledge		te and	explaii	n basic	1,2		
II		ry Tract Infection. As ry Abnormalities.	ymptomatic	6	basic Infec	c knov	wledge Asym	of U	Jrinary	in the Tract Jrinary	1,2		
III	Renal Uropa		Obstructive	6	of r		•			wledge ructive	1,2		
IV	_	enital Renal Diseases y. Pregnancy assoc es.		6		e to ap eases. T			-	Renal	1,2		
V	Renal diseas	Vascular Disord es due to hypertension		6		cribe, i l vascu			_	in the	1,2		

T1: Clinical text of Nephrology by John Fegally

T2: Text book of Nephrology- Oxford and Brenner Recto

#### **REFERENCES BOOKS:**

R1: Chronic renal disease, paull. Kimmel, marke. Rosenberg

R2: Chronic Kidney Disease, Dialysis, and Transplantation by Brenner and Rector, Academic Publishers, USA

#### **OTHER LEARNING RESOURCES:**

Online resources Google scholar

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Programme Outcome							
1	Able to explain the acute and chronic renal failure. nephrotic syndrome.	1, 8							
2	Able to explain the It enables to urinary tract infection, asymptomatic urinary abnormalities.	1, 8							
3	Apply the basic knowledge of renal stone diseases, obstructive uropathies.	1, 8							
4	Able to apply congenital renal diseases, tumors of kidney. pregnancy associated renal diseases.	1, 8							
5	Demonstrate a comprehensive understanding the renal vascular disorders.	1, 8							

			Semester – I	IV								
Cours	e Title		Nutritio	on in Dia	lysis	S						
Cours	e Code	24BDIT2205R	<b>Total Credits: 2</b>		L	T	P	S	R	O/F	С	
Course	e Coue	24DD112203R	Total Hours: 30T+	-30P	2	0	0	0	0	0	2	
Pre-re	quisite	Nil	Co-requisite	:				Ni	1			
	amme		Bachelor of D									
Sem	ester	-	ng/ IV Semester of S						me			
		1. To understand	the dietary considerat	ions for d	lialy	sis pa	tients	S.				
	urse	2. To provide knowledge for protein intake, fluid management, electrolytes balance.										
Obje	ctives	3. Able to underst	anding the specific d	ietary stra	ıtegi	ies to	suppo	ort the	e over	all hea	alth of	
dialysis patients.												
Able to explain the indications, types of dialysis, principles of dialysis.												
CO2 Able to explain the hemodialysis apparatus												
CO3 Apply the basic knowledge of type of primin haemodialysis.					dia	lysis a	appar	atus,	vascu	ılar ac	cess in	
C	04	Able to apply dialyz	er reuse.									
C	05	Demonstrate a comp	rehensive understand	ding the m	noni	toring	g of p	atien	ts dur	ing dia	llysis.	
Unit-		Content		Contact	t	Learning Outcome KI						
No.				Hour								
I	Introd	luction to basic l	nowledge of the	2		Descri					1,8	
	impor		•			explai		ic kn	owled	lge		
		gement, and anthropo			_	of dial	•					
II		n Requirements in Di	•	5		Descri					1,8	
		nmended Dietary A	Allowances Dietary			explai				-		
	source					naemo			•			
III		olytes Balance:		9		Learn		•			1,8	
		of sodium, potassium				cnowl	_	prepa	aratio	n for		
		ry restriction on high-	phosphorus foods.		_	lialysi						
IV		ım Intake,	Eluid Managara	10	Able to apply the dialyser 1,8							
		n-D Supplementation		_		reuse						
V		oring Blood Sugar	Levels in dialysis	4	Describe, illustrate and 1,8							
	patient	S.				explai						
					r	patien	ts du	ing d	ıalysi	S.		

T1: Laura D. Byham-Gray, Jerrilynn D. Burrowes, and Glenn M. Chertow.

T2: Additional articles and resources are provided throughout the course.

### **OTHER LEARNING RESOURCES:**

Online resources Google scholar etc.

	CO PO Mapping									
S.N.	Course Outcome (CO)	Mapped Programme Outcome								
1	Able to explain the indications. types of dialysis. principles of dialysis.	1,8								
2	Able to explain the hemodialysis apparatus	1,8								
3	Apply the basic knowledge of type of priming of dialysis apparatus, vascular access in haemodialysis.	1,8								
4	Able to apply dialyser reuse.	1,8								
5	Demonstrate a comprehensive understanding the monitoring of patients during dialysis.	1,8								

Course Title			$-\mathbf{V}$											
000000000000000000000000000000000000000		Clinical	Obse	ervation	I									
Course and	24DDIT2101D	Total credits: 4	L	T	P	S	R	O/F	С					
Course code	24BDIT3101R	Total hours: 360S	0	0	0	24	0	0	4					
Pre-requisite	Nil	Co-requisite				Nil		•	•					
Programme		Bachelor of I	Dialy	sis Techı	nolog	y								
Semester				rd Year of the Programme										
	* * *	e skills, and competence	ies n	ecessary	to eff	fectively	provid	e and n	nanage					
Course	1	hemodialysis therapy.												
Objectives		Able to apply the vascular access management in dialysis patients.  Able to apply the dialyzer reprocessing in dialysis unit.												
201				_	it.									
CO1		e basic knowledge of he												
CO2	CO2 Able to apply the Technique of Dialysis Eva CO3 Learn the basic knowledge of vascular access													
			dialy	S1S.										
CO4 CO5		of arteriovenous fistula nprehensive understand		•	<b>1770</b> *	ropross	aging							
Unit-		nprenensive understand I <b>tent</b>		Contact	-	reproce rearning		me	KL					
No.	Con	iwiit		Hour	1	zai IIIII}	5 Juico	MILE	KL					
	Basic of Hemodialysis				De	scribe, i	illustrate	e and	1,2					
	es of Hemodialysis	_			_	olain	_	basic						
	<ul><li> Principles of Hemodialysis</li><li> Types of Hemodialysis Machine</li></ul>					owledge	of	basic						
	Hemodialysis Prescription					owledge nodialys	eis	of						
							1	1.0						
	i <b>que of Dialysis Eva</b> Treatment Patient Ev					scribe, i olain	illustrate the	e and basic	1,2					
	tment Evaluation	aruation			_	owledge								
	dialysis dialyzer Insp	pection				dialysis								
	edure of Priming a I													
	itoring of Intradialyt													
	nination of the Dialy				_				1.0					
	llar Access for He es of Vascular Acces	•			Lea	arn nprehen	civo	the	1,2					
• •	ation of Arteriovenou					owledge		scular						
	ing of maturation of					ess for l								
,	gical technique of ana													
• Fem	oral Triangle technic	que												
	ovenous Fistula in					scribe, i	illustrate		1,2					
	siology of arterioven					olain	<b>C</b> " 4	the						
	aration and assessme edure of first cannul					erioveno lysis	us fisti	ıla in						
	nulation techniques	ation			uia	1 y 51 5								
	riovenous Fistula car	re												
• Con	plications related to	Arteriovenous Fistula												
V Dialy:	zer Reprocessing				De	scribe, i	illustrate	e and	1,2					
• Gui	<ul> <li>Guidelines for dialyzer reprocessing</li> </ul>				exp	olain t	he dia	alyzer						
	• Dialyzer cleaning and disinfection processes				rep	rocessin	ıg							
	ilization Techniques	=												
	yzer Reprocessing E mology	quipinent and												
	surement of the dial	yzer reprocessing												
	umentation and reco													

- T1: Handbook of Dialysis-Jon T Daugirdas
- T2: Textbook of Dialysis Therapy-Nissenson
- T3: Textbook Peritoneal Dialysis-Ram Gokal
- T4: NANT and Oxford-Textbook of Dialysis for Technologists

#### **REFERENCE BOOKS:**

- R1: The Essentials of Clinical Dialysis by Hideki Kawanishi (Editor), Yong-Lim Kim (Editor), Springer, USA
- R2: Essentials Of Nephrology 3ed By Visweswaran R K (Author, CRS Publication, New Delhi, India
- R3: Hard cover by Matthew R. Weir Edgar L. Lerma , Austin, Texas , USA

#### OTHER LEARNING RESOURCES:

Youtube, Google scholars

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Programme Outcome							
1	Able to explain the basic knowledge of hemodialysis.	1, 2,3,4,8							
2	Able to apply the Technique of Dialysis Evaluation	1, 2, 3,4, 8							
3	Learn the basic knowledge of vascular access for hemodialysis.	1,2, 3, 4, 8							
4	Apply knowledge of arteriovenous fistula in dialysis.	1, 2,3, 4, 8							
5	Demonstrate a comprehensive understanding about dialyzer reprocessing.	1, 2, 3, 4,8							

			SEMESTER	$\mathbf{R} - \mathbf{V}$									
Course	Title		Clinical	Obse	rvatio	n I	Į.						
Course	Code	24BDIT3102R	Total Credits: 4	L	T	P	S	R	O/F	C			
Course	Couc	24DD113102K	Total Hours: 260S	0	0	0	24	0	0	4			
Pre-req		Nil	Co-requisite				Nil						
Progra			Bachelor of I										
Semes	ster		Fall/ V Semester of Tl										
			e knowledge, and skills		-	_	ed to provid	le patie	ents receiv	ing			
Cour	se	•	is therapy all of the car				منده المسلم المند	.1:4 of	1:6.				
Object	ives	considerations.	nd the comprehensive	about	psycn	oso	ciai and qua	unty of	me				
			e knowledge of assessi	no dis	alveie s	adeo	nnacy						
CO	1		basic knowledge of pe		•								
CO		*	ble to explain the complications and treatments of peritoneal dialysis.										
CO			Learn the basic knowledge of education and training in peritoneal dialysis.										
CO		Apply knowledge of psychosocial and quality of life considerations.											
CO			prehensive understand					dequa	cy.				
Unit-	,	Con	tent	(	Contac		Learni	ng Auf	tcome	KL			
No.					Hour	•							
Ι		c knowledge of Perit	•				Describe,			1,2			
		ysiology of Peritone					explain ba		_				
		ritoneal Equilibrium					of peritone	eal dial	ys1s				
	• Types of Perito		*										
		ritoneal Dialysis Sol ritoneal Dialysis Tec											
II			atments of Peritoneal			•	Describe,	illustr	ate and	1,2			
11	Dial	•	itments of Terrionear				apply the		1,2				
		thogenesis						eatmen					
		gns & Symptoms					peritoneal	dialysi	S				
	• Di	fferential Diagnosis	of Cloudy Effluent										
		eatment of PD comp											
			removal for PD-related	l									
		ections											
III		_	n Peritoneal Dialysis		360		Learn the	•		1,2			
		roduction					knowledge						
		sessment plementation					and training dialysis	ıg ın p	ernoneal				
		aluation					dialysis						
		training & Home Vi	sits										
IV			of Life Consideration	s			Describe,	illustr	ate and	1,2			
	•	- •	of peritoneal dialysis or				explain th						
	patients and families		-						of life				
			self-care skills training				considerati	ions					
	• Qu	ality of Life assessn	nent and interventions										
V		ssing Dialysis Adeq	•				Describe,		1,2				
		portance of Dialysis					•		assessing				
		easures of Dialysis A					dialysis adequacy						
	• Te	chniques for assessing	ng Dialysis Adequacy										

T1: Handbook of Dialysis-Jon T Daugirdas

T2: Textbook of Dialysis Therapy-Nissenson

T3: Textbook Peritoneal Dialysis-Ram Gokal

T4: NANT and Oxford-Textbook of Dialysis for Technologists

#### **REFERENCE BOOKS:**

R1: The Essentials of Clinical Dialysis by Hideki Kawanishi (Editor), Yong-Lim Kim (Editor), Springer, USA

R2: Essentials Of Nephrology 3ed By Visweswaran R K (Author, CRS Publication, New Delhi, India

	CO PO Mapping									
S.N.	Course Outcome (CO)	Mapped Programme Outcome								
1	Able to explain the basic knowledge of peritoneal dialysis.	1,2,3,4,8								
2	Able to explain the complications and treatments of peritoneal dialysis.	1,2,3,4,8								
3	Learn the basic knowledge of education and training in peritoneal dialysis.	1,2,3,4,8								
4	Apply knowledge of psychosocial and quality of life considerations.	1,2,3,4,8								
5	Demonstrate a comprehensive understanding the assessing dialysis adequacy.	1,2,3,4,8								

			SEMESTER	. – <b>V</b>							
Cour	se Title		Clinical	Obse	rvatio	on III					
Cours	se Code	24BDIT3103R	Total Credits: 4	L	T	P	S	R	O/I	1	C
			Total Hours: 360S	0	0	0	824	0	0		4
	equisite	Nil	Co-requisite					il			
	ramme		Bachelor of								
Sen	nester		Fall/ V Semester of T								
	ourse ectives	handle hemodi 2. Able to unders monitoring	the knowledge, information alysis patients' water trained the comprehensive	eatme e aboi	ent ut bica	arbonat	te deliv				0
		3. Able to apply the anticoagulant therapy, and medication.									
C	CO1		Able to apply the knowledge of reverse osmosis water in hemodialysis.								
C	<b>CO2</b>	Able to apply the	knowledge delivery sy	stems	s for t	oicarbo	nate he	emodia	alysis		
	<b>CO3</b>		ut the management of		-				alysis r	nac	hines.
	CO4	Able to apply the management of anticoagulation for hemodialysis.									
	CO5	Demonstrate an e	exposure the pharmaco	therap	y in c	lialysis	patien	its.			
Unit- No.		Conte		tact our	Le		KL				
II	<ul> <li>Differ</li> <li>Function</li> <li>Monition</li> <li>Loop</li> <li>Delivery</li> <li>Hemodi</li> <li>Types</li> <li>Techn</li> <li>Comp</li> <li>Manage</li> <li>Hemodi</li> <li>The D</li> </ul>	of Hemodialysis I siques of Bicarbona	smosis water Osmosis Water rbonate Fluid ate Hemodialysis onate Hemodialysis	36	Water in Hemodialys.  Describe, illustrate				owledge Osmosis alysis ate and Delivery arbonate Chensive Safety		1,2
IV	Hemodi • Monit • Hepar • Protoc Pharmac • Pharm	coring test for Anticinization Protocols cols with Other Agreed the Cotherapy in Dialymacokinetic	coagulation s ents sis Patients s in dialysis patients			Description of A Hemore Description apply Pharm	1,2				

T1: Handbook of Dialysis-Jon T Daugirdas

T2: Textbook of Dialysis Therapy-Nissenson

T3: Textbook Peritoneal Dialysis-Ram Gokal

T\$: NANT and Oxford-Textbook of Dialysis for Technologists

#### **REFERENCE BOOKS:**

R1: The Essentials of Clinical Dialysis by Hideki Kawanishi (Editor), Yong-Lim Kim (Editor), Springer, USA

R2: Essentials Of Nephrology 3ed By Visweswaran R K (Author, CRS Publication, New Delhi, India

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Programme Outcome							
1	Able to apply the knowledge of reverse osmosis water in hemodialysis.	1, 2,3,4,8							
2	Able to apply the knowledge delivery systems for bicarbonate hemodialysis	1, 2, 3,4, 8							
3	Able to learn about the management of safety monitors on hemodialysis machines.	1,2, 3, 4, 8							
4	Able to apply the management of anticoagulation for hemodialysis.	1, 2,3, 4, 8							
5	Demonstrate an exposure the pharmacotherapy in dialysis patients.	1, 2, 3, 4,8							

			Semester-VI									
Course	Course Title Applied Dialysis Technology II											
			Total Credits: 5	L	T		S	R	O/F		C	
<b>Course Code</b>		24BDIT3201R	Total Hours: 45T+60P	3		0 4 0 0					5	
Pre-req	uisite	Nil	Co-requisite		<u> </u>		Nil	_	0		•	
Progra			Bachelor of Dial	ysis Te	chno	ology						
Semes		S	pring/ VI Semester of Seco				ogram	me				
			<u>.                                      </u>						aluati	on		
		•	1. To impart the basic knowledge of dialysis special situations and clinical evaluation of patients with renal disease.									
Cour		2. To gather know	wledge on special dialysis pro	ocedure	es.							
Object	tives	3. To gather know	wledge on trained dialysis tec	hnicia	ns w	ho prov	ide str	ong				
		_	apport system to hospitals for			_		-	enal			
		failure patients		•	Ü	•						
CO	1	Able to explain t	he use of dialysis in special s	ituatio	ns.							
CO	2	Able to explain t	he basic knowledge of dialys	is in in	fants	s and ch	ildren					
CO	3	Apply the compr	ehensive knowledge of speci	al dial	ysis j	procedu	res.					
CO	4	Able to apply the	e plasmapheresis procedures.									
CO	5	Understanding a	comprehensive of the specia	l probl	ems	in dialy	sis pat	ients.				
Unit-		C	ontent	Cont	act	Loor	nina (	Outcor	me IV		ΚL	
No.			Jiiteiit	Hou	ır	Leai	ınııg (	Jucoi	IIC .	1	XL	
I	Introd	luction to Dialysis	S:	9		Describ	e, illu	strate	and	1	1,2	
		c principles of dia				explain						
		cations for dialysis			of princ	iples o	of dial	ysis				
	disea	*	andialysis and Daritanael									
	• Type Dial	•	nodialysis and Peritoneal									
			d advancements in									
		nology										
II	Dialys	is in Special Situ	ations:	10		Describ	e, illu	ıstrate	and	1,	2,3,	
	,	gestive Cardiac Fa				explain	th	-	basic			
	•	act of dialysis on c				knowled	ige of	-				
		d management and anced Liver Disea	I monitoring during dialysis			special populati	ions	pε	tient			
		atorenal syndrome			1	1 · L						
	_	agement strategies	•									
		, HBsAg & HCV										
			s and infection control									
		viral therapy and c ed Kidney Transpl	lialysis coordination									
			s post-transplant failure									
		•	aging transplant-related									
	com	plications	- ·									
o Dia lithi		oning Cases	• / 4									
			ning (e.g., methanol,									
		um, theophylline) ical decision-maki	ng in poisoning-related									
	dialy		ng m poisoning-related									
	• Preg											
	o Dial	ysis during pregna	ncy: Risk assessment and									
		agement	Attabasta and 100									
	Effects	s of pregnancy on	dialysis and vice versa									

	T	ı	T	
III	Dialysis in Infants and Children:	7	Learn the comprehensive	1,2,3,
	Pediatric dialysis considerations		knowledge of dialysis	
	Dialysis techniques in children		procedures for infants	
	Management of pediatric dialysis complications		and children	
IV	Special Dialysis Procedures:	9	Able to apply the	1,2,3,
	Continuous Renal Replacement Therapies		knowledge of Evaluate	, , ,
	(CRRT)		and select advanced	
	o Indications, principles, and types of CRRT		dialysis techniques	
	(SLED, CVVH, etc.)		diarysis teemiques	
	• Peritoneal Dialysis (PD)			
	o Different PD modalities: CAPD, APD			
	o Indications, procedure, and complications			
	Hemodiafiltration (HDF) & Hemoperfusion			
	o Clinical applications and benefits			
	o Protocols and monitoring			
	MARS-Type Dialysis			
	<ul> <li>Advanced dialysis for liver failure</li> </ul>			
	Membrane types and use			
V	Special Problems in Dialysis Patients:	10	Describe, illustrate and	1,2,3
	Diabetes Management		explain the common	
	<ul> <li>Insulin use in dialysis patients</li> </ul>		clinical problems in	
	o Dialysis and glucose control		dialysis patients	
	Hypertension Management		3 1	
	Dialysis and blood pressure control			
	Pharmacologic and non-pharmacologic			
	approaches			
	Infection Control in Dialysis Patients			
	Types of infections in dialysis patients			
	<ul><li>Prevention and treatment protocols</li></ul>			
	Bone Diseases and Renal Osteodystrophy			
	· - ·			
	o Dialysis-related bone mineral disease			
	o Treatment options for bone disease in dialysis			
	patients			
	Psychology and Rehabilitation			
	o Emotional support and coping mechanisms for			
	dialysis patients			
	o Rehabilitation strategies to improve quality of life			
	Aluminium Toxicity and Renal Anaemia			
	Management			
	o Dialysis-associated aluminum toxicity			
	Treatment of renal anaemia in chronic dialysis			
	• Hands-on demonstration of hemodialysis and			
	peritoneal dialysis techniques			
	• Setting up and monitoring machines for different			
	dialysis types (Hemodialysis, CRRT, etc.)			
	• Troubleshooting common issues in dialysis		Perform dialysis	
	machines		procedures proficiently,	
7	• Practical training in CRRT, SLED, and		Execute advanced	
lic	hemodiafiltration	<b>CO</b>	dialysis therapies,	100
Practical	Use of MARS-type dialysis systems	60	Manage dialysis in	1,2,3
P	Managing dialysis in critically ill patients		special cases, Provide	
	• Dialysis in special populations (e.g., pregnant		patient care and	
	patients, pediatric patients)		education	
	• Managing dialysis in liver disease, diabetes, and			
	hypertension			
	Infection control practices in dialysis settings			
	Training on patient education and support			
	on patient education and support	l	]	

• Home dialysis training and patient sel	f-
management	
• Simulation of dialysis setup and patient monitorin	ng
Psychological support and counselling for dialys	is
patients	

- T1: Handbook of Dialysis-Jon T Daugirdas
- T2: Textbook of Dialysis Therapy-Nissenson
- T3: Textbook Peritoneal Dialysis-Ram Gokal NANT and Oxford-Textbook of Dialysis for Technologist

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- R2: Essentials of Nephrology 3ed By Visweswaran RK (Author, CRS Publication, New Delhi, India

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Programme Outcome						
1	Able to explain the use of dialysis in special situations.	1,2,8						
2	Able to explain the basic knowledge of dialysis in infants and children.	1,2,3,4,6, 8						
3	Apply the comprehensive knowledge of special dialysis procedures.	1,2,3,4,6, 8						
4	Able to apply the plasmapheresis procedures.	1,2,3,4,6, 8						
5	Understanding a comprehensive of the special problems in dialysis patients.	1,2,3,4,6, 8						

			SEME	ESTER – V	Ί							
Cours	e Title		Applie	ed Dialysis	Tech	nolog	gy III					
Course	e Code	24BDIT3202R	Total cred	lits: 5	L	T	P	S	R	O/F	C	
Course	e Coue	24DD113202K	Total hours: 4	45T+60P	3	0	4	0	0	0	5	
Pre-re	quisite	Nil	Co-requi	isite				N	Vil			
Progr	amme		Bachel	lor of Dial	ysis T	echn	ology					
Semo	ester	$S_1$	pring/ VI Semes	ster of Thi	rd Ye	ar of	the P	rogra	amme			
		1. Able to apply the knowledge about test towards confirmation of diagnosis, initiate therapy										
Cou	ırse	and screening for renal disease in the community and hospital patients.										
Objec	ctives	2. Able to understand comprehensive about peritoneal access.										
		3. Able to apply the	e telemedicine.									
CO	<b>)</b> 1	Able to explain th	e basic knowled	dge of vaso	cular a	access	for i	hemo	dialysi	s and as	sociated	
		complications.										
CO	)2	Able to explain the	•									
CO		Learn the basic kn										
CO	04	Apply knowledge						-				
CO	<b>D5</b>	Demonstrate a con	nprehensive unde		of tele					practice		
Unit-		Content		Contact		Le	earnii	ng Ou	itcome	2	KL	
No.				Hour								
I		ılar access for h	emodialysis &	8					_	olain the	1,2	
	associ	iated complications								dialysis		
			ces: types of						licatio			
II		oneal access devi	15	Describe, illustrate and explain the basic knowledge of peritone						-		
	cathet	•				owle	dge	of pe	eritoneal			
		iated complications		acce	SS							
		ite infection		10								
III	_	olications of dialysis	10	Lear		the		•	hensive	-		
		odialysis: acute			wledg	e of	cor	nplica	tion of			
	•	lications.		dialy	/S1S							
		oneal dialysis:	aamuliaationa									
IV	Recer	anical & metabolic nt advances and	research in	6	Dag		:11			10:4100	1.2	
1 1		n advances and odialysis.	O					•	olain the earch in			
		urnal dialysis Online	dialycic			odial		es an	u resc	aicii iii		
		dialysis.	diarysis.		Helli	ourar.	y 515					
V		nedicine in dialysis	practice	6	Desc	cribe	illust	rate a	nd ext	olain the	1,2	
'		lications.	practice						sis prac			
		e of dialysis apparat	us.							dialysis		
		ed ultrafiltration.								iltration,		
		rmance of perit	oneal dialysis		_			_		dialysis		
		inge manually.								g up of		
		g up of automa	ited peritoneal			mated		eriton		dialysis		
ন্ধ		sis equipment. assistant in minor p	rocedures			pmen edure				minor		
Practical		suturing.	roccaures.	60	proc	caure	, sKi	ii sutt	mmg.		1,2	
Pra		demonstrations										
		luction to tissue ty										
		vitness metrology for										
		LA typing method										
		n (X- match), podies (PRA) and De										
		fic antibodies (DSA										

T1: Handbook for Dialysis Technician Dr Anjani Sharma (Author), Faswal Pichan (Author)

T2: Textbook on Renal Dialysis Technology By Dr. B.C. Bhagavan. New Delhi, India

#### **REFERENCE BOOKS:**

R1: Davidson's Principles and Practice of Medicine/24 the 2nd Edition New York USA.

R2: Henrich's Principles and Practice of Dialysis, 5/e Hard cover by Matthew R. Weir Edgar L. Lerma , Austin, Texas , USA

#### **OTHER LEARNING RESOURCES:**

Youtube, Google scholar

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Programme Outcome						
1	Able to explain the basic knowledge of vascular access for hemodialysis and associated complications.	1, 2,3,4,8						
2	Able to explain the peritoneal access.	1, 2, 3,4, 8						
3	Learn the basic knowledge of complication of dialysis.	1,2, 3, 4,8						
4	Apply knowledge of recent advances and research in hemodialysis.	1, 2,3, 4, 8						
5	Demonstrate a comprehensive understanding the telemedicine in dialysis practice.	1, 2, 3, 4,8						

			SEMESTE	R – VI									
Course	Title		Renal	Transpl	lantat	ion							
Course	Codo	24BDIT3203R	<b>Total Credits: 3</b>	L	T	O/F		C					
Course	Coue	24DD113203K	<b>Total Hours: 45T</b>	3	0	0	0	0	0		3		
Pre-requisite Nil Co-requisite Nil													
Program	mme	Bachelor of Dialysis Technology											
Semes	ster		ring/ VI Semester o		Year	of the	Progr	amme					
			ut the transplantation										
Cour	rse		various forms of ren	_		_	y and	succes	sful				
Object	ives	-	ne same in patients w			re.							
		3. Able to learn about	ut the different types	s of graft	t <b>.</b>								
CO	1	Able to explain the	basic knowledge of	kidney t	ranspl	ant.							
CO	2	Able to explain the	history of transplant	ation.									
CO	3	Learn the basic kno	Learn the basic knowledge of types of graft and rejection.										
CO	4	Apply knowledge of tissue matching and investigation to transplant											
CO	5	Able to understand	the live donor and ca	adaver d	onor i	n renal	transp	olant.					
Unit-		Conter	nt	Conta	ct	Learning Outcome				K	L		
No.				Hour	•								
I	Intro	duction to kidne	ey transplantation	9	D	escribe	, ill	ustrate	and	1,	,2		
	immı	unology, pro		ex	explain the basic knowledge								
	Imm	unosuppressive me	edications		of	kidney	y trans	plant.					
II	Histo	ory of transplantati	on What is renal	9	D	Describe, illustrate and					,2		
		plantation?	Indications.						y of				
	Cont	raindication			transplantation								
III	Trans	splantation Descripti	ve terms.	9	L	earn t	he co	ompreh	ensive	1,	,2		
	Type	s of grafts.			kı	nowled	ge of	types o	of graft				
	Graft	rejection.			aı	nd rejec	tion.						
	Type	s of tissue and organ	s transplanted										
IV	Tissu	e matching and	other relevant	9	Describe, illustrate and					1,	,2		
	inves	tigation to transplan	t		ex	kplain t	the tis	sue ma	tching				
		ention & treatment o	f rejection. dialysis.					igation	to				
	Daily dialysis. transplant												
V		donor and cadav	•	9		escribe		ustrate	and	1,	,2		
	•	d exchange transpla							or and				
		npatible, transplant	ation, transplant in			daver		or in	renal				
	sensi	tized recipients			tr	ansplan	ıt.						

T1: Handbook for Dialysis Technician Dr Anjani Sharma (Author), Faswal Pichan (Author)

T2: Textbook on Renal Dialysis Technology By Dr. B.C. Bhagavan. New Delhi, India

#### **REFERENCE BOOKS:**

R1: Davidson's Principles And Practice Of Medicine/24th 2nd Editionnew York USA.

R1: Henrich's Principles and Practice of Dialysis, 5/e Hard cover by Matthew R. Weir Edgar L. Lerma , Austin, Texas , USA

#### **OTHER LEARNING RESOURCES:**

Youtube, Google scholar

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Programme Outcome						
1	Able to explain the basic knowledge of kidney transplant.	1,8						
2	Able to explain the history of transplantation.	1,8						
3	Learn the basic knowledge of types of graft and rejection.	1,8						
4	Apply knowledge of tissue matching and investigation to transplant	1,8						
5	Able to understand the live donor and cadaver donor in renal transplant.	1,8						

			SEMESTE	$\mathbf{R} - \mathbf{R}$	VI							
Course	Title		Medical	Ethi	cs in Dialy	sis						
Course	Code	24BDIT3204R	<b>Total Credits: 3</b>	L	T	P	S	R	O/F	C		
			Total Hours: 45T	3	0	0	0	0	0	3		
Pre-req		Nil	Co-requisite				Vil					
Programme Bachelor of Dialysis Technology												
Semester Spring/ VI Semester of Third Year of the Programme						1						
Course			1. Able to learn about the basic concept on essential elements is professional competence									
Objectives			and medical ethics.  2. Able to learn about the sterilization.									
Objec	uves		out the mandatory rep	ortine	or							
CO	\1		e basic knowledge of		-							
CO		Able to explain the		3001111	Zation.							
CO			owledge of different t	vnec	of sterilizat	tion						
CO		Apply knowledge		ypes	or sterriza	.1011.						
CO			the mandatory report	ting.								
Unit-					Contact							
No.		Con	ntent		Hour	Lea	rning	g Outo	come	KL		
I	Steri	lization-Introduction	on		9	Describ	e, i	llustra	ite and	1,2		
						explain		the	basic			
						knowled	dge o	f Steri	ilization			
II	Туре	rpes of sterilization and details of different pes of sterilization.			9	Describ	e, i	llustra	ite and	1,2		
						explain	the o	differe	ent types			
						of steril	izatio	on.				
III		duction			9			_	ehensive	1,2		
			on, Types of Medical			knowled	dge o	of ethic	cs.			
		•	etween law & Ethics?									
			review in Ethics for									
	detai	gency Medical Ted										
IV		s of Law-in brief a	nd Legal system		9	Describ	e i	Hustra	ite and	1,2		
•		cal Practice Act.	ia Legai system.			explain	-			1,2		
			ility & Accountability			onpium		) Pes s	1 100 11 1			
		gency Vehicle law	•									
	Medi	cal Examination ca	ises.									
	Decis	sion making capaci	ty. Daily dialysis.									
	Law	& Ethics?										
			review in Ethicsfor									
		gency Medical Tec	hnician (EMT) (in									
	detai					<b>D</b> ::		11				
V	Mano	datory Reporting			9	Describ	-	llustra		1,2		
						explain		e ma	andatory			
						reportin	g.					

T1: Textbook of Emergency Care in the Street by Nancy Caroline

#### **REFERENCE BOOKS:**

R1: The Essentials of Clinical Dialysis by Hideki Kawanishi (Editor), Yong-Lim Kim (Editor), Springer, USA

R2: Essentials of Nephrology3 ed By Visweswaran RK (Author, CRS Publication, New Delhi, India

#### **OTHER LEARNING RESOURCES:**

ERP contents, Online resources

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Programme Outcome						
1	Able to explain the basic knowledge of sterilization.	1,2,8						
2	Able to explain the ethics.	1,3,5,8						
3	Learn the basic knowledge of different types of sterilization.	1,2,8						
4	Apply knowledge of types of law.	1,2,5,8						
5	Able to understand the mandatory reporting.	1,5,8						



# **Assam down town University**

# Curriculum and Syllabus

# Bachelor of Trauma, Emergency and Disaster Management

# OUTCOME BASED EDUCATION FRAMEWORK CHOICE BASED CREDIT SYSTEM

Version: 2.2

# FACULTY OF PARAMEDICAL SCIENCES

July, 2024

**PREAMBLE** 

Assam down town University is a premier higher educational institution which offers Bachelor,

Master, and Ph.D. degree programmes across various faculties. These programmes, collectively

embodies the vision and mission of the university. In keeping with the vision of evolutionary

changes taking place in the educational landscape of the country, the university has restructured

the course curriculum as per the guidelines of National Education Policy 2020. This document

contains outline of teaching and learning framework and complete detailing of the courses. This

document is a guidebook for the students to choose desired courses for completing the programme

and to be eligible for the degree. This volume also includes the prescribed literature, study

materials, texts, and reference books under different courses as guidance for the students to follow.

Recommended by the Board of Studies (BOS) meeting of the Faculty of Paramedical Science held

on dated 20/06/2024 and approved by the 51st Academic Council (AC) meeting held on dated

26/07/2024.

Chairparson Board of

Chairperson, Board of Studies

Member Secretary, Academic Council

Downey

#### Vision

To become a Globally Recognized University from North Eastern Region of India, Dedicated to the Holistic Development of Students and Making Society Better

# Missions

- 1. Creation of curricula that address the local, regional, national, and international needs of graduates, providing them with diverse and well–rounded education.
- 2. Build a diverse student body from various socio-economic backgrounds, provide exceptional value-based education, and foster holistic personal development, strong academic careers, and confidence.
- 3. Achieve high placement success by offering students skill-based, innovative education and strong industry connections.
- 4. Become the premier destination of young people, desirous of becoming future professional leaders through multi-disciplinary learning and serving society better.
- 5. Create a highly inspiring intellectual environment for exceptional learners, empowering them to aspire to join internationally acclaimed institutions and contribute to global efforts in addressing critical issues, such as sustainable development, Climate mitigation and fostering a conflict–free global society.
- 6. To be renowned for creating new knowledge through high quality inter disciplinary research for betterment of society.
- 7. Become a key hub for the growth and excellence of AdtU's stake holders including educators, researchers and innovators
- 8. Adapt to the evolving needs and changing realities of our students and community by incorporating national and global perspectives, while ensuring our actions are in harmony with our foundational values and objectives of serving the community.

# **Programme Details**

#### **Programme Overview**

The Bachelor of Trauma, Emergency, and Disaster Management is a three-year undergraduate program designed to equip graduates with the skills and knowledge to effectively manage emergencies, disasters, and trauma care. The course integrates medical sciences, disaster risk reduction, crisis management, and public health strategies. Through hands-on training, simulations, and case studies, graduates gain expertise in emergency planning, rescue operations, disaster preparedness, and trauma care.

#### I. Specific Features of the Curriculum

The curriculum provides skill enhancement and value-added courses along with the core papers.

#### II. Eligibility Criteria:

Minimum 45% in 10+2 with English, Biology & Chemistry.5% relaxation for SC/ST, EWS, and especially able candidates.

#### **III.** Program Educational Objectives (PEOs):

**PEO-1:** Graduates will be well prepared for successful careers in healthcare settings both government and private sector in areas like critical care units (NICU, PICU & ICU) and emergency departments.

**PEO-2:** The graduates will be engaged in professional activities to enhance their own stature and simultaneously contribute to the profession and society at large.

**PEO-3:** Graduates will be successful in higher education in inter-disciplines of intensive care technology if pursued.

#### **IV.** Program Specific Outcomes (PSOs):

**PSO1: Research and Reasoning:** Identify, formulate, review literature, and analyze complex Biotechnological problems reaching substantial conclusions using logical and critical thinking, and scientific principles.

**PSO2: Professional Efficiency:** Apply comprehensive knowledge to perform life-saving procedures in emergency and critical care settings.

**PSO3: International competency:** Demonstrate global competency to excel in the profession through international interdisciplinary certification courses.

#### V. Program Outcome: (POs)

**PO1: Human Health Knowledge:** Apply the knowledge of human anatomy, physiology, biochemistry, nutrition science, drug intervention and pathophysiology of the diseases.

**PO2**: **Patient Care:** Demonstrate hospital practices in ICU settings including critical care procedures and sterile practices for intensive care of critically ill patients.

**PO3:** Procedures and Techniques: Demonstrate efficiency in handling emergencies using life-saving techniques and able to prepare the patients for general medical procedures.

**PO4**: **Equipment Proficiency:** Operate modern patient monitoring systems and devices including ventilators and defibrillators etc.

**PO5:** Professional and Ethical Practices: Prepare and maintain patient information, and apply ethical principles in the profession.

**PO6: Teamwork:** Perform efficiently as a member or leader in diverse teams/multidisciplinary settings.

**PO7:** Communication: Use effective communication within the healthcare team rendering seamless collaboration and timely sharing of critical information.

**PO8:** Sustainable and Lifelong Learning: Able to engage in independent and lifelong learning in the broadest sense to benefit the environment and humankind.

#### VI. Total Credits to be Earned: 133

#### VII. Career Prospects:

Graduates with a B.Sc. in Critical and Intensive Care Unit Technology have excellent career prospects in Emergency Medical Technician (EMT), Trauma Care Specialist, Disaster Response Coordinator, Emergency Services Manager, Crisis Management Consultant, Safety Officer, Public Health Emergency Planner.

# **EVALUATION METHODS**

The student performance shall be evaluated through In-semester (Sessional) and semesterend examinations. A weightage of 40% or as prescribed by the programme shall be added to the score of the end-semester examination.

#### A. INTERNAL ASSESSMENT:

The teacher who offers the course shall be responsible for internal assessment by conducting in-semester (Sessional) examination and evaluating the performance of the students pursuing that course. The components for internal assessment are illustrated in the table given below.

SN	Components/ Examinations	Marks Allotted
1.	In-Sem Exam – I (ISE-I) (Written Examination) *	30
2.	In-Sem Exam – II (ISE-II) (Written Examination) *	30
3.	Assignment	10
4.	Presentation (SP)	10
5.	Quiz	5
6.	Class Performance based score*	5

^{*}are compulsory

Note: Total Internal assessment should be out of 40

#### INSTRUCTION

- 1. If a student fails to appear in the any of the component without any valid reason he/she shall be marked zero in that component. However, the course teacher at his discretion may arrange for the missed test on an alternate date for the absentee students after determining ground with genuine/valid reasons for the absent.
- 2. The report of evaluation of an activity towards the in-semester (Sessional) component of a course shall be duly notified by the concerned course teacher within a week of completion.
- 3. The program coordinators should upload the in-semester marks to the ERP and forward acknowledgement of all the courses of the program to the Controller of Examinations before the start of the End-semester examination.

#### **B. SEMESTER END EXAMINATION:**

Time table for end semester examination is published at least 25 days prior to the start of Examination.

#### I. Pre-Examination:

#### Eligibility Criteria for a student to appear in University Examinations:

The student shall only be allowed to appear in a University Examination, if:

- i) He/ She is a registered student of the University;
- ii) He/ She is of good conduct and character;

iii) He/ She has completed the prescribed Programme of study with minimum percentage of attendance as laid down in the Regulations of the Programme concerned.

Under special cases, a student may be allowed to appear for an examination without being registered in the University but the result of the said student will be kept on hold till the registration of the concerned student is completed.

#### II. Admit Card:

Admit card for the examination may be downloaded through ERP where the system will generate a Unique ID Cards through online.

The University shall have the right to cancel admission for examination of any candidate on valid grounds.

#### **III. Pattern of Question Papers:**

The question paper shall follow the principles of Bloom's Taxonomy.

Table

S. N.	Level	Questions /verbs for test	
1	Remember	List, Define, tell, describe, recite, recall, identify, show who, when,	
		where, etc.	
2	Understand	Describe, explain, contrast, summarize, differentiate, discuss, etc.	
3	Apply	Predict, apply, solve, illustrate, determine, examine, modify	
4	Analyze	Classify, outline, categorize, analyze, diagrams, illustrate, infer, etc.	
5	Evaluate	Assess, summarize, choose, evaluate, recommend, justify, compare etc.	
6	Create	Design, Formulate, Modify, Develop, integrate, etc.	

Note: No course is to be evaluated on basis of all 6 knowledge levels.

The format of the question paper across all the program follow a unique pattern and the total marks is 60

**Table 1: Question paper pattern for End semester examination** 

Sl no	Question pattern	Total marks
1	MCQs (10 Questions)	10
2	2 Marks questions (10 Questions)	20
3	4 Marks questions (5 Questions)	20
4	10 Marks questions (1 Question)	10

#### **IV. Examination Duration:**

Each paper of 60 marks shall ordinarily be of two hours duration.

#### V. Practical Examinations, Viva-Voce etc.:

- i) Practical examination shall be conducted in the presence of one external expert and one or more internal examiners.
- ii) Viva-Voice, Oral examinations of the Project report, Dissertation etc. shall be undertaken by a Board of Examiners constituted by the respective Dean of Program with the advice of Supervisor(s).

#### VI. Procedure of Expulsion:

If any candidate is found to be using any unfair-means during the examination, the invigilator may cease his/her answer sheet and report it directly to the Officer-in-Charge. The Office-in-Charge of the centre may take appropriate decisions as per the rules and procedure of the examination. The Officer-in-Charge may allow the students to write the exam with new answer sheet or may expel the student from appearing the paper depending on the nature of unfair-means. In case of Computer based test, the students may be directed to write an apology letter and sign in the prescribe expulsion form. The student may not be allowed to write that examination.

#### VII. Instruction to the Students:

- (i) The students shall not bring to the Examination Hall, any electronic gadget used as a means of communication or record except electronic calculator, if required.
- (ii) The students shall not receive any book or printed or hand written or photo copy (Xerox) or blank-paper from any other person while he/she is in the examination-room or in laboratory or in any other place to which he/she is allowed to have access during course of examination.
- (iii) The students shall not communicate with any other candidate in the examination room or with any other person in and outside the examination-room.
- (iv) The students shall not see, read or copy anything written by any other candidate, nor shall he/she knowingly or negligently permit any other candidate to see, read or copy anything written by him/her or conveyed by him/her.
- (v) The students shall not write anything on the Question Paper or in other paper or materials during the examination, or pass any kind of paper to any other candidate in the examination-room, or to any person outside the room.
- (vi) The students shall not disclose his/her identity to the examiner by writing his/her name or putting any sign / symbol in any part of his answer-script.
- (vii) The students shall not use any abusive language or write any objectionable remark or make any appeal to examiner by writing in any part of his answer-script.
- (viii) The students shall not detach any page from the answer-script or insert any authorized or unauthorized loose sheet into it. He /she shall also not insert any other answer-script / loose sheet by removing the pins of the origin answer-scripts and re-fixing it.
- (ix) The students shall not resort to any disorderly conduct inside the examination-room or misbehave with the invigilator or any other examination official.

#### VIII. Provision for an Amanuensis (writer):

- (i) A candidate may be provided with an Amanuensis (writer) to write down on dictation on his / her behalf on ground of his / her physical disability to write down by himself / herself due to accident or any other reason. The amanuensis may be provided till he / she recovers from the physical disability. The physical disability to write down by himself / herself must be supported by Medical Certificate from a competent Medical Officer.
- (ii) The qualifications of the amanuensis so provided must not be equal or higher than that of the candidate. This is also to be supported by Certificate from the Faculty of Study where the Amanuensis is provided.

(iii) Such candidates are to be accommodated in a separate room under the supervision of an invigilator so that the fellow candidates are not disturbed in the process.

#### C. Credit Point:

It is the product of grade point and number of credits for a course, thus,  $CP = GP \times CR$ 

#### i. Credit:

A unit by which the course work is measured. It determines the number of hours of instructions required per week. 'Credit' refers to the weight age given to a course, usually in terms of the number of instructional hours per week assigned to it. Credits assigned for a single course always pay attention to how many hours it would take for an average learner to complete a single course successfully.

#### ii. Grade Point:

Grade Point is a numerical weight allotted to each Grade Letter on a 10-point scale.

#### iii. Letter Grade:

Letter Grade is an index of the performance of students in a said paper of a particular course. Grades are denoted by letters O, A+, A, B+, B, C, P, F and Abs. Student obtaining Grade F / Grade Abs shall be considered failed/ absent and, will be required to appear in the subsequent ESE. The UGC recommends a 10-point grading system with the following (Table: 1) Letter Grades:

- (i) A Letter Grade shall signify the level of qualitative/quantitative academic achievement of a student in a Course, while the Grade Point shall indicate the numerical weight of the Letter Grade on a 10-point scale.
- (ii) There shall be 08 (eight) Letter Grades bearing specific Grade Points as listed in Table 1, where the Letter Grades 'O' to 'P' shall indicate successful completion of a course
- (iii) Apart from the 08 (eight) regular Letter Grades listed in Table 1, there shall be 03 (three) additional Letter Grades, which shall be awarded if a Course is withdrawn or spanned over the next Semester or remains incomplete as stated in Table 2.

**Table 2: Letter Grades and Grade Points** 

Letter Grade	Grade Points	Description
0	10	Outstanding
A+	9	Excellent
A	8	Very Good
B+	7	Good
В	6	Above Average
С	5	Average
P	4	Pass
F	0	Fail
Abs	0	Absent
UFM	0	Unfair Means

#### iv. Grade Point Average:

#### a. SGPA (Semester Grade Point Average)

The SGPA of a student in a Semester shall be the weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered in that Semester, irrespective of whether he/she could or could not complete the Courses. More specifically, the calculation of SGPA shall take into account the Courses graded with Letter Grades 'O' to 'F' as given in Table 1.

$$SGPA = \frac{\sum_{i=1}^{n} C_{i}G_{i}}{\sum_{i=1}^{n} C_{i}}$$
(1.1)

The SGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.1) up to two decimal places, where n is the total number of Credit Courses registered by the student in that Semester, Gi is the Grade Point secured in the ith registered Course and Ci is the Credit (weight) of that Course.

#### **b.** CGPA (Cumulative Grade Point Average)

- (i) The CGPA of a student in a Semester of a Programme shall be the accumulated weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered and successfully completed so far starting from the enrolment in the Programme. In other words, taking into account all the Courses graded with 'O' to 'P' as given in Table 1.1, generally the CGPA of a student shall be calculated starting from the first Semester of his/her enrolled Programme, while the CGPA of a lateral-entry student shall be calculated starting from the Semester of his/her enrolment.
- (ii) The CGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.2) up to two decimal places, where N is the total number of Credit Courses registered and successfully completed so far by the student, Gi is the Grade Point secured in the ith completed Course and Ci is the Credit (weight) of that Course.

$$CGPA = \frac{\sum_{i=1}^{N} C_i G_i}{\sum_{i=1}^{N} C_i}$$
 (1.2)

(iii) The CGPA shall be convertible into equivalent percentage of marks using Equation Conversion of CGPA to percentage marks: = CGPA*10

#### **D.** Post-Examination

#### i. Transcript or Grade Card or Certificate:

A marking certificate shall be issued to all the registered students after every Semester. The Semester mark sheet will display the course details (code, title, number of credits, grade secured) along with total credit earned in that Semester.

#### ii. Grievance Readdress Mechanism:

Students with any dissatisfaction or grievance regarding the marks awarded in any of the Papers / Courses may appeal to the Controller of Examinations for remedial action such as Re-evaluation within 10 days of the declaration of result.

- (i) A student has options to appeal for re-evaluation of his /her answer script to the Controller of Examination.
- (ii) Application for re-evaluation / re-scrutiny of answer scripts shall be made in the definite performa available with the Examination Office through the head of the respective departments within 10 days of declaration of the results of the respective examinations.
- (iii) The Controller of Examination may appoint an examiner for re-evaluation and will consider and recognize the evaluation done by a University appointed examiner.
- (iv) There shall be no provision for re-evaluation of the Practical Papers, Project Work, and Dissertation etc. However, the students fail in practical examination or viva voce and wish to appear again may apply to be evaluated can do so with the next schedule.
- (v) After screening the application for re-evaluation, the CoE may send the answer scripts of the student to the examiners appointed by the CoE with the approval of Vice Chancellor.
- (vi) The marks/grades achieved by the students after the re-evaluation shall be final and binding.
- (vii) Fresh Marks sheets / Grade Card shall be issued only if the candidate secures pass marks / passing grade in the re-evaluated paper.
- (viii) Revaluation of answer scripts shall be deemed to be an additional facility provided to the students with a view to improving upon their results at the preceding examination result for any reason whatsoever shall not confer any right upon them for admission to next higher class which matters always be regulated in accordance with the relevant rules or regulations framed by the University.
- (ix) If as a result of revaluation of the candidate attracts the provision of condonation of deficiency, the same may be applied to his/her only for fresh attempt.

#### INSTRUCTION TO TEACHERS AND STUDENTS

(Teaching and Learning Methods)

In all the courses the teacher has to select topics for teacher-method which should not be less than 20 percent. The approach will be direct classroom teaching through a series of lectures delivering concepts using ITC facilities, white or blackboard. Notes may also be circulated to the students; however, the students are to be involved in the preparation of the notes. The teacher will be responsible for selecting the best note for circulation. The teacher-centric methodology has recently fallen out of favour because this strategy for teaching is seen to favour passive students.

#### 1. Student- centric / Constructivist Approach:

The topics of the courses may be selected at the start of the class and assigned one topic to each of the students for studying by themselves, prepare presentations, notes, etc., and present at respective class time after consultation and discussion with the course teachers. The teacher facilitates the learning of the students by guiding and providing input and explaining concepts. 60 percent of the course contents may be selected for this purpose. To avoid behaviour problems, teachers must lay a lot of groundwork in student-centric classrooms. Typically, it involves instilling a sense of responsibility in students. In addition, students must learn internal motivation.

- **a. Project-Based Learning:** The teacher may select 5 percent of topics for the purpose and may conduct visits to the laboratory for experiments or field surveys. The selection of the topic may be done considering the available facility for the purpose. However, in the final semester of each of the programme the student has to undergo project-based learning at least 4 months duration. This approach will help the student to think critically, evaluate, analyze, make decisions, collaborate, and more.
- **b. Inquiry-Based Learning:** The teacher/ students are supposed to list at least five questions in each contact hour and student solve these question or search for answer which becomes the home work for the students "question-driven" learning approach. The teacher may look for the correctness of the solution or the best possible answer and discuss in the successive class. This will help in the preparation for various competitive examinations and develop a habit for search for solutions.
- **c. Flipped Classroom:** About 10 percent of the course content has to be completed by this method. In this approach the students are asked to watch video or lecture prepared by the teacher or any video available (relevant to the course). A set of questions may be given to the students for searching answers by the students. The idea is that students should have more time in-classroom focusing on achieving these higher levels of thinking and learning. The Flipped classroom is also an acronym. The letters FLIP represent the four pillars included in this type of learning: Flexible environment, Learning culture shift, Intentional content, and Professional educator. As you can see, the second pillar refers to a culture shift from the traditional approach where students are more passive to an approach where students are active participants. As a result, this approach is also a student- centric teaching method.
- **d. Cooperative Learning:** The remaining five percent has to be completed by cooperative learning approach. In this approach, the students are allotted problems. During library hours the students along with the teacher visit the library and search for probable solutions for the assigned problem. The same has to be done in groups so that the students discuss among themselves for the appropriate answers. Essentially, cooperative learning believes that social

interactions can improve learning. In addition, the approach recreates real-world work situations in which collaboration and cooperation are required.

#### 2. The percentage categorization for the completion of a theory course

Teacher-centric or Direct Classroom Teaching: Delivery by series of lectures	20%
Student-centric Approach, Students present and deliver lectures in the presence of	<b>600</b> /
teacher and supervised by teacher	60%
Students visit fields or perform experiments or teachers perform demonstration	05%
Flipped Classroom approach	10%
Cooperative learning approach	05%

#### 3. Inquiry-based approach has to be followed in all of the classes

The teacher has to distribute the topics to be considered for teaching by the above-mentioned approaches and prepare a lesson plan for execution and maintain a file.

# **Breakdown of Credits**

Sl. No.	Category	<b>Total number of Credits</b>	
1	DSC Major	70	
2	DSC Minor	18	
3	Multidisciplinary Course (MDC)	9	
4	Ability Enhancement Course (AEC)	8	
5	Skill Enhancement Course (SEC)	9	
6	Value Added Course (VAC)	6	
7	Internship	4	
8	Research/Industry Internship	6	
9	Field Training	1	
10	Co & Extra-Curricular	3	
Total:		133	

# **Breakdown by categories of courses**

Sl. No.	Category	Credits	%
1	Paramedical Sciences	119	89.47%
2	Science	2	1.50%
3	Engineering	1	0.75%
4	Commerce and Management	2	1.50%
5	CLPPD	6	4.51%
6	Humanities and Social Sciences	3	2.25%
	Total:	133	100%

# SEMESTER WISE COURSE DISTRIBUTION

	C N	Carras Cada	Commo Title	Course			Eng	ager	nent			Max	imum 1	Mark	s for			
	S.N.	Course Code	Course Title	Category	L	Т	P	S	R	О	C	IA*	SEE*	PE*	Total			
	1	24BEDM1101R	Human Anatomy and Physiology I	DSC (Major)	4	0	4	0	0	0	6	40	60	100	200			
	2	24BEDM1102R	General Biochemistry	DSC (Minor)	3	0	2	0	0	0	4	40	60	100	200			
r I	3	24BEDM1103R	Basic Principles of Hospital Practice and Patient Care	DSC (Minor)	2	0	0	0	0	0	2	40	60	100	200			
Semester	4	24UBPD1101R	Basic Communication English	AEC	0	0	2	0	0	0	1	0	0	100	100			
Se	5	24BEDM1101M	The Art and Science of Relationship: Understanding Human Need	VAC	2	0	0	0	0	0	2	0	100	0	100			
	6	24BEDM1104R	Medical Psychology	MDC	3	0	0	0	0	0	3	40	60	0	100			
	7	24BEDM1105R	(TPS) Basic Clinical Examination	VAC	0	0	2	0	0	0	1	0	0	100	100			
		To	otal		14	0	10	4	0	0	20	280	340	400 1100				
	S.N.	Course Code	Course Title	Course			Eng	ager	nent			Max	imum	Mark	s for			
	D.11.	Course Coue	Course True	Category	L	Т	P	S	R	0	C	IA*	SEE*	PE*	Total			
	1	24BEDM1201R	Human Anatomy and Physiology II	DSC (Major)	4	0	4	0	0	0	6	40	60	100	200			
	2	24BEDM1202R	Biochemistry: Biomolecules and its Metabolism	DSC (Minor)	3	0	2	0	0	0	4	40	60	100	200			
er II	3	24BEDM1203R	Fundamentals of Patient Care and Safety	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	100			
este	4	24UBPD1201R	Functional English	AEC	0	0	2	0	0	0	1	0	0	100	100			
Semest	5	24URSH1201R	Radiation Sources & Hazards	MDC	3	0	0	0	0	0	3	40	60	0	100			
	6	24UBES1201R	Environmental Studies	VAC	2	0	0	0	0	0	2	40	60	0	100			
	7	24BEDM1204R	Self- Study Seminar/Presentation	AEC	0	0	2	0	0	0	1	0	0	100	100			
	8	24UBCC1201	Co-Curricular	VAC	0	0	0	4	0	0	1	100	0	0	100			
	Total			14	0	10	4	0	0	20	300	300	400	1000				

	S.	Course Code	Course Title	Course			Eng	gagei	men	t		Max	imum	Marks for		
	N.	Course Code	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total	
	1	24BEDM2101R	Airway Management and Respiratory Emergencies	DSC (Major)	3	0	4	0	0	0	5	40	60	100	200	
	2	24BEDM2102R	Patient Assessment and Drug Administration	DSC (Major)	3	0	4	0	0	0	5	40	60	100	200	
III	3	24BEDM2103R	Wound Care and Suture Techniques	DSC (Minor)	2	0	2	0	0	0	3	40	60	100	200	
	4	24BEDM2104R	Pharmacology	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	100	
Semester	5	24BEDM2105R	Biomedical Waste	DSC (Minor)	1	0	0	0	0	0	1	40	60	0	100	
	6		Radiation Safety & Protection	MDC	1	0	0	0	0	0	1	40	60	0	100	
	7		DISA	SEC	1	0	0	0	0	0	1	0	0	100	100	
	8	24UBPD2101R	Executive English	AEC	0	0	2	0	0	0	1	0	0	100	100	
	9	24UCDL2101R	Digital Literacy	VAC	0	0	2	0	0	0	1	0	0	100	100	
	10		BAS	MDC	0	0	2	0	0	0	1	0	0	100	100	
	11	24BEDM2106R	First Aid	SEC	0	0	2	0	0	0	1	0	0	100	100	
	12	24BEDM2107R	Field Training	FT	0	0	0	0	0	8	1	0	0	100	100	
	Total				13	0	18	0	0	8	23	240	360	900	1500	

	S.	Course Code	Course Title	Course Engagement						Max	laximum Marks for				
	N.	Course Code	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total
	1	24BEDM2201R	Cardiovascular and Neurological Emergency Management	DSC (Major)	3	0	4	0	0	0	5	40	60	100	200
	2	24BEDM2202R	Mechanical Ventilation	DSC (Major)	2	0	2	0	0	0	3	40	60	100	200
	3	24BEDM2203R	Medical Equipment and Terminologies	DSC (Major)	2	0	0	0	0	0	2	40	60	0	100
ter IV	4	24BEDM2204R	Introduction to ambulance operation system	DSC (Major)	2	0	0	0	0	0	2	40	60	0	100
Semester	5	24BEDM2205R	Pharmacology II	DSC (Major)	2	0	0	0	0	0	2	40	60	0	100
S	6	24BEDM2206R	Patient Safety and Quality Care	DSC (Major)	2	0	0	0	0	0	2	40	60	0	100
	7	24UBPD2201R	Enhanced Professional Skills	AEC	0	0	2	0	0	0	1	0	0	100	100
	8	24UUFL2202R	Financial Literacy	MDC	0	0	2	0	0	0	1	0	0	100	100
	9	24BEDM2207R	Advanced Cardiac Life Support (ACLS)	SEC	0	0	4	0	0	0	2	0	0	100	100
	10	24UULS2202R	BLSS	VAC	0	0	2	0	0	0	1	0	0	100	100
	11	Self-Study Seminar	24BEDM2208R	AEC	0	0	2	0	0	0	1	0	0	100	100
		To	otal		13	0	18	0	0	0	22	240	360	700	1300

	S.	Course Code	Course Title	Course			Eng	agen	nent			Max	imum	Marl	ks for
	N.	Course Code		Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total
	1	24BEDM3101R	Clinical Observation I (Emergency Patient Care)	DSC (Major)	0	0	0	16	0	0	4	0	0	100	100
	2	24BEDM3102R	Clinical Observation II (Advanced Concepts and Specialized Care)	DSC (Major)	0	0	0	16	0	0	4	0	0	100	100
Semester V	3	24BEDM3103R	Clinical Observation III (Communication and Documentation Skills)	DSC (Major)	0	0	0	16	0	0	4	0	0	100	100
	4	24BEDM3104R	Case Study Report	SEC	0	0	0	16	0	0	4	0	0	100	100
	5	24BEDM3105R	Summer Internship		0	0	0	0	0	24	4	0	0	100	100
	6	24BEDM3106R	Research	SEC	0	0	2	0	18	0	2	0	0	100	100
	7	24BEDM3101R	Clinical Observation I (Emergency Patient Care)	DSC (Major)	0	0	0	16	0	0	4	0	0	100	100
		Tot	tal		0	0	2	80	18	24	26	0	0	700	700
	S.	Course Code	Course Title	Course			Eng	agen	nent			Max	kimum	Marl	ks for
	N.	Course coue	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total
	1	24BEDM3201R	Trauma Care	DSC (Major)	3	0	4	0	0	0	5	40	60	100	200
	2	24BEDM3202R	Disaster Management in Health Care	DSC (Major)	3	0	4	0	0	0	5	40	60	100	200
Semester VI	3	24BEDM3203R	Introduction to Emergency Medical Services	DSC (Major)	4	0	0	0	0	0	4	40	60	0	100
Semes	4	24BEDM3204R	Introduction Research Methodology	DSC (Major)	2	0	0	0	0	0	2	40	60	0	100
	5	24BEDM3205R	Research/ Industry Internship	Research	0	0	0	0	24	0	4	0	0	100	100
	6	24BEDM3206R	Techno Professional Skills Finishing School	SEC	0	0	8	0	0	0	4	0	0	100	100
1	7		AEC	0	0	4	0	0	0	2	0	0	100	100	
	,	Tot		12		20		24	0		160	240	500	900	

^{*}IA: Internal Assessment, SEE: Semester End Examination, PE: Practical Examination

			SEMESTER – I								
Course 7	Γitle		Human Anatomy					1			
Course o	ode	23BEDM111R	Total credits: 6	L	T	P	S	R	O/F		C
D			Total hours: 60T+60P	4	0	4	0	0	0		6
Pre- requisi	te	Nil	Co-requisite					Nil			
Program		Bachelo	r of Science in Trauma Eme	rgeno	cy an	d Di	saste	er Ma	nageme	ent	
Semest	er		Fall / I semester of first	ear o	f the	pro	gran	nme			
Cours Objecti	ves	<ol> <li>To learn about the anatomical positions, gross and microscopic structure of the organs and skeleton in the human body.</li> <li>To assist students in developing a better grasp of the anatomical structure and basic Physiological function of various body regions.</li> <li>To study practically the anatomical structures of human body.</li> </ol>									
CO1			omical terms and basic structu								
CO2	features and functions.										
CO3			nposition of the human digest						fic func	tior	ıs.
CO4			ory system and classify variou tomy and physiology of the c						d comp	ositi	ion and
CO5		distribution in th		ururo	, asca	iui 5	yster	11, 1141	d comp	OBIL	ion una
Unit-			Content	(	Conta	act		Lear	ning		KL
No.			Content		Hou	r		KL			
I	• Le Pl	evel of Organizati anes and Sections rminology	atomical Terms, Basic tion of Cell on – Body Parts and Areas, s. Common anatomical tion of Cell Membrane,		7		Describe the fundamental knowledge of anatomical structures of human bodies and the cellular functions.		1	1,2	
п	<ul> <li>Bo</li> <li>m</li> <li>Ti</li> <li>Co</li> <li>Jo</li> <li>jo</li> <li>M</li> <li>Pr</li> </ul>	ones: Classification or phology. Issue and its types artilage wints: definition, clints.	lassification, and movements s For Specific y: Importance of different	of	10		func anat tissu join	omy one, car ts, mu ome th	ne tals of of bone, tilage, scle and	i	1,2
III	• Ai	estive System- natomy of gastroi gans of digestive omposition and fu testinal, and bilian	,	8		anat diffe	ystem			1,2	
IV	Respiratory System-				10		resp	ssify the irator em, its	y		1,2

	• Gaseous exchange in lung and tissues.		function of	
	• Lung volumes and capacities.		different parts of	
	• Respiratory abnormalities: Hypoxia, cyanosis,		the respiratory	
	dyspnoea, Asphyxia, hyperventilation,		system and some	
	hypoventilation, tachypnoea and bradypnea		respiratory	
	Specific Program		abnormalities.	
	• ECC: Intra-pleural and intrapulmonary pressures			
	and their changes with respiration, Hypoxia.			
	For Specific programs			
	<b>ECC:</b> Description of larynx, trachea, and respiratory			
	centres			
	Cardiovascular System and Blood:			
	• Mediastinum– division			
	• Structure of heart and blood vessels.			
	• Systemic circulation, pulmonary circulation, and			
	coronary circulation		Explain the	
	• Cardiac output, cardiac cycle, conducting system		anatomical	
	of heart.		structures in the cardiovascular	
V	• Heart sounds, pulse, blood pressure and their	10	System and their	1,2
	regulation.		functions also all	
	• Composition and functions of blood, Plasma, and		the components of	
	body fluids.		blood.	
	• Functions of RBC, WBC and platelets		5100 <b>d</b> .	
	• Hemoglobin.			
	• Blood hemostasis			
	• Blood groups			
	1. Study of Skull, Vertebrae, Ribs and bones of			
	upper limb.			
Practical	2. Study of compound microscope.	60		1,2,3,4
Tacucal	3. Measurement of blood pressure, Arterial pulse	00		1,2,3,4
	4. Bleeding time (BT) Clotting time (CT)			
	5. Haemoglobin estimation			

T1: Allison Wynn Grant, Anne Waugh, and Kathleen J. W. Wilson 'Ross and Wilson Anatomy and Physiology', Elsevier, Amsterdam, Netherlands, 13th Edition (2020)

T2: Richard Drake, A. Wayne Vogl, Adam Mitchell, 'Gray's Anatomy for Students', Elsevier, Amsterdam, Netherlands, 4th Edition (2019).

#### **REFERENCE BOOKS:**

R1: BD CHAURASIAS., 'HUMAN ANATOMY' CBS publisher, New Delhi, 8th Edition (2017).

R2: Inderbir Singh. 'Anatomy and Physiology' CBS Publisher, New Delhi 2nd Edition (2004)

R3: Frederic Martini, Judi Nath, Robert Tallitsch, 'Human Anatomy', Pearson Publisher,

USA, 1 stedition (2017).

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Discuss the anatomical terms and basic structure and function of cells.	1,3
2	Explore knowledge of Musculo skeletal system and bones along with their special features and functions.	1,3,4,6
3	Describe the composition of the human digestive system and their specific functions.	1,3,4,6
4	Explain respiratory system and classify various respiratory disorders.	1,3,4,6
5	Describe the anatomy and physiology of the cardiovascular system, fluid composition and distribution in the body.	1,3,4,6

		SEMESTER – I							
Course Ti	tle	General Bio	chemisti	<b>.</b> y					
C	J. 24DEDM1102D	Total credits: 4	L	T	P	S	R	O/F	C
Course co	de   24BEDM1102R	Total hours: 45T+30P	3	0	2	0	0	0	4
Pre-requis		Co-requisite				Ni			
Programm		f Science in Trauma Eme					anag	t	
Semester		Fall / I semester of first y	<u> </u>		_				
Course Objective	focusing on the control 2. To explain the er	owledge in the technical as clinical findings in various nergy flow in the form on A practical knowledge for the ds.	body met ATP in th	tabolite e huma	es. an bo	dy a	nd c	ells.	·
CO1		s, functions and metabolism	_						
CO2		assifications of amino-acid				igni	ficar	ice of	Protein.
CO3		icance, classification and f			ds.				
CO4	Comprehend the st								
CO5	Explain the fundan	nentals and importance of a		and b	uffer	s.			
Unit-No.	Со	ntent	Contact Hour	Lea	Learning Outcome				
I	<ul><li>Common carbohydra Starch, Glycogen, St</li><li>Biological significan</li></ul>	fication of carbohydrates ates (Glucose, Fructose, arch) and their sources	9	Describe the structure, function, and importance of carbohydrates in biological systems.					1,2
П	<ul> <li>PROTEINS</li> <li>Definition of Protein Biological</li> <li>Significance</li> <li>Amino acids and its of Essential and Non-essential</li> </ul>	classification	9	Explain the structure, function, and importance of proteins in biological processes.				eins	1,2
III	<ul> <li>LIPIDS</li> <li>Definition and classif</li> <li>Classification of Fatt</li> <li>Examples and function</li> <li>Lipids (Phospholipid</li> </ul>	y Acids	9	Description of the hi	ion, a fican	and ce of	lipi		1,2
IV	Nucleic Acids  Basic idea of the strue  DNA and RNA  Function of DNA and		9	Describe the structure and function of nucleic acids, including DNA and RNA, and their role in genetic information storage and transmission.			1,2		
V	• Basics about acids, b Buffer • Acid base balance	RS: ases, pH, pOH, pKa and	9	Illusti buffe to pre the pl chem	r that edict H lev	ena and els i	bles contr n	rol	1,2

Practical
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T1: U Satyanaryana and U Chakrapani 'Biochemistry' 6th Edition

T2: DM Vasudevan 'Text book of Biochemistry for medical students' 7th Edition

	CO PO Mapping									
SN	Course Outcome (CO)	Mapped Program Outcome								
1	Develop fundamental knowledge on the components of cells and tissue structure.	1,3								
2	Describe the different composition and functions of the blood.	1,3								
3	Understand the process of the digestive system along with the organs involved and their significance.	1,3								
4	Explain the mechanism of the respiratory system.	1,3								
5	Understand the cardiovascular system along with the human circulatory system.	1,3								

			SEMESTEI										
Course '	Title	Basic princip	oles of hospital pract						1				
Course	code	24BEDM1103R	Total credits: 2	L	T	P	S	R	O/F	C			
Pre-requ	uigita.	Nil	Total hours: 30T Co-requisite	2	0	0	0 N	0	0	2			
Program			f Science in Trauma	Fmerg	encv	and Di			gement				
Semes		Dachelor o	Fall / I semester of						igement				
2 222 23		1. To impart the kno	owledge in patient in a				_		wellbeing	of the			
Cour Objecti		patient. 2. To impart a compart medical professional	orehensive knowledge dls.	on med	ical e	thics ar	nd the	quality	and functi				
CO		of hospital manager	3. To provide a gross knowledge on the legal hazardous of medical profession.  Discuss different functions, process of record keeping, reporting and essential components of hospital management.										
CO2	•	in certain medical e											
CO3		patients.	knowledge of patient	•						t			
CO4			non laboratory accide					ement	•				
CO5	<u> </u>	Describe vital signs	and effectively mana			nalities	•						
Unit- No.		Conter	nt	Contac Hour		Le	arning	g Outc	ome	KL			
1100	Host	oital &Records & R											
I	<ul> <li>Definition and functions of hospitals</li> <li>Classification, organization and departments of hospitals Management of hospitals</li> <li>Definition of records and reports</li> <li>Different types of records and reports</li> <li>Values objectives and maintenance of records principle of good record writing</li> <li>Difference of records &amp; reports</li> </ul>			10	n re es		and a and rep health	nalyze orts to	ately hospital ensure	1,2			
П	• Fir Pri aid aid • Sin cor Sco var Ha	ical Profession Al a ards of Medical Prost aid Aims & object orities of first aid Go qualities & responsiver and the responsive or the proposed of the propose	fession ives of first aid iden rules of first bilities of first es in selected bisoning Snake bite foreign bodies in scald  Needs of patients; aintenance of erapeutic tors for patients	10	ri ri	_	bilities ociated	and p	otential practicing	1,2			

	chamical injums and infinite 0			
	chemical injury, radiation & bacteriological injury, safety from			
	allergens. Different positions of the body:			
	supine position, prone position, cardiac			
	position, lateral, position, fowlers Position.			
	Safety In The Laboratory			
	• Common laboratory accidents from			
	Physical injuries		Classify assential safety	
	Electrical shock		Classify essential safety	
III		10	protocols to prevent accidents	1,2
	• Chemical injury		and injuries in the laboratory.	
	• Bleeding			
	Burn Eye accidents			
	Biological hazards			
	Vital signs Of Patients		Explains how to accurately	
	Body temperature		measure and interpret vital	
IV	Maintenance of body temperature	9	signs in patients.	1,2
	• Factors influencing body temperature			
	• Different types off ever Stages of rigor			
	Management of pyrexia			
	• Pulse			
	• Common pulse sites			
	• Factors influencing pulse rate			
	• Characteristics of Pulse Abnormal pulses			
	Reading of pulse Blood		Defines different diseases and	
$\mathbf{v}$	Pressure Definition Factors influencing	9	their effects on the human	1,2
	B.P. Abnormalities of B.P. Recording of		body.	1,2
	B.P.			
	Respiration			
	Regulation of respiration			
	• Factors causing variations in			
	Respiration Abnormal respirations			
	• Reading of respiratory rate.			
	• Different methods of Artificial Respiration			

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Discuss different functions, process of record keeping, reporting and essential components of hospital management.	2,3,6						
2	Explain the basic principles; golden rules of First Aid and effectively implement the skills in certain medical emergencies.	2,3,4						
3	Apply fundamental knowledge of patient safety and care to ensure basic care needs of patients.	2,3,4,5						
4	Assessment of common laboratory accidents and its effective management.	3,4						
5	Describe vital signs and effectively manage the abnormalities.	1,2,3,4						

	SEMESTER – I								
<b>Course Title</b>		F	ield V	isit					
Course code	24BEDM1104R	Total credits: 1	L	T	P	S	R	O/F	C
Course code	24DEDWIIIU4K	Total credits: 1	0	0	0	0	0	8	1
Pre-requisite	Nil	Co-requisite				N	il		
Programme	Bachelor o	f Science in Trauma	Emer	gency	and I	)isaste	r Man	agement	
Semester	Fall / I semester of first year of the programme								
C	1. To introduce the students to the basics of English grammar and their application.								
Course	2. To enhance communication skills through listening and speaking exercises.								
Objectives	3. To learn and understand the importance of pronunciation of words.								
CO1	Understand the theoretical concepts and foundational knowledge relevant to the field								
CO1	during the visit.								
CO2	Comprehend the pr	actical applications of	theor	etical	concep	ts in re	eal-wor	rld settings	s.
CO3	Exposure to divers	e situations to enhance	skills	in pat	ient m	anagei	ment ar	nd care.	
CO4	Evaluate the effect	veness of different ap	proacl	nes and	d meth	ods se	en duri	ng the fiel	d trip.
CO5	Prepare and deliver presentations effectively using visual aids and non-verbal								
CO5	communication techniques.								

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Understand the theoretical concepts and foundational	1,6
	knowledge relevant to the field during the visit.	2,0
2	Comprehend the practical applications of theoretical concepts	2,3,5
4	in real-world settings.	4,0,0
3	Exposure to diverse situations to enhance skills in patient	2,3,5,8
3	management and care.	2,3,3,8
1	Evaluate the effectiveness of different approaches and methods	2 4 5 9
4	seen during the field trip.	3,4,5,8
5	Prepare and deliver presentations effectively using visual aids	225
3	and non-verbal communication techniques.	2,3,5

			SEMESTER	<u> </u>							
Cours	e Title		Basic Comm		ative En	glish					
Cours	o oodo	24UBPD1101R	Total credits: 1	L	T		S	R	O/F	C	
Cours	e coue	240BPD1101R	Total hours: 30P	0	0	2	0	0	0	1	
Pre-re		Nil	Co-requisite				Nil				
Progr			f Science in Trauma B						gement		
Sem	ester		Fall / I semester of fin	•							
	ırse ctives	2.To enhance com	students to the basics of munication skills through	gh lis	tening ar	nd speal	king 6	exerci	•		
			erstand the importance								
CO		•	and articulate ideas clean culary and use synonym	•		_					
CO		_	rules to construct gran						l naragrar	he	
		11 0	pes of communication						1 0 1		
CC	)4	barriers.	, pes or communication							-	
CC	) <i>5</i>	Prepare and deliver	presentations effective	ly us	ing visua	al aids a	and no	on-ve	rbal		
CC	)5 	communication tec	hniques.								
Unit- No.		Cont	ent		Contact Hour	Lea	arnin	g Ou	tcome	KL	
	• Parte	of Speech				Defin	es the	part	s of		
	• Artic	-			6	speec				1,2	
I		Auxiliary Verbs				auxiliary verbs with					
		mative and Negative	e Sentences			affirmative and negative sentences.					
								A 116A	of		
	• Dete	rminers				Explains the use of grammar using					
	• Sente	entence Construction				determiners, senter					
II	• Type	pes of Sentences (Assertive, Imperative etc.)				construction, types of				1,2	
	• Degr	ree of Comparison			sentences and comprehension						
	• Com	prehension Exercise									
	XX/1	. 1:				exerci	ises.			1	
		t is listening? Process of Listening				111			<b>c</b>		
		ors that adversely aff				listeni		_	ocess of		
III		erence between Liste			6	betwe	-			1,2	
			of Effective Listening			hearir			•		
	_	to Improve Listenin									
		ducing yourself									
	• Self-	discovery				Illustr	ate se	elf-dis	scovery,		
IV	• Basic	es of Phonetics, pror		6	perfor	rming	exte	mpore	1,2		
	• Exte	mpore speech			speec	h, etc					
		o Recording for Self								ļ	
		duction to Commun									
	_	ortance of Communic		Describes the							
<b>T</b> 7	_	ose of Communicati		communication skills				skills,	1.0		
V		es of Communication			6	types, its importance a				1,2	
		nal and informal con ortance of Communic				the ba	rriers	S.			
	- mpc	mance of Community	Cat1011								

• Barriers to Communication

How to improve/ tips to improve Communication		
skills.		
Responding to different questions in various		
situations		

T1: Debnath, Adhir "A Textbook of English Grammar and Composition" 2018

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Speak confidently and articulate ideas clearly with correct pronunciation.	7						
2	Expand their vocabulary and use synonyms and antonyms appropriately.	7						
3	Apply grammatical rules to construct grammatically correct sentences and paragraphs.	7						
4	Identify different types of communication and strategies to overcome communication barriers.	7						
5	Prepare and deliver presentations effectively using visual aids and non-verbal communication techniques.	7						

			SEMESTER	R – I						
Course T	itle		Extr	a-Curri	cular					
Course c	odo	24UBEC1101	Total credits: 1	L	T	P	S	R	O/F	C
Course C	oue	240BEC1101	Total hours: 60S	0	0	0	4	0	0	1
Pre-requ	isite	Nil	Co-requisite				Ni			
Program		Bachelor (	of Science in Trauma						gement	
Semest	er		Fall / I semester of f							
Course Objectives		curricular activities. 2. To learn about tea and competitions. 3. To provide oppor	and interests through parties and leadership tunities for personal gr	abilitie	s by e	ngagin	g stude	ents in	club-led ev	ents/
		curriculum.	tivities organized by v	arious c	luhe o	uich as	dance	music	nhotogra	nhv
CO1		drama, and literacy.	tivities organized by v	arrous C	iuos, s	such as	uance	, illusic	, photogra	piry,
CO2		Develop confidence competitions, accord	to participate in regulating to individual inter	ests.						
CO3		Apply knowledge and competitions.	nd skills to represent A	ADTU in	ınter-	-univer	sity, st	ate, an	d national	level
CO4		Explore new platform to learn from invited experts in their respective fields.								
CO5		Evaluate overall gro	wth alongside academ	ic devel	opme	nt.				
Unit-		Conte	nt .	Contac	t	Ιω	ome	KL		
No.		Conte	Tt .	Hour		LC	ai iiiig	Guice		IXL
	the r	J encourages a range egular curriculum int ner's interest.		7						1,2
	socia deve	e activities are aimed al and soft skills and lopment of the learne	promote a holistic	10						1,2
I	meth diffe clubs	oing in mind the 360 addology the students rent activities headed is viz. Dance, music, pa, literary etc.	are engaged in under different	10	ap	escribe oply Th		1,2		
1	The regu	students are encourage lar club activities, we petitions as per their	orkshops,	8	W	gular c orkshoj eir inte	ps, con	ons as per	1,2	
	repre stude	e students members of the club are trained bresent AdtU in various inter University dent and national level competitions.								1,2
	work stude	ewed personalities are ashops that benefit the ents by giving them to experts in the respec-	e members and he platform to learn							

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Explore different activities organized by various clubs, such as dance, music, photography, drama, and literacy.	7						
2	Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests.	7						
3	Apply knowledge and skills to represent ADTU in inter-university, state, and national level competitions.	7						
4	Explore new platform to learn from invited experts in their respective fields.	7						
5	Evaluate overall growth alongside academic development.	7						

		SEMESTER – II									
Course Ti	tle	Human Anatomy a	nd Pl	hysiol	ogy Il	[					
Course co	de 24BEDM1201R	Total credits: 5	L	T	P	S R	O/F	C	1		
		Total hours: 45T+60P	3	0	4	0 0	0	5	5		
Pre-requis		Co-requisite				Ni					
Programn		of Science in Trauma Emer									
Semester		Fall / II semester of first year of the programme									
Course	-	1. To provide a comprehensive concept of all the anatomical position and physiological function of the human body.									
Objective		e underlined mechanism and	reon	lation	of the	humai	n body				
Objective		derstand the physiologic fund	_				-				
CO1		re and function of excretory s			-8-1						
CO2	_	ry organs and nervous system	•		their	function	ons.				
CO3		pes of immune cells and lym		-							
CO4	· ·	re and functions of male and									
CO5	Describe the endoc	rine system and their regulati	on.								
Unit-No.		Content		ontact	ī	earnir	g Outcome	,	KL		
			I	Hour				,			
	Urinary System				Expl	lain ab	out the urina	ary			
I	-	Structure of kidney, ureter, urinary bladder, mal and female urethra.				system, all the organ					
1	<ul> <li>Functions of kidneys</li> </ul>	s nenhron		8	relat	ed to it	and its		1,2		
	• Urine formation	s, nepinon.			func	tion.					
	Nervous System										
	<u> </u>	Classification of Nervous system.					Describe the nervous				
		Central Nervous system – Brain and Spinal cord,									
		blood supply of brain.				system of human body,					
	• Cranial nerves and s	Cranial nerves and spinal nerves				its classification					
II	• Introduction of moto	or system, sensory system and	1	12	including different				1,2		
	Autonomic Nervous	Autonomic Nervous System.					functions of different				
	• Functions of brain, a	and spinal cord			parts of the nervou						
	• Synapse, reflex arc				system.						
	• Cerebrospinal fluid										
	• •	in, Ear, Nose, Tongue Eye									
	Lymphatic and										
	Immunological System				_	lain ab					
III		tic system and functions.		5		-	ic system		1,2		
		, Antibody, and Immune				_	lymphatic		-		
	response.					em of t	he body.				
_	• Acquired immunity										
		Reproductive System  • Structure of male and female reproductive organs.					a rannadust	ivo			
	• Structure of Inale an	a remaie reproductive organs	•				e reproduct				
IV	<ul><li>Structure of breast</li><li>Changes during puberty</li></ul>			system, organs it and all the ch					1,2		
1,	• Ovulation,	ore,		10			g menstrual		1,2		
	Menstrual cycle				cycle		o				
	<u> </u>	s boundaries and contents				•					
	1 01 vio cavity with its	5 5 5 and arios and contents			<u> </u>						

v	<ul> <li>Endocrine System</li> <li>Different endocrine glands</li> <li>Hormones and functions of endocrine glands</li> <li>Regulation of secretion hormones.</li> </ul>	10	Explain the endocrine system of the human body including function of different glands.	1,2
Practical	<ul> <li>Study of pelvic bones and bones of lower limbs of human body.</li> <li>Study of organs: Brain, heart, lung, liver, kidney.</li> <li>Blood group</li> <li>DLC</li> <li>Total count of RBC and WBC</li> </ul>	30		1,2,3,4

- T1: Pamela K Levangie "Fundamentals of Anatomy" JP Bros Medical Publishers, New Delhi
- T2: Duane Nudson "Fundamentals of Medical Anatomy" 2nd ed. 2007 Publisher Springer
- T3: Ross and Wilson "Ross and Wilson Anatomy and Physiology" 8th Edition.

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Explain the structure and function of excretory system.	1,3						
2	Describe the sensory organs and nervous system along with their functions.	1,3,4,5						
3	Identify different types of immune cells and lymphatic system in the body.	1,3,4,5						
4	Explain the structure and functions of male and female reproductive system.	1,3,4,5						
5	Describe the endocrine system and their regulation.	1,3,4,5						

SEMESTER- II											
Course T	itle	BI	OCHEMISTRY: B							T	T
Course co	ode	24BEDM1202R	Total credits:	_	L	T	P	S	R	O/F	C
D		NT21	Total hours: 45T		3	0	4	0	0	0	5
Pre-requi		Nil Rochelon of	Co-requisite		7070	v and	Diggs	Nil	2000	mont	
Program Semeste			f Science in Traum Fall / II semester of			-			mage	шеш	
Schiest									ies sr	ecially	
Course Objectives		focusing on the c.  2. To explain about  3. To provide inform	To impart the knowledge in the technical aspects of biochemical studies specially focusing on the clinical findings in various body metabolites.  To explain about the energy flow in the form on ATP in the human body and cells.  To provide information and understanding on the basic idea about the enzymes, nomenclature functions, regulations and their significance in biological processes.								
CO1		Describe classificati	on, mechanism of e	nzymes,	and	factor	s affec	cting er	nzyme	action	s.
CO2		Define the mechanis									
CO3		Explain the metabol									ody.
CO4		Describe the proces									
CO5		Determine the differ signs of deficiencies		is and m	inera	als, the	eir clas	sificati	on, so	ources a	ınd
Unit-No.		Conter	Contac Hour			Learn	ing O	ıtcom	ie	KL	
I	<ul> <li>Enzymes:</li> <li>Definition and classification of enzyme.</li> <li>Basic idea of co-enzyme, iso-enzyme.</li> <li>Mechanism of enzyme Action.</li> <li>Factors affecting enzyme action</li> </ul>			10	1	Describe, classify and explain the types of enzymes along with the factors affecting their actions					1,2
п	• Gl • Kr • Gl • Gl	bohydrates Metabolism lycolysis reb's Cycle luconeogenesis lycogenesis lycogenolysis  Describe and explain a mechanism of carbohy the body						1,2			
Ш	• Tr • De • Ur • LF	tein Metabolism ansamination eamination ea Cycle and its Sign T (Liver Function To	ests)	10	1		taboli	sm of p		xplain n and	1,2
IV Lipid Metabolism, Clinical Biochemistry  • β oxidation of Fatty Acids.  • Ketone bodies  • Ketosis and ketoacidosis			10	1	Define and explain the metabolism of lipids along the clinical diagnostic tests their significance.			_	1,2		
V	• De ace	efinition and classific cording to solubility. curces and functions of amins.	ation of vitamins	16	1	the dif	ferent inerals	plain a types of along function	of vita with	mins	1,2

	• Individual minerals (calcium, phosphorus, iron, magnesium flu slide, copper, selenium, molybdenum etc) — their sources, function and properties		
Practical	<ul> <li>To perform precipitation test to determine the presence of proteins in an unknown urine sample.</li> <li>To perform heat and acetic acid test to determine the presence of proteins in an unknown urine sample</li> <li>To perform Heller's test to determine the presence of proteins in an unknown urine sample</li> <li>To perform lipid solubility test</li> </ul>	30	1,2,3,4

T1: U Satyanaryana and U Chakrapani "Biochemistry"

T2: Shruti Mohanty "Practical Clinical Biochemistry" 1st Edition

T3: Prem Prakash Gupta "Essentials of Practical Biochemistry" 1st Edition

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Describe classification, mechanism of enzymes, and factors affecting enzyme actions.	1,3						
2	Define the mechanism of carbohydrate metabolism in the body.	1,3						
3	Explain the metabolism of protein and its significant effects on different organs of body.	1,3						
4	Describe the process of Lipids metabolism and associated clinical conditions.	1,3						
5	Determine the different types of vitamins and minerals, their classification, sources and signs of deficiencies in the body.	1,3						

SEMESTER – II											
Course	Course Title Fundamentals of Patient Care and Safety										
Course	e code	24BEDM1203R	Total credits: 2	L	T	P	S 0	R	O/F 0	C	
			Total hours: 30T	2	0	0	2				
Pre-rec		Nil	Co-requisite				Nil				
Progra		Bachelor o	f Science in Trauma						agement		
Seme	ester	1 75 1 1	Fall / II semester of		•						
Con			sures of the health se hether the health care		•					haalth	
Cou Objec			quality is changing of		• •	em.	is providii	ոց ու	gii-quaiity	nearm	
Objec	uves		fferent laboratory fun			nital					
CO	)1		symptoms of commo					liate 1	nanageme	nt	
CC			1 ethics and its import						nanageme		
CC		•	nt types of shock alon								
		· ·	s and symptoms of hy	_				caem	ia and its		
CC	)4	immediate manager	• •	P***8	.,		o 11) p 0 81)				
~~	_	-	ming quality laborato	ry in	vestigati	on p	process an	d labo	oratory		
CO	05	management.		•	9	r			•		
Unit-		<u> </u>	.1	Co	ontact		T		4	TZT	
No.		Conter	It	F	<b>lour</b>		Learnii	ng Ot	itcome	KL	
	Poison	ning:									
	• Defi										
		ses of poisoning									
		rces of Poisoning				Define, describe and					
	-	nptoms of poisoning				explain the different types					
		st aid & Management									
_		tidotes			0	of poisons along with their sources and management				1,2	
I		nmon drugs poisonir		8 including the classification							
		oon monoxide poiso			of various legal liabilities of medical professions.						
	_	<b>Responsibility:</b> of commission									
		of omission									
		of rashness, neglige									
		al liabilities of medic									
	_	antage & disadvanta									
		practice	.g wev.								
	,	l negligence				De	escribe, il	lustra	te and		
		ical negligence					plain vari				
		oorate negligence					gal respon				
II	_	paration of patients			5		edical pro			g 1,2	
	_	paration of equipmer	nt's				ith the tec				
	_	ection of specimens				sp	ecimen co	ollecti	on.		
		um, blood, CSF, Per									
	Peri	toneal fluid, Pleural									
	• Defi	nition				D	escribe, cl	assify	and		
	• Typ	es of shock				ex	plain sho	ck alo	ng with		
III	• Gen	eral Features of shoo	ek		6	th	eir clinica	1		1,2	
111	• Insti	gations of shock			U		anifestatio			1,2	
		al management & fi	rst aid of shock				anagemen		_		
	• Defi	nition				di	agnostic t	ests fo	or		

	Clinical features		diabetes.	
	Diabetes laboratory tests for diabetes			
	• Different types of glycosuria			
	• Ketone bodies			
	• Glucose tolerance test.			
	Definition			
	• Etiologic & Clinical Features			
	• Investigations for hypoglycaemia			
	Definition		Describe, classify and	
	Names & classification of drugs		explain the different types	
	Different preparations of drugs		of emergency drugs along	
	• Effects of drugs		with their mechanism,	
IV	• Adverse effects of drugs	4	routes of administration,	1,2
	• Tolerance, Abuse, addiction of drug		indications and adverse	
	• Different routes of drug administration		effects.	
	• Storing of medicine			
	• Units of standard measurement			
	• Function of medical Professional			
	Qualities of good professional			
	• Ethics of Medical Profession			
	Laboratory designing			
	Laboratory management			
	Different laboratory		Describe, illustrate and	
	• Functions of receptionist, Head of section,		explain medical ethics	
<b>T</b> 7	laboratory specialist, business manager,		along with the guidelines	1.0
V	quality officer, safety officer	9	and management of	1,2
	• Disposal of wastes		different laboratories in the	
	• Reporting of tests of laboratory		hospital.	
	Quality control and accreditation			
	• Control of fire, infection, corrosive			
	chemicals, toxic fumes, broken glasses,			
	carcinogen.			
	• Legal and ethical regulation.			

T1: National Health Programs of India National Policies and Legislations Related to Health: 1 J. Kishore (Author)

T2: A Dictionary of Public Health Paperback by J Kishor

T3: Health System in India: Crisis &Alternatives, National Coordination Committee, Jan Swasthya Abhiyan

T4: In search In Search of the Perfect Health System

T5: Central Bureau of Health Intelligence (1998). Health Information of India, Ministry of Health and Family Welfare, New Delhi.

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Describe signs and symptoms of common poisonings and its immediate management.	1,2,3,4,5						
2	Explain the medical ethics and its importance on the healthcare system.	6						
3	Identify the different types of shock along with the management.	1,2,3,4,5						
4	Determine the signs and symptoms of hyperglycaemia and hypoglycaemia and its immediate management.	1,2,3,5						
5	Proficient in performing quality laboratory investigation process and laboratory management.	3,5,6						

SEMESTER – II										
Course Ti	tle		Environn				1	ı	1	1
Course co	de	24UBES1201R	Total credits: 2	L	T	P	S	R	O/F	C
Due ne surie	**4.0	NIST	Total hours: 30T	2	0	0	0	0	0	2
	Pre-requisite Nil Co-requisite Nil Programme Bachelor of Science in Trauma Emergency and Disaster Managemen							a com on t		
Programm Semester			Fall / II semester of fi						agement	
Semester									ing comple	a V
Course Objective	es 2	<ol> <li>To prepare students for careers as leaders in understanding and addressing complex environmental issues from a problem-oriented, interdisciplinary perspective.</li> <li>To develop a world population that is aware of and concerned about the environment and its associate problems and which has the knowledge, Skills, attitudes, motivations, and commitment</li> <li>To work individually collectively towards solutions of current problems and prevention of new ones.</li> </ol>								ent ions,
CO1	1	Discuss the importa	nce of Environment St	udies	and th	ne need	for p	ıblic a	wareness.	
CO2	]	dentify natural reso	ource, its importance, a	nd its	impac	cts on t	he env	ironm	ent.	
CO3	I	Explore in-depth kr	nowledge on concept of	ecosy	ystem.					
CO4	l	Biodiversity.	f biodiversity and the v							
CO5	I	Explain various env	vironmental pollution a			t on hu	ıman a	and eco	osystem.	
Unit-No.		Con	tent		tact our	L	earniı	ng Out	tcome	KL
I	Multidisciplinary nature of environmental studies:  I • Definition • Scope and importance • Need for public awareness			Discuss about the multidisciplinary nature environmental studies.					1,2	
п	<ul> <li>Rer</li> <li>Fo</li> <li>W</li> <li>M</li> <li>Fo</li> <li>En</li> </ul>	rural Resources: newable and non-ruprest resources Vater resources lineral resources bood resources nergy resources and resources	enewable resources:		6	resou	rces, i	out nati ts type he wo	s and its	1,2
Ecosystems Concept of an ecosystem:  • Structure and function-Producers, consumers, and decomposers.  • Energy flow • Ecological succession  • Food chains, food webs and ecological pyramids • Introduction- types, characteristic features, structure, and function of the following ecosystem: -Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems				5	differ in this functi effect world	ent ec s worl ions ar ivenes	d and had its	m present now it	1,2	
IV	Bio	diversity and its c	onservation		6	Discu	ıss abo	out the		1,2

	<ul> <li>Introduction –</li> <li>Definition</li> <li>Value of biodiversity</li> <li>Threats to biodiversity</li> <li>Conservation of biodiversity</li> </ul>		biodiversity of the world along with its risk or threats and how to conserve it.	
V	<ul> <li>Environmental Pollution</li> <li>Definition Cause, effects, and control measures of: -Air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution, nuclear hazards</li> <li>Solid waste management</li> <li>Disaster management</li> </ul>	6	Explain the different types and levels of pollution the present world and its management.	1,2

T1: Harucha E. B "Textbook of Environmental Studies" T2: Chatwal G. R. &Sharma H. "Environmental Studies"

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Discuss the importance of Environment Studies and the need for public awareness.	8						
2	Identify natural resource, its importance, and its impacts on the environment.	8						
3	Explore in-depth knowledge on concept of ecosystem.	8						
4	Discuss the value of biodiversity and the various methods of conservation of Biodiversity.	8						
5	Explain various environmental pollution and its impact on human and ecosystem.	8						

SEMESTER – II									
Course Title	Field Training								
Course code	24BEDMFT102	Total credits: 1	L	T	P	S	R	O/F	С
Course code	24DEDWIF 1102	Total hours: 1200	0	0	0	0	0	8	1
Pre-requisite	Nil	Co-requisite				N	il		
Programme	Bachelor of	f Science in Trauma I	Cmerg	gency	and D	isaste	r Mana	agement	
Semester		Fall / II semester of fi	rst ye	ar of	the pr	ogran	ıme		
Course	1. To introduce the	students to the basics of	of Eng	glish g	ramma	ar and	their ap	plication.	
Objectives	2. To enhance communication skills through listening and speaking exercises.								
Objectives	3. To learn and understand the importance of pronunciation of words.								
CO1	Understand the theo	pretical concepts and for	oundat	tional	knowl	edge r	elevant	to the field	ld
	during the visit.								
CO2	Comprehend the pr	actical applications of	heore	tical c	oncep	ts in re	al-wor	ld settings	3.
CO3	Exposure to diverse	situations to enhance	skills	in pati	ient m	anager	nent an	d care.	
CO4	Evaluate the effecti	veness of different app	proaches and methods seen during the field trip.						
CO5	Prepare and deliver presentations effectively using visual aids and non-verbal								
005	communication techniques.								

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Understand the theoretical concepts and foundational knowledge relevant to the field during the visit.	1,6						
2	Comprehend the practical applications of theoretical concepts in real-world settings.	2,3,5						
3	Exposure to diverse situations to enhance skills in patient management and care.	2,3,5						
4	Evaluate the effectiveness of different approaches and methods seen during the field trip.	3,4,5						
5	Prepare and deliver presentations effectively using visual aids and non-verbal communication techniques.	2,1,2						

SEMESTER – II												
Course	Course Title Functional English											
Course	code	24UBPD1201R	Total credits: 1	L	T	P	S	R	O/F	C		
			Total hours: 30P	0	0	2	0	0	0	1		
Pre-req		Nil	Co-requisite				Ni					
Progra			f Science in Trauma I		_ •				agement			
Seme	ster		Fall / II semester of fi				gram	me				
			types of sentences and		_		1 .,	1	1 4			
Cour	rse		e vocabulary of the stud									
Object	tives	•	eaking and writing skill	.s it tr	ie import	ance (	or are	ess coo	ies in vario	ous		
		organisations.	2D's (Dlamina mismit	-i	er manfam	i	· of T	ima M	[	. 4		
			3P's (Planning, priorit		_							
CO	1	their differences.	ses appropriately in ver	dai ai	ia written	com	mum	cation	, distingui	sning		
			ciency in recognizing a	ad nei	ng homo	nrama	and	homor	honos			
CO	2	accurately in langu		ia usi	ng nomo	пушѕ	anu	пошор	niones			
		•	age contexts. aphs, stories, or articles	offoc	tivoly ro	fining	n nroi	nuncia	tion skills	for		
CO	3	clearer communica	* '	CIICC	tivery, re	31111111	g pro	nuncia	tion skins	101		
			anagement strategies to	orgai	nize daily	task	s cat	egoriza	e them usi	ng the		
CO	4	•	Matrix, and solve prob	_	•		s, cai	C GOTTE.	e them asi	ng the		
			onal resume and unders			•	n'ts c	of resu	me writing	У.		
CO	5		and managing a profil						_			
Unit-					Contact							
No.		Con	atent		Hour	L	earn	ing O	utcome	KL		
	Gran	ımar				Eve	Join	the use	of.			
	• Inte	rchange of Interroga	ntive and Assertive			_		the use	t types of			
I	Sen	tences, Exclamatory	and Assertive Sentence	es	3		1,2					
	• Typ	es of Tenses			sentences, some common errors.							
	• Con	nmon Errors						Common Cirors				
	Voca	bulary										
II	• Syn	onyms			Enhance the vocabulary							
		onyms		J	skil	ls.			1,2			
		nonyms										
		ing Skills				Enh	nance	the re	ading			
		hniques of Effective	-					effecti	_	1,2		
III		-	ormation from a text		reading, gathering							
		SQ3R Technique					_	ion etc	-			
		rpret the text										
		ict Management				Disc	CHSS	the tec	hniques			
		inition							agement			
IV		e of Conflict Manag		3			effect o	-	1,2			
	• Effects of Conflict Management					con	flicts					
		hods to deal with Co										
		Management Skill						the tir				
V		oduction To Time M	-		3		-		cills by	1,2		
	-	•	e of Time Managemen	t	-		_	some 1	basic			
1	Dog	ic Tips to Maintain	l'ime.			tech	ıniqu	es.		ĺ		

T1: Wren, P.C and Martin "High School English Grammar and Composition"

T2: Barrett, Grant "Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speaking"

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Utilize various tenses appropriately in verbal and written communication, distinguishing their differences.	7						
2	Demonstrate proficiency in recognizing and using homonyms and homophones accurately in language contexts.	7						
3	Summarize paragraphs, stories, or articles effectively, refining pronunciation skills for clearer communication.	7						
4	Implement time management strategies to organize daily tasks, categorize them using the Time Management Matrix, and solve problems efficiently.	7						
5	Develop a professional resume and understand the dos and don'ts of resume writing, along with creating and managing a profile on LinkedIn to build professional networks.	7						

			SEMESTER – II									
Cour	se Title		Co-Curricular	r								
			Total credits: 1	L T P S R O/F C								
Cour	se code	24UBCC1201	Total hours: 60S	0	0	0	4 0	0	1			
Pre-r	equisite	Nil	Co-requisite	L. L.			Nil					
							agemen	ıt				
	nester			•								
		1. To develop skills and in	nterests through participati	ion in	dive	rse e	xtracu	rricular	and co-			
Course		curricular activities.										
Co	ourse	2. To learn about teamwor	rk and leadership abilities	by eng	gagir	ng sti	ıdents	in club	-led			
Obj	ectives	events and competitions.										
		3. To provide opportunitie	es for personal growth and	practi	ical l	earn	ing be	yond th	e			
		academic curriculum.										
	CO1	Explore different activities	s organized by various clu	ıbs, su	ch as	s dan	ce, mu	ısic,				
	.01	photography, drama, and l	literacy.									
	202	Develop confidence to par	rticipate in regular club ac	tivities	s, inc	cludi	ng wo	rkshops	and			
	.02	competitions, according to	individual interests.									
	203	Apply knowledge and skil	lls to represent ADTU in i	nter-u	nive	rsity,	state,	and nat	tional			
	.03	level competitions.										
C	<b>CO4</b>	Explore new platform to le	earn from invited experts i	in thei	r res	pecti	ve fiel	lds.				
C	<b>CO5</b>	Evaluate overall growth all	longside academic develop	pment								
				Contact Learning								
Unit-		Content		Conta	act	I	_earni	ng	KI			
Unit- No.		Content							KL			
		J encourages a range of acti	· ·						KL			
		J encourages a range of acti	· ·						KL			
	curric	J encourages a range of acti ulum intended to meet learn	ner's interest.		ır	(	Outco		KL			
C Unit-	• These	J encourages a range of activities are aimed to devel	ner's interest.		ır	Desc	Outcon	me	KL			
	• These skills	J encourages a range of activities are aimed to developed and promote a holistic development.	ner's interest. elop the social and soft elopment of the learners.		ır	Descillus	Outcon cribe, trate e	me xplain	KL			
	• These skills	J encourages a range of activities are aimed to developed and promote a holistic developed in mind the 360 degree l	Nil Co-requisite Nil Co-requisite Nil Co-requisite Science in Trauma Emergency and Disaster Managemetrally II semester of first year of the programme lop skills and interests through participation in diverse extracurricular activities.  If about teamwork and leadership abilities by engaging students in clucompetitions. In additional diverse extracurricular activities for personal growth and practical learning beyond the curriculum. In the seminary of the programme students in clucompetitions. In the seminary of the programme students in clucompetitions. In the seminary of the programme students in clucompetitions. In the seminary of the programme students in clucompetitions. In the seminary of the programme students in the seminary of the programme students in clucompetitions. In the seminary of the programme students in the programme students in the seminary of the programme students in the program	xplain	KL							
	• These skills :	J encourages a range of activities are aimed to developed and promote a holistic developed in mind the 360 degree lats are engaged in different	ner's interest. elop the social and soft elopment of the learners. learning methodology the activities headed under		ır	Descillus and stud	Dutcon cribe, trate enapply	xplain The	KL			
	• These skills :	J encourages a range of actual ulum intended to meet learn activities are aimed to develop and promote a holistic develop in mind the 360 degree lats are engaged in different ent clubs viz. Dance, music	ner's interest. elop the social and soft elopment of the learners. learning methodology the activities headed under	Hou	ır	Descillus and studence	Dutcon eribe, trate enapply 'ents are	xplain The re d to	KL			
	These skills:     Keepingstuden differen literary.	J encourages a range of activities are aimed to developed and promote a holistic developed in mind the 360 degree lets are engaged in different ent clubs viz. Dance, music, y etc.	ner's interest. elop the social and soft elopment of the learners. learning methodology the activities headed under , photography, drama,	Hou	ır	Descillus and studence parti	Outcor eribe, trate e apply ' ents ar ourageo cipate	xplain The re d to in	<b>KL</b> 1,2,3,4			
No.	<ul> <li>These skills a</li> <li>Keeping student different literary</li> <li>The st</li> </ul>	J encourages a range of actual dum intended to meet learn activities are aimed to develop and promote a holistic develop in mind the 360 degree leats are engaged in different ent clubs viz. Dance, music y etc.	ner's interest. elop the social and soft elopment of the learners. learning methodology the activities headed under , photography, drama, articipate in regular club	Hou	ır	Descillus and studence partiregu	Dutcon cribe, trate en apply ents ar ouraged cipate lar clu	xplain The re d to in				
No.	• These skills: • Keeping student different literary. • The state activities	J encourages a range of actual dum intended to meet learn activities are aimed to develop and promote a holistic develop in mind the 360 degree leats are engaged in different ent clubs viz. Dance, music y etc.	ner's interest. elop the social and soft elopment of the learners. learning methodology the activities headed under , photography, drama, articipate in regular club	Hou	ır	Descillus and stud- enco parti- regu- activ	cribe, trate e. apply 'ents ar ouraged cipate lar clu	xplain The re d to in b				
No.	These skills a     Keeping student different literary     The state activity and here.	J encourages a range of activities are aimed to developed and promote a holistic developed in mind the 360 degree lats are engaged in different ent clubs viz. Dance, musically etc.  udents are encouraged to paies, workshops, competition obbbies.	her's interest.  elop the social and soft elopment of the learners.  learning methodology the activities headed under , photography, drama,  articipate in regular club ns as per their interest	Hou	nr	Descillus and studence partiregu activ	cribe, trate enapply 'ents are curaged cipate lar clurities,	xplain The e d to in b				
No.	<ul> <li>These skills:</li> <li>Keeping student differed literary</li> <li>The student activity and how</li> <li>The student activity and how</li> </ul>	J encourages a range of activities are aimed to developed and promote a holistic developed in mind the 360 degree lefts are engaged in different ent clubs viz. Dance, musically etc.  udents are encouraged to parties, workshops, competition obbies.	ner's interest. elop the social and soft elopment of the learners. learning methodology the activities headed under , photography, drama, articipate in regular club ns as per their interest	Hou	nr	Describing and studence partitions active world communications.	cribe, trate en apply 'ents are ouraged cipate lar clu- vities, ashops petitio	xplain The ed to in b				
No.	<ul> <li>These skills a</li> <li>Keeping student different literary</li> <li>The state activity and how the state of the s</li></ul>	J encourages a range of activities are aimed to developed and promote a holistic developed in mind the 360 degree lefts are engaged in different ent clubs viz. Dance, musically etc.  udents are encouraged to parties, workshops, competition obbies.	ner's interest. elop the social and soft elopment of the learners. learning methodology the activities headed under , photography, drama, articipate in regular club ns as per their interest	Hou	nr	Describing and studence partiregulactive work compertitions.	eribe, trate e apply ' ents ar ouraged cipate lar clu vities, ashops petitio	xplain The ed to in b ., ns as atterest				
No.	<ul> <li>These skills at the student differed literary.</li> <li>The st activity and how the student differed literary.</li> <li>The st activity and how the student differed literary.</li> </ul>	J encourages a range of activities are aimed to developed and promote a holistic developed in mind the 360 degree lefts are engaged in different ent clubs viz. Dance, musically etc.  udents are encouraged to parties, workshops, competition obbies.  udent members of the club in various inter University etitions	elop the social and soft elopment of the learners.  learning methodology the activities headed under photography, drama,  articipate in regular club are trained represent student and national level	Hou	nr	Describing and studence partiregulactive work compertitions.	eribe, trate e apply ' ents ar ouraged cipate lar clu vities, ashops petitio	xplain The ed to in b ., ns as atterest				
No.	<ul> <li>These skills a</li> <li>Keeping student differed literary</li> <li>The stactivity and how the stactivity and how the stactivity competent of the stactivity compe</li></ul>	J encourages a range of activities are aimed to developed and promote a holistic developed in mind the 360 degree lefts are engaged in different ent clubs viz. Dance, musically etc.  udents are encouraged to parties, workshops, competition obbies.  udent members of the club in various inter University etitions	ner's interest. elop the social and soft elopment of the learners. learning methodology the activities headed under , photography, drama, articipate in regular club ns as per their interest are trained represent student and national level	Hou	nr	Describing and studence partiregulactive work compertitions.	eribe, trate e apply ' ents ar ouraged cipate lar clu vities, ashops petitio	xplain The ed to in b ., ns as atterest				
No.	<ul> <li>These skills at the s</li></ul>	J encourages a range of activities are aimed to development and promote a holistic development in mind the 360 degree lets are engaged in different ent clubs viz. Dance, musically etc.  udents are encouraged to paies, workshops, competition obbies.  udent members of the club in various inter University etitions  wed personalities are invited	elop the social and soft elopment of the learners.  learning methodology the activities headed under , photography, drama,  articipate in regular club ns as per their interest  are trained represent student and national level d to conduct workshops dents by giving them the	Hou	nr	Describing and studence partiregulactive work compertitions.	eribe, trate e apply ' ents ar ouraged cipate lar clu vities, ashops petitio	xplain The ed to in b ., ns as atterest				

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Explore different activities organized by various clubs, such as dance, music, photography, drama, and literacy.	7					
2	Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests.	7					
3	Apply knowledge and skills to represent ADTU in inter-university, state, and national level competitions.	7					
4	Explore new platform to learn from invited experts in their respective fields.	7					
5	Evaluate overall growth alongside academic development.	7					

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cess.										
3.										
to-toe										
entation										
and communication.										
Identify the different composition of fluid in the body, different types of IV Fluids, gain IV										
sites and access.  Develop comprehensive knowledge on the routes of drug administration and utilize skills										
SKIIIS										
KL										
1,2										
1,2										
+										
1,2										
1,2										
1,2										
s										

V	<ul> <li>Medication administration</li> <li>Routes of medication administration</li> <li>Calculating fluid infusion rates</li> </ul>	4	Explain the procedure of medication preparation for patient administration.	1,2
Practical	<ol> <li>Checking Vitals</li> <li>Gaining Venous access</li> <li>IV fluids administration</li> <li>Full body Assessment</li> <li>Rapid Assessment</li> </ol>	30		1,2, 3,4

T1: Nancy Caroline "Textbook of emergency care in the streets" 7th Edition

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Understand and apply the techniques of assessment for medical and trauma patients.	1,2,3,4,5					
2	Comprehend the technique of history taking and demonstrate how to perform head-to-toe examination.	1,2,3,8					
3	Apply principles for critical thinking and implement skills on techniques of documentation and communication.	1,2,7					
4	Identify the different composition of fluid in the body, different types of IV Fluids, gain IV sites and access.	1,2,3,4					
5	Develop comprehensive knowledge on the routes of drug administration and utilize skills to perform correct techniques.	1,2,4					

			SEMESTE	R – III								
Course Tit	tle		Airway Manageme		irato	ry E	merg	encie	es			
Course co	de	24BEDM2102R	Total credi		L	T	P	S	R	O/F	C	
			Total hours: 45		3 0 4 0 0 0							
Pre-requisite Nil Co-requisite									Nil			
Programn			of Science in Traun							gement		
Semester	r		all / III semester of									
Course		1. Introduce the students to basic airway assessment techniques, airway management during										
Course		emergencies and respiratory failures.										
Objectives		2. To introduce the students on how to assess the patient's airway obstruction.										
		3. To manage them in the hospital as well as out of hospital settings.  Describe anatomy and physiology of the airway and understand the basic airway adjuncts										
CO1		and functions	na pnysiology of the	airway an	a uno	iersia	ına ır	ie bas	ic an	way au	juncts	
		Explain advanced a	muou managamant t	aahniayaa	and d	ovol.	n the	. alzi11	6 200	0000	for their	
CO2		effective application		echniques	anu c	ever	р ше	SKIII	s nec	essary	for their	
CO3		Classify surgical &		c								
CO3		Identify the sympton			ditio	ne						
CO5		Demonstrate the ass					virato	rv dis	orde	re		
CO3		Demonstrate the ass	essment and manage	Contact	arrou	o resp	mato	ry urs	oruci	10.		
Unit-No.		Conte	nt	Hour		Lea	rnin	g Ou	tcom	e	KL	
	Ai	rway Management										
		view of Anatomy a	nd Physiology									
		Basic Airway Manag										
		Manual airway mano		Explain the anatomy and								
		Airway Adjuncts		physiology of respiratory								
I		Continuous Positive	6	system and also some basic 1,2 manoeuvres for airway opening.						1,2		
		CPAP)								ŕ		
	• \$	Supplemental O2 the										
		levices										
	• 5	Suctioning										
	• <i>A</i>	Assisted and artificia	l ventilation									
	Ad	lvanced airway ma	nagement									
	• F	Endo tracheal intubat	ions		D:-		- 1 4	41	1	1		
	• F	Kings IT Airway						the a		icea		
II	• I	Digital intubations		10	airway management techniques like using ET					г	1,2	
	• I	Laryngeal mask airw	ays and			_		c usi.	-			
	(	Combitube intubation	ns		tuo	J, 1XII	ığ Lı	. , 12141	171, 01	.с.		
	• F	Rapid sequence intub	ations									
	Su	rgical Airway			Evr	Join	como	meth	ods (	of		
III	• 5	Surgical and non-sur	gical airways	5	_			ical a			1,2	
	• 5	Special patient consid	leration		ulli	CICIII	surg	icai a	n way	, s.		
	Re	spiratory emergen	cies – I		Des	cribe	ahoi	ıt dif	ferent	+		
IV	• A	Airway problems ver	sus breathing	12							1,2	
	•	problems			103	maio	Ty CII	icigo	nergencies.			
		spiratory emergen						ıt dif		t		
V		Obstructive airway d		12		-	_	encie			1,2	
		Assessment and man	=					issess	ment	and	1,2	
	V	arious respiratory pr	oblems.		management.							
	,	arroas respiratory pr	Colonia.		management.							

	1. Suctioning Procedure 2. Endo tracheal Intubation 3. Digital Intubation 4. Rapid Sequence Intubation 5. Tracheotomy	30		1,2,3,4	
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T1: Nancy Caroline "Textbook of emergency care in the streets" 7th Edition

	CO PO Mapping							
SN	SN Course Outcome (CO)							
1	Describe anatomy and physiology of the airway and understand the basic airway adjuncts and functions	1,8						
2	Explain advanced airway management techniques and develop the skills necessary for their effective application.	1,3,4,5						
3	Classify surgical & non-surgical airways.	1,4,8						
4	Identify the symptoms of airway and breathing conditions.	1,8						
5	Demonstrate the assessment and management of various respiratory disorders.	2,3,4,5						

			SEMESTER -	- III																
Cours	e Title		Psy	ycholo	gy															
Cours	e code	24BEDM2103R	Total credits: 3	L	T	P	S	R	O/F	C										
			Total hours: 45T	3	0	0	0	0	0	3										
	quisite	Nil	Co-requisite				Ni													
Progr			f Science in Trauma l						agement											
Semester Fall / III semester of second year of the programme  1. Aims to provide students with a comprehensive understanding of human																				
		•	•	enensiv	ve t	ınderstar	iding o	f huma	ın											
	behaviour and mental processes.  2. Explore various psychological domain				20.00	ognitiva	daval	onman	tal social	and										
Cou	ırse	_				-		_		anu										
Obje	ctives		with critical thinking sl						, and act.											
			numan behaviour, enab						al											
		concepts to real-		8		to uppry	Pojul	010810												
C	01	•	nificance, history, scop	e and l	brai	nches of	psycho	ology.												
CO			of human behaviour a				1 3													
			nt stages of human gro				ent and	d the fa	actors											
CC	)3	influencing it.				1														
CC	24	Understand the cor	cept and types of moti	vation,	, en	notion, s	tress al	ong wi	th the											
	<i>)</i> 4	management of stre	ess and conflict.																	
CO	)5	Apply skills to asse	ess mental health and id	dentify	the	warning	g signs	of poo	r mental h	nealth.										
Unit-		Conte	nt	Conta	act	Learning Outcome			Loorning Ou			Looming Out		I coming O		Laguning		Learning Outcome		KL
No.				Hou	r	Learning Outcome				IXL										
		-	<del></del>			Introdu	ces the	know	ledge of											
_				5				•		1.0										
l			chology							1,2										
	_					branche	es of it.													
		1 ,																		
		-	modulation process in																	
	_	_	nodulation process in																	
			vous system neurons			Explair	of													
II			•	10		_		1,2												
			, g																	
		-	: Vision, Hearing,				-													
No.  Introduction to Psychology  Definition of psychology Scope of psychology Branch of psychology Biology of Behaviour  Body mind relationship modulation process in health and illness Brain and behaviour: nervous system, neurons  Explains the best of the content of the conte																				
	sensa	ation						Management  Management  mme f human  opmental, social, k, feel, and act. for the ological  ology.  If the factors  ong with the  g Outcome  knowledge of a evolution in and different  iology of mindset and all												
	Growt	h and Developmen	t																	
			_																	
			lescence, adulthood,			_														
III		lle age, old age)		15				_		1,2										
		dity and environmen	·			develop	oment o	of a per	rson.											
		environment in phys																		
		hological developme re v/s Nature contro																		
		ation and Emotion				Explair	ns the t	echnia	ues of											
		vation: meaning, co				keeping		_												
IV		ries, motives and bel		5		maintai				1,2										
			ponents, changes in			processes.														
<u> </u>			, , , , , , , , , , , , , , , , , , , ,	<u> </u>		processes.														

	emotions, theories, emotional adjustments, emotions in health and illness. Stress: stressors, cycle, effects, adaptation & coping and management.  • Conflicts and frustration, conflict resolution			
v	<ul> <li>Mental Hygiene and Mental Health</li> <li>Concepts of mental hygiene and mental health.</li> <li>Characteristics of mentally healthy</li> <li>person,</li> <li>Warning signs of poor mental health,</li> <li>Primitive and preventive mental health</li> <li>strategies and services</li> <li>Psychology of vulnerable individuals.</li> <li>Guidance counselling and rehabilitation</li> </ul>	10	Explain the warning sign of poor mental health ways of preventing it and characteristics of a healthy person.	1,2

T1: Jane Ogden "Health Psychology" 3rd Edition

T2: Amanpreet Kaur Jhand "Psychology" 1st Edition

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Understand the significance, history, scope and branches of psychology.	1,8					
2	Discuss the biology of human behaviour and sensation.	1,2,7					
3	Identify the different stages of human growth and development and the factors influencing it.	1,8					
4	Understand the concept and types of motivation, emotion, stress along with the management of stress and conflict.	7					
5	Apply skills to assess mental health and identify the warning signs of poor mental health.	2,3,7					

			SEMESTER	– III						
Course	e Title			maco	logy I					
Course	e code	24BEDM2104R	Total credits: 2	L	T	P	S	R	O/F	C
Pre-re		Nil	Total hours: 30T  Co-requisite	2	0	0	0 Nil	0	0	2
Progra			of Science in Trauma	 Emer	gency an	d Dis			ement	
Semo			Fall / III semester of se						- Sement	
Cou Objec		<ol> <li>Basic concepts of The student will be mechanisms of ac</li> <li>Being able to rep medicine.</li> <li>Being able to trans</li> </ol>	<ol> <li>Basic concepts of Pharmacology including Emergency Medicines and their properties.         The student will be able to identify a range of drugs used in medicine and discuss their mechanisms of action.     </li> <li>Being able to report the clinical applications, side effects and toxicities of drugs used in</li> </ol>							
CO	01	Develop concept of administration.	Pharmacology including	ng Em	ergency l	Medio	cines a	nd the	routes of	
CC	)3	Classify sedative ar	t drugs that affect the A	long w	ith their 1	nech	anism	of action		
CC			erent drugs used to treat pressing of IV fluids and the							
Unit-			ntent	en pre	Conta	ct			utcome	KL
No.	Conon	al Pharmacology			Hour	<u> </u>				
I	<ul><li>Intro</li><li>Rout</li><li>Phar</li><li>Phar</li><li>Factor</li></ul>	•		ıgs	7	p i	Explains the gene pharmacology including its mechanism of act		7	1,2
II	<ul><li>Gene</li><li>Chol</li><li>Adre</li></ul>	omic Nervous Systemal Considerations inergic and Anti –Conergic and Adreners and muscle relaxants	holinergic drugs gic blocking drugs		5	u a s	ised to utonoi ystem nechar		ge rvous	1,2
III	• Seda Benz • Anti-	pharmacology: tive — Hypnotic Dru zodiazepines epileptic drugs, narc	otic analgesics.		5	n c s	of some	nism of e drugs	biturates,	1,2
IV	<ul><li>Drug vaso</li><li>Antii</li><li>Drug block</li><li>Vaso</li><li>Antii</li></ul>	s used in heart failu dilators. hypertensive Drugs	t Disease – Nitrates, Be el blockers. agents mbolytic	,	10	ti c		-	_	1,2

V	Others:  • IV Fluids with different preparation.  • Anti-Diabetic drugs –Insulin, Steroids	5	Explains about some other drugs like anti diabetic drugs and preparation of drugs.	1,2	
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T1: Dr. K D Tripathi "Essentials of Medical Pharmacology"

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Develop concept of Pharmacology including Emergency Medicines and the routes of administration.	1,8							
2	Recognize different drugs that affect the Autonomic Nervous System.	1							
3	Classify sedative and antiepileptic drugs along with their mechanism of action.	1							
4	Understand the different drugs used to treat cardiovascular and respiratory conditions.	1							
5	Identify different types of IV fluids and their preparations as well as anti- diabetic drugs.	1,2,3,4							

SEMESTER – III												
Course Ti	tle	Wound Care a	and Sutur	e Tec	hniqu	ies						
G	1 24DED 1/2105D	Total credits	s: 4	L	T	P	S	R	O/F		С	
Course co	de   24BEDM2105R	Total hours: 30	T+60P	2	0	4	0	0	0		4	
Pre-requis	ite Nil	Co-requisit	te		II.		N	ſil		- 1		
Programn	ne Bachelor o	f Science in Trauma	ma Emergency and Disaster Management									
Semester	r Fa	all / III semester of s	f second year of the programme									
	•	1. To identify and classify different types of wounds.										
Course		2. To understanding the process of wound healing										
Objective		3. To develop proficiency in the principles, techniques, and materials involved in										
		suturing for effective wound closure and management.										
CO1		Understand the anatomy and physiology of the Integumentary system, and the various										
		factors that influence the healing process.										
CO2	-	ortance of assessing v	_				catio	n, as w	ell as			
		evaluate surrounding tissue to facilitate effective wound closure.										
CO3		oain management stra	itegies duri	ing su	turing	g to	ensu	re pati	ent co	mf	ort	
	and cooperation.											
CO4	Demonstrate comp	etency in various suti	ure techniq	ues ai	nd sel	lecti	on of	appro	priate			
005		1			1		1	CC		1		
CO5	Identify and manag	e complications asso		ı sutu	ring a	ind v	woun	d care	effect	.1V6	ely.	
Unit-No.	Conte	ent	Contact Hour		Lear	rnin	ıg Oı	ıtcom	e		KL	
	Introduction											
	<ul> <li>Anatomy and physiol</li> </ul>	Anatomy and physiology of the			Explains the anatomy and							
I	Integumentary system	6	physiology of wound and					1,2				
•	• Principle of wound he	U	stages of healing.						1,2			
	- Stages of wound heal											
	- Factors influencing w											
	Assessment and prep	aration for wound										
	closure			Illustrates the methods of								
II	• Initial assessment of		6	assessment of wound in different parts of the body.			1		1,2			
	• Importance of assessi	ng wound depth,	Ū				lv.		1,2			
	size and location			different parts of the body.				-).				
	Assessing surrounding	g tissue										
	<b>Patient Preparation:</b>											
	<ul> <li>Informed consent</li> </ul>											
	<ul> <li>Preparing the patient</li> </ul>	psychologically					_	edure				
III	for suturing		6	_	_	_	ation	for w	ould		1,2	
	• Local Anaesthesia teo	chniques		man	agem	ent.						
		<ul> <li>Understanding pain management during</li> </ul>										
	suturing											
	Suture technique and											
	• Suture materials and	Instrument										
	• Suture techniques:			Illustrates the technique		_						
IV	- Interrupted		10	suture including differen						1,2		
	- Continuous			equi	pmen	ıts u	sed f	or suti	ıture.			
	- Mattress											
	- Subcuticular											

	- Horizontal and Vertical suture			
	• Suture removal:			
	- Timing			
	- Proper Techniques			
	Complications in suturing and wound			
	care:			
	• Identification and management of			
	Infections		Describes the different	
$\mathbf{V}$	Potential complications of local	4	complications that may arise	1,2
	anaesthesia		during suturing.	
	Hemorrhage: Recognizing and			
	management of excessive bleeding			
	Allergic reaction to suture mate			

T1: Nancy Caroline "Textbook of emergency care in the streets" 7th Edition

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Understand the anatomy and physiology of the Integumentary system, and the various factors that influence the healing process.	1,3							
2	Recognize the importance of assessing wound depth, size, and location, as well as evaluate surrounding tissue to facilitate effective wound closure.	1,2,3,4,7							
3	Develop effective pain management strategies during suturing to ensure patient comfort and cooperation.	1,2,7							
4	Demonstrate competency in various suture techniques and selection of appropriate materials for wound closure.	1,2,4							
5	Identify and manage complications associated with suturing and wound care effectively.	2,3,4,8							

		SEMESTER -	· III						
Course Title		Fie	eld Vi	sit					
Course code	24BEDM2106R	Total credits: 1	S	R	O/F	С			
Course code	24BEDW12100K	Total hours: 1200	0	0	0	0	0	8	1
Pre-requisite	Nil	Co-requisite				N	il		
Programme	Bachelor of	f Science in Trauma I	Emerg	gency	and D	isaste	r Mana	agement	
Semester	Fall/ III semester of second year of the programme								
Course	1. To introduce the students to the basics of English grammar and their application.								
Objectives	2. To enhance communication skills through listening and speaking exercises.								
Objectives	3. To learn and understand the importance of pronunciation of words.								
CO1	Understand the the	oretical concepts and for	ounda	tional	knowl	edge r	elevant	t to the fie	ld
COI	during the visit.								
CO2	Comprehend the pr	ractical applications of	theore	etical o	concep	ts in re	eal-woi	rld setting	s.
CO3	Exposure to diverse	e situations to enhance	skills	in pat	ient m	anagei	ment ar	nd care.	
CO4	Evaluate the effects	veness of different app	roach	nes and	l meth	ods se	en duri	ng the fiel	d trip.
CO5	Prepare and deliver presentations effectively using visual aids and non-verbal								
COS	communication tec	hniques.							

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Understand the theoretical concepts and foundational knowledge relevant to the field during the visit.	1,6							
2	Comprehend the practical applications of theoretical concepts in real-world settings.	2,3,5							
3	Exposure to diverse situations to enhance skills in patient management and care.	2,3,5,8							
4	Evaluate the effectiveness of different approaches and methods seen during the field trip.	3,4,5,8							
5	Prepare and deliver presentations effectively using visual aids and non-verbal communication techniques.	2,3,5,8							

		SEMESTER -	– III								
Course Ti	tle	Basic Acc	limatiz	ing S	kills						
	1 24IIII C2101D	Total credits: 1	L	T	P	S	R	O/F	С		
Course co	de   24UULS2101R	Total hours: 30P	0	0	2	0	0	0	1		
Pre-requis	ite Nil	Co-requisite	,		•	N	il		•		
Programm	ne Bachelor o	Bachelor of Science in Trauma Emergency and Disaster Management									
Semeste		Fall / III semester of second year of the programme									
Course		1. To impart knowledge of the fundamentals of Hospitality industry and its applications.									
Objective	20	2. Students will be able to familiarize with the cooking equipment's & Utensils.									
-	3. Students will be	3. Students will be able to handle different modes of reservations.									
CO1		tudents will have basic knowledge of cooking methods. tudents will gain the knowledge of organizing & Cleaning of Rooms.									
CO2							oms.				
CO3		le to gain the travel ma			•		)	· '4' C	1		
CO4		le to acquire the know	leage o	i bası	c nous	enola	s amer	nities for c	lay-		
	to-day use.	op an understanding o	f parace	nal fir	nanoia1	mono	gaman	t and bud	ratina		
CO5	skills.	op an understanding o	i persoi	11a1 111	ianciai	mana	gemen	t and budg	getting		
			Contac	t							
Unit-No.	Conte	ent	Hour		Lea	arning	g Outc	ome	KL		
	Introduction to Accor	mmodation									
	Management	anagement Felephone handling technique			Explains the techniques of accommodation management.						
	• Telephone handling t										
I	•Organizing of Rooms	Organizing of Rooms.						1,2			
	<ul><li>Cleaning agents.</li></ul>	Cleaning agents.			accommodation management.						
	•Cleaning equipment's	Cleaning equipment's and uses.									
	•Bed making Process.										
	Fundamentals of Coo	_									
	<ul> <li>Definition of cookery</li> </ul>	–Aim &		In	Introduces the fundamentals			nantale			
II	Objectives of cooking	=	4		of cooking including effici			1,2			
	<ul> <li>Use of basic Cooking</li> </ul>	g equipment's	7		nd safe	_	_	CITICICII	1,2		
	<ul> <li>Personal Hygiene and</li> </ul>	d Safety			ia saro	., 11100	110000				
	• Use of Fire & Fuels										
	<b>Methods of Cooking</b>										
	• Different Cuts.			I11	ustrate	s diffe	erent m	ethods			
III	• Use of Herbs and Spi		3		cooki				1,2		
	<ul> <li>Basic Food and Beve</li> </ul>	-				6					
	• Regional food Habits										
	Forms & Format's										
	• C –form				_		llustrat				
IV	• Reservation form		4	various formats of writin			-	1,2			
	<ul> <li>Registration form</li> </ul>				forms like reservation, passport, etc.			1,	,-		
	<ul> <li>Passport Application</li> </ul>			pa							
	• Legal Rent Agreeme	nt									

T1: Arora K "Theory of cookery" 2011

T2: Bruce H. Axler, Carol A. Litrides "Food and Beverage Service" 2010, Vol-1

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Students will have basic knowledge of cooking methods.	7						
2	Students will gain the knowledge of organizing & Cleaning of Rooms.	6,7						
3	Students will be able to gain the travel management concept.	7						
4	Students will be able to acquire the knowledge of basic household's amenities for day- to-day use.	7						
5	Students will develop an understanding of personal financial management and budgeting skills.	7						

			SEMESTER -	III										
Cours	e Title		Execut		nglish	<u> </u>								
		24UDDD2101D	Total credits: 1	L	T	P	S	R	O/F	С				
Cours	se code	24UBPD2101R	Total hours: 30P	0	0	2	0	0	0	1				
Pre-re	quisite	Nil	Co-requisite				N	il		•				
	amme				gency and Disaster Management									
Sem	ester				l year of the programme									
Course Objectives		2. Enhance Gramm	<ol> <li>Develop Writing Skills: To help students write clear paragraphs and applications.</li> <li>Enhance Grammar: To teach correct preposition use and active/passive voice.</li> <li>Understand Non-Verbal Cues: To provide knowledge on body language types and</li> </ol>											
C	01		iency in writing structu	red p	aragrai	ohs an	d form	al app	lications.					
CO		•	epositions and convert			•				ce.				
CO		_	ret various types of bod											
CO			in, and summarize grow											
CO	<b>D5</b>	Apply writing, grar world contexts.	nmar, non-verbal comr	nunic	ation, a	and gr	oup di	scussio	on skills in	real-				
Unit- No.		Con	itent		Cont Hot		Lear	ning C	Outcome	KL				
I	Use of	Grammar Use of preposition, Tag Question, Idioms, Phrases and Clauses, Simple, Complex, Compound Sentences				Describe and explain about the preposition.								
II	and Clauses, Simple, Complex, Compound Sentences  Grammar  Active and Passive Voice, Direct and Indirect Speech				Describe, illustrate and explain about the active and passive voice and direct and indirect speech.									
Ш	The Ba	ag Skills asics of writing, avoidess, paragraph writing, resume, CV, Cove	ng, Precise writing, Le	Describe and appl writing sparagrap				ply the	e basic like	1,2				
IV	SWOT	anagement Skills Analysis, Self-Reg al hygiene	ulation-Goal Setting,		3		Descri about s manag	self	analyse skills.	1,2				
V	Langua What i Langua Command imand imand imand to Hap to Prov	age s Non-Verbal Commage, Elements of unication, types of be pact of body langua unication through bottic, Introduction to be	nunication and Body ody language, Importa ge, types of ody language, Introduct cinesics, Introduction age Do's and Don'ts,		3		explain verbal common of bod import impact langua	unicati y lang ance a t of boo age and	on, types uage, nd dy apply apply	1,2				

T1: Barrett, Grant "Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speaking" 2016

T2: McDowell, Gayle Laakmann "Cracking the Coding Interview" Indian Edition

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Demonstrate proficiency in writing structured paragraphs and formal applications.	7						
2	Learn the use of prepositions and convert sentences between active and passive voice.	7						
3	Identify and interpret various types of body language and their meanings.	7						
4	Initiate, participate in, and summarize group discussions effectively.	7						
5	Apply writing, grammar, non-verbal communication, and group discussion skills in real-world contexts.	7						

SEMESTER – III													
Course	Title		Basic I		Lite	racy							
Course	e code	24UCDL2101R	Total credits: 2	L	T	P	S		O/F	C			
			Total hours: 60P	0	0	4	0		0	2			
Pre-rec		Nil	Co-requisite			1.7	Nil						
Progra Seme			of Science in Trauma						gement				
Seme	ster		Fall / III semester of s						o and the	r			
Course Objectives		uses. 2. Students will be 3. Students will be for digital finance	<ol> <li>Students will be able to identify and analyze computer hardware, software and their uses.</li> <li>Students will be able to use MS-Office suite for various purposes.</li> <li>Students will be able to use the Internet efficiently for required information as well as for digital financial transactions.</li> </ol>										
CO			Computer Hardware, S					andling.					
CO			to solve basic informat					1 - 41-	11				
CO			et, social media and e-				cienti	y and eth	ically.				
CO		•	crimes on digital paymonality and use of cred		• •		net l	vanking (	and LIDI				
Unit-		Explore the function	manty and use of cred	it care	18, 461		ntact		rning				
No.			Content				our		come	KL			
2,00	Fund	amentals of Comp	outer Systems					0.23					
I	Differ Lab I  Iden Fund App  Dem iden com	Components of a Computer and their functions.  Different Types of Computers and their applications.  Lab Experiment:  • Identify the Components of a Computer and their Functions and different types of Computers and their Applications.  • Demonstrate the usage of various storage devices and identify various operating system file management commands					4	Explain the fundamental of computer systems.		1,2			
II	Office Creat Spread Lab I Der form Cre fam Wo Cre Des effe etc. Des difff etc. Cre Cre	e suite. Creating ding Presentations was desheets with MS-E Experiment: monstrate how a documented in MS Word at e casual application of the processor.  The action of the processor of the proce	cument to be prepared  cons for 3 days leave be ony using  ae using MS- Word.  with MS – Word.  ter Components using Design, Record  ter Components using S Transitions, Animatic	word. Creati and ecause differ	of		14	Describ function different of Micro Office I Excel, I Word, o	ns on nt tools cosoft like MS- MS-	1,2			

Ш	Introduction to Internet & Cyber World: Introduction to Computer Networks and Internet. World Wide Web, Websites and Web portals, Web browsing. Web Searching, Search engines, Introduction to Google Search Engine; How to search using Keywords, topics of Interest, etc. Creation and use of Email Accounts. Cyber Crimes.  Lab Experiments:  Creating a professional Google account and use various products of Google like drive, photos. Study of computer network and internet and  Demonstrate how to search information using keywords in different search engines.	6	Explain the importance and use of internet along with its adverse side.	1,2
IV	Introduction to social media: The Power of social media, Relevance of social media in present scenario. Creating accounts and using some popular social media portals and Apps like WhatsApp, Facebook, Twitter, Instagram, and LinkedIn. Social Media Etiquettes.  Lab Experiments:  Creating an account of some popular social media portals and Apps like LinkedIn, Facebook, Twitter and Instagram.  Creating an accounts of digital payment systems  like credit cards, debit cards, net banking	4	Explain the power of social media their relevance and adverse effects to over using it.	1,2
V	<ul> <li>Introduction to Digital Payment Systems.</li> <li>Creating accounts and using Digital Payment Systems like</li> <li>Credit Cards, Debit Cards, Net banking, UPI.</li> <li>Lab Experiments:</li> <li>Create online Google form and learn how to</li> <li>Give online test.</li> <li>Creating an account of Online Shopping sites like</li> <li>Amazon, flip kart, eBay etc. Understand the</li> <li>Journey of customer to buy and sell on online shopping sites.</li> </ul>	4	Illustrate the types of digital payment and their risks.	1,2

T1: Sinha Pradeep K. and Priti Sinha "Computer Fundamentals: Concepts Systems & Applications" 3rd Edition

T2: Goel A "Computer Fundamentals" 2010

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Understanding of Computer Hardware, Software and Computer handling.	2,7						
2	Apply MS-Office to solve basic information Management issues.	2,7						
3	Operate the Internet, social media and e-commerce sites efficiently and ethically.	2,7						
4	Analyse the cybercrimes on digital payments application.	2,7						
5	Explore the functionality and use of credit cards, debit cards, net banking, and UPI.	2,7						

			SEMESTER -	- III							
Course	Title		Extra- Currico	ular / Co	-Cu	rricu	lar				
Course	aada	24UBEC2101/	Total credits	: 1	L	T	P	S	R	O/F	C
Course	code	24UBCC2101	Total hours:	60S	0	0	0	4	0	0	1
Pre-req	uisite	Nil	Co-requisit	e				N	il		
Progra	mme		ence in Trauma l							ment	
Seme	ster		II semester of se								
Cou Objec		<ol> <li>To develop skills and in curricular activities.</li> <li>To learn about teamwo and competitions.</li> <li>To provide opportunition academic curriculum.</li> </ol> Explore different activities	ork and leadership	abilities owth and	by e	engagi	ing st	uden	ts in c	lub-le	d events
CO	1	drama, and literacy.	es organized by va	irious ciu	108, 8	sucii a	is uai	ice, ii	iusic,	photo	grapny,
СО		Develop confidence to pa competitions, according to Apply knowledge and ski	o individual inter	ests.						•	
CO	3	competitions.						, ~	,		
CO	4	Explore new platform to l	learn from invited	l experts i	in th	eir re	spect	ive fi	elds.		
CO	5	Evaluate overall growth a	longside academi	ic develop	pmei	nt.					
Unit- No.		Content		Contact Hour	t	Le	arniı	ıg Oı	itcom	ie	KL
I	These social developments of the regular compositions of the regular compositions of the representations of the representations of the regular compositions of the representations of the region of the representations of the region of the	de the regular curriculum is learner's interest.  e activities are aimed to deal and soft skills and promode lopment of the learners.  Fing in mind the 360 degree and activities headed under sorter.  Students are encouraged to lar club activities, workshope the interest and national level compared to the club activities are promoted in the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited and national level compared to the club activities are invited to the club activities and national level activities are invited to the club activities and national level activities are invited to the club activities and national level activities are invited to the club activities and national level activities are invited to the club activities and national level activities are invited to the club activities and national level activities are invited to the club activities and	evelop the ote a holistic re learning engaged in er different graphy, drama, o participate in ops, est and hobbies. The are trained requirements are trained reduced to conduct on the sand afform to learn	60	e s to c v	tuder o part lub a vorks	n and ticipa ctivit hops, their	l apple encorte in the interval in the interva	ate y The ourage regula petition	ed ar ons	1,2,3,4

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Explore different activities organized by various clubs, such as dance, music, photography, drama, and literacy.	7						
2	Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests.	7						
3	Apply knowledge and skills to represent ADTU in inter-university, state, and national level competitions.	7						
4	Explore new platform to learn from invited experts in their respective fields.	7						
5	Evaluate overall growth alongside academic development.	7						

		SEMEST	ER – IV								
Course Ti	tle Car	diovascular & Ne	urological	Emerg	gency	Ma	nage	ment	t		
Course oo	do 24DEDM2201D	Total cred	its: 5	L	T	P	S	R	O/F	С	
Course co	de   24BEDM2201R	Total hours: 4	5T+60P	3	0	4	0	0	0	5	
Pre-requis		Co-requi					N				
Programm		Bachelor of Science in Trauma Emergency and Disaster Management									
Semeste		'all / IV semester o									
	-	Develop skills to assess patients and identify cardiovascular and neurological									
Course	· ·	emergencies.									
Objective	2. To master the tec	•	0 0		and se	izur	es, in	cludi	ng		
	thrombolytic the	rapy and airway m	-		.1 4	-1-					
001	3. To gain practical						-1-4-		-1		
CO1	Develop fundamen										
CO2	Demonstrate skills				•		iac e	merg	encies	•	
CO3	Apply acquired ski	_		•		·.					
CO4	Develop comprehe					rio -	mari	orci	va i==-1	udina	
CO5	Illustrate the ability seizures, strokes, ar			y or net	ur010§	gic e	merg	enc16	es, incl	uumg	
	seizures, suokes, ai	ind other conditions	Contact								
Unit-No.	Conte	nt	Hour	1	Learn	ing	Outo	come		KL	
				Discu	ıss ab	out t	he ar	naton	nical		
_	Cardiovascular Syste	ardiovascular System			structures and physiological						
I	• Review of anatomy		3	functi		_		_		1,2	
	·			syster	m.						
	Cardiovascular Syste										
	Assessment and man	Assessment and management of									
	<ul> <li>Coronary artery dise</li> </ul>	Coronary artery disease and angina			ain ab	out o	differ	ent			
	<ul> <li>Acute myocardial in</li> </ul>	fract		diseas	ses rel	lated	l to				
II	• Congestive heart fail	lure	15	cardio	ovasci	ular	syste	m		1,2	
	• Cardiac tamponade	-			ding it	ts as	sessr	nent	and		
	• Cardiogenic shock			mana	geme	nt.					
	Aortic aneurysm	Aortic aneurysm									
	Hypertensive emerge	encies									
	ECG										
	<ul> <li>ECG and arrhythmia</li> </ul>	ıs									
	• 12 lead ECGs										
	Basic and advanced	cardiac life		Illusti							
	support			place			_				
III	<ul> <li>Cardio pulmonary re</li> </ul>	esuscitation	15	techn	_			_	BLS	1,2	
	(CPR)			and A			usin	g			
		Defibrillation			rillato	r.					
		Cardio version									
	• Transcutaneous card										
	• Review of pharmaco	ology		<b>.</b>							
	Nervous system –			Discu					-	1.0	
IV	• Review of anatomy	and physiology	4	nervous system.					1,2		
<b>T</b> 7			O						1.2		
V	Neurological emerge	ncies	8	Discu	iss ab	out	umer	ent		1,2	

	Assessment and management of		neurological emergencies and	
	• Stroke		there identification including	
	• TIA		immediate management.	
	Altered Mental Status			
	• Coma, etc.			
	4.ECG lead placement			
	5.ECG rhythm determination			
Practical	6.Performing CPR	30		1 2 2 4
Fractical	7.Use of defibrillator	30		1,2,3,4
	8. Identification and management of			
	stroke.			

T1: Nancy Caroline "Textbook of emergency care in the Streets" 7th Edition

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Develop fundamental knowledge of the human heart and the circulatory system.	1,8					
2	Demonstrate skills and techniques to assess and manage any cardiac emergencies.	1,2,3,4,5					
3	Apply acquired skills to perform ECG and identify anomalies.	2,3,4,5					
4	Develop comprehensive knowledge on the nervous system.	1,8					
5	Illustrate the ability to evaluate and treat a variety of neurologic emergencies, including seizures, strokes, and other conditions.	2,3,7					

		SEMESTE	R – IV								
Course Ti	Course Title Mechanical Ventilation										
Course co	de 24BEDM2202R	Total credits:	L	L	T	P	S	R	O/F	C	
		Total hours: 30T		2	0	2	0	0	0	3	
Pre-requis		Co-requisite					Nil				
Programm		f Science in Trauma		•					nent		
Semeste		all / IV semester of		•							
Course		1. To understand the principles and mechanics of mechanical of ventilation.  2. To learn effectively manage ventilator setting to entimise exygenation.									
Objective		2. To learn effectively manage ventilator setting to optimise oxygenation.  3. To develop skills in assessing and responding to changes inpatient condition and									
Objective	ventilator parame	-	ponding	g to ci	langes	mpati	ciit co.	iiditio	ii aiia		
CO1	•	ledge on basic conce	pt of ve	ntilati	ion.						
		to initiate mechanica	_			ess for	r any 1	espira	atory		
CO2	failure.						•	•	•		
CO3	Apply skills on usi	ng various modes of	ventilat	ion ar	nd the t	iming	s to be	initia	ated wi	th.	
CO4	Demonstrate skills	on monitoring of pat	tient du	ring ve	entilati	on and	l ever	day d	checkli	st.	
CO5		on various weaning c	riteria a	and ma	anagem	ent of	comp	licati	ons du	ring	
	ventilation.		1								
Unit-No.	Conte	ent Contact Learning Outo					Learning Outcome				
	D 4 -		Hou	r							
	Basic concept:	Mechanics of ventilation			Explain	the basic concepts of					
I	<ul><li>Work of breathing</li></ul>				mechanical ventilation and						
	· ·	Pressure – Peak, Plateau			physiology of breathing.						
	Initiation of ventilation										
		Clinical conditions leading to			Discuss the condition where						
	mechanical ventilation	•			ventilator support is needed and check all essential						
II	<ul> <li>Ventilatory failure,</li> </ul>		8								
	• oxygenation failure	-			criteria's of mechanical						
	Strategies to improve	Strategies to improve ventilation and			ventilation.						
	oxygenation										
	Operating modes of v	entilation:									
	<ul> <li>Modes of ventilation</li> </ul>										
	<ul> <li>Invasive modes- con</li> </ul>	*									
	SIMV, APRV, Press				llustrat						
III	Non invasive modes	- CPAP & BiPAP	15		entilati			-	isive	1,2	
	Ventilator settings			a	ınd non	-ınvas	ave m	odes.			
		Timings: inspiratory, expiratory,									
		inspiratory hold PEEP, FiO2									
	<ul><li>Alarm settings</li><li>Monitoring during ver</li></ul>	ontilation:		_							
	<ul> <li>Vital signs, chest ins</li> </ul>			E	Explain	facto	rs that	are			
	& auscultation	poetion			needed				-		
IV	<ul> <li>Arterial blood gases</li> </ul>	(ARG) Oxygen	8		nechan				nd	1,2	
	and end tidal	(IDO), ONY ECII			lso che	_	acid-l	oase			
	• carbon dioxide mon	toring		b	alance	•					
L		U	ı								

	Fluid electrolyte balance			
	Acid base balance			
	Weaning:			
	• Modes, weaning criteria's		Discuss about the weaning	
V	Care of ventilator	7	criteria's, maintaining sterility	1,2
	• Tubing and sterility complications		and care of ventilator.	
	during mechanical ventilation.			

T1: Nancy Caroline's Emergency Care in the Streets, Andrew N. Pollak, MD, FAAOS, 7th Edition (1970)

T2: Essential of Mechanical Ventilation, DEAN R.HESS ROBERT M.KACMAREK 3rd Edition

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Demonstrate knowledge on basic concept of ventilation.	1,8						
2	Apply Knowledge to initiate mechanical ventilation and assess for any respiratory failure.	1,2,3,4						
3	Apply skills on using various modes of ventilation and the timings to be initiated with.	3,4						
4	Demonstrate skills on monitoring of patient during ventilation and everyday checklist.	2,3						
5	Apply knowledge on various weaning criteria and management of complications during ventilation.	1,2,3						

	SEMESTER – IV									
Cours	e Title		Medical Equipm	ent and		rminol	ogies			
Cours	e code	24BEDM2203R	Total credits: 2	L	T	P	S	R	O/F	C
			Total hours: 30T	2	0	0	0	0	0	2
Pre-requisite Nil Co-requisite Nil										
	Programme Bachelor of Science in Trauma Emergency and Disaster Management									
Semo	ester		all / IV semester of se						1	
		management.	working principles of n	nedical e	equi	pment	s, then	r usage	and	
Cou	ırco	_	ed to medical terminol	ogies an	nd m	ndersta	nds the	nrefi	ves and	
	ctives	_	ies them to the body s	_	ia ai	nacista	iids tiiv	o, prem	Acs, and	
Object	CCIVCS		selecting appropriate	-	eau	iipment	based	on cli	nical need	s.
		_	aints, regulatory requi		_	_				
CO	01		tand medical terminol							
CC	)2	Comprehend variou	us diseases and illnesse	es cause	d by	bacter	ia and	viruse	S.	
CO	13	Understand vital sign	gns and the techniques	of meas	sure	ment in	cludir	g basic	c examina	tion
	<i>,</i>	position.								
CO	)4		ificance of PPE as wel	l as the	esse	ential ec	quipme	ent and	adjuncts f	or
		airways.					11.0			
CC	)5	Classify the differe	nt equipment used in c			rauma	life su	pport.		ı
Unit- No.		Conter	nt	Conta Hour		Le	earnin	come	KL	
	Introd	uction				Discuss the terminologies			ologies of	
I	• Intro	roduction to Medical equipment and				medica	s, terms	1,2		
1	Term	inology	U	and also different types of					1,2	
		s of medical equipm	ent			equipn	nent.			
		and disease				Explain about different types of diseases caused by				
II		ases caused by virus	8							
		communicable disea			virus, bacteria and non- communicable diseases.					
		ases caused by bacter	ria			comm	unicab	ases.		
	_	ostic procedures ribe the four vital sig	rns recorded for			Illustra	ate abo	ut type	es of	
		patients	giis recorded for			diagno	stic pi	ocedui	res	
III		ify and describe the	hasic examination	8		includ	-	_		1,2
	positi		ousic examination			signs,		cumen	itation	
	•		jection and position			proces	S.			
			irway management			Explai	n abou	ıt perso	onal	
IV	equipr	nents				protect	tive eq	uipme	nts uses,	1.2
1 V	• Glov	es, Mask, Goggle, A	pron, etc	6		and ide	entific	ation o	f airway	1,2
		,NPA, Suction mach				manag	ement	equip	ments.	
		ac life support and	trauma							
	_	pport equipments				Discus	s abou	it the		
<b>T</b> 7		Machine, Cardiac N		_					cardiac	1.2
V		neter, Sphygmomano	-	8					o trauma	1,2
		orillator- AED, Splin	Spine Board, Scoop			life su	pport f	or a pa	tient.	
		lage-Cervical Collar. cher, KED etc	, spine board, scoop							
	Such	chor, KED Cit								

T1: Nancy Caroline's Emergency Care in the Streets, Andrew N. Pollak, MD, FAAOS, 7th Edition (1970)

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Identify and understand medical terminologies and equipment.	1,4						
2	Comprehend various diseases and illnesses caused by bacteria and viruses.	1,8						
3	Understand vital signs and the techniques of measurement including basic examination position.	1,2,3,4						
4	Recognize the significance of PPE as well as the essential equipment and adjuncts for airways.	2,3,4						
5	Classify the different equipment used in cardiac and trauma life support.	2,3,4						

		SEMESTE	R – IV								
Course Ti	tle	Pha	armacolo	gy II							
Course co	de 24BEDM2204R	Total credits: 3	L	T	P	S	R	O/F		C	
		Total hours: 45T	3	0	0	0	0	0		3	
Pre-requis		Co-requisite				N					
Programm		of Science in Traum						agement	t		
Semester		Fall / IV semester of									
		1. To understand the basic concepts of Pharmacology including Emergency Medicines									
C	and their Proper		1: .:	1 .	1'	41		:	4	•	
Course	*	nge of drugs used in									
Objective		I be able to report the edicine. The student							CILI	es oi	
	~	clinical decision-mak		oie to	uansi	ate pii	umaco	nogicai			
		undamentals of how		ne in	nact t	ne ner	VOIIE EX	zstem an	1 a1	ter	
CO1	behaviour.	undamentars of now	incurcatio	1115 111	ipact ti	ic nei	vous sy	stem am	a ai	ici	
CO2		sic principles of anxi	ety disoro	lers a	nd the	ir treat	ment v	vith anxi	olv	tics	
		ensive knowledge on							-		
CO3	with their mechani	_	tire crass.	iiioai		our uro	v asc are	ar arago .		*B	
CO4		tensive drugs as well	as with t	heir r	nechar	ism of	faction	1.			
CO5		drugs used to treat v									
TI '4 NI	· · ·	<del>-</del>	Contac							TZT	
Unit-No.	Cont	ent	Hour		g Outc	ome		KL			
	Neuro pharmacology	Neuro pharmacology: Sedative-Hypnotic Drugs:		D	iscuss	about	mecha	nism of			
I	Sedative-Hypnotic 1			ac	action of neuro-pharmacologic					1,2	
1	Barbiturates, Benzo	Barbiturates, Benzodiazepines			drugs like sedative- hypnotic						
	, ,	Anti-anxiety Drugs: Benzodiazepines			drugs and anti-anxiety drugs.						
	Other Anxiolytics	Antiepileptic drugs, Narcotic			Discuss about anxiolytic drugs					1,2	
II					its function and mechanism of						
	analgesics				tion.						
	-	Cardiovascular pharmacology:  Drugs used in the treatment of Heart				_					
***					Explain about the drugs used					1.0	
III	Failure (Digitalis, D	5		for cardiovascular treatment or					1,2		
	• ACE inhibitors	Vasodilators)			immediate management.						
	Antihypertensive dr	uac.									
	• Calcium channel Bl	o .		D	escribe	about					
IV	Carcium channel Bi     Central acting Alpha		6	an	tihype	rtensiv	e drug	gs its		1,2	
1 1 1	Peripheral Alpha Ai	-	U	ty	pes and	d mecl	nanism	of		1,2	
	• Direct acting vasodi	•		ac	tion.						
	Drugs used in the tro										
	vascular disease and										
	Vascular Disease	tissuc ischemia									
	• Lipid lowering agen				znlain :	differ	nt drug	gs used in	n		
$\mathbf{v}$	Antithrombotic		9		_			-	.1	1,2	
•	• Anticoagulants and	Thrombolytics		treatment of vascular disease and tissue ischemia.						1,4	
	Ischemic Heart Dise	· ·									
	Nitrates, Beta Block										
	channel Blockers	ers, Carciulli									
	Chamici Diockers										

T1: Dr. KD Tripathi "Essentials of Medical Pharmacology"

	CO PO Mapping						
SN	Course Outcome (CO)	<b>Mapped Program Outcome</b>					
1	Comprehend the fundamentals of how medications impact the nervous system and alter behaviour.	1					
2	Understand the basic principles of anxiety disorders and their treatment with anxiolytics	1,2					
3	Develop comprehensive knowledge on the classification of cardiovascular drugs along with their mechanism of action.	1,2					
4	Classify antihypertensive drugs as well as with their mechanism of action.	1,2					
5	Identify classes of drugs used to treat vascular disease and tissue ischemia.	1,2					

Course Title Introduction To Ambulance Operation System	
* *	l
Course code 24BEDM2205R Total credits: 3 L T P S	R O/F C
Total hours: 45T 3 0 0 0	0 0 3
Pre-requisite Nil Co-requisite Nil	
Programme Bachelor of Science in Trauma Emergency and Disaster M	
Semester Fall / IV semester of second year of the program	
1. To identify and properly use the equipment and supplies found in a	
Course 2. To understand the maintenance and restocking procedures for amb	ulance equipment
Objectives and supplies.	
3. To implement protocols for patient care during transport, including	monitoring vital
signs and providing necessary medical interventions.	
CO1 Develop fundamental knowledge on the ambulance and its developm	
Understand the principles and guidelines of ground ambulance mana	gement of the
different barriers.	
CO3 Describe the evaluation and management of pain in patients and get a	equainted with the
different drug interventions.	
CO4 Classify the different types of air ambulance and its operation.	1. 1 1 1 1 1
CO5 Apply knowledge on triage for priorities of patient transportation with consideration.	n legal and ethical
Unit- Consideration.	
No. Content Contact Hour Learning C	outcome KL
Introduction to ambulance Operation Explain the history	ry and
• History and Development development of a	*
• BLS and ACLS Ambulances – operation, roles a	
I Responsibilities and roles 10 responsibilities, u	
Ambulance on board Equipments     different equipments	
Mitigating Hazards throughout the  reducing hazards	
operation operation.	
Ground Ambulance	
• Advantages Defines about gro	
Disadvantages ambulance system	1 1 7
• Inspection Tasks before Operation	vantage and
Cleaning and Maintenance of Ambulance     maintenance.	
Air Medical Ambulance	
Rotor Wing- Advantages and	
Disadvantages Describes the sys	tem of air
• Fixed Wing- Advantages and ambulance its adv	vantages and
Disadvantages  10  disadvantages, m	aintaining 1,2
• Establishing a landing Zone safety landing zo	nes, etc.
Landing Zone safety and patient transfer	
Special considerations	
Defensive Driving Principles	
• Pilot's characteristics	Animin a dina
IV • Safety driving practices 15 Illustrates all the	112
• Emergency vehicle control for safety driving	protocois.
1	l
Laws and Regulation	

Assessment and Triage	transport decisions,
Determining transport destination	maintaining time and
Transport mode and timing	considering legal and ethical
Legal and Ethical consideration in transport	values.

T1: Nancy Caroline's Emergency Care in the Streets, Andrew N. Pollak, MD, FAAOS, 7th Edition (1970).

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Develop fundamental knowledge on the ambulance and its development.	1,2,4					
2	Understand the principles and guidelines of ground ambulance management of the different barriers.	1,2,8					
3	Describe the evaluation and management of pain in patients and get acquainted with the different drug interventions.	1,2					
4	Classify the different types of air ambulance and its operation.	2,4					
5	Apply knowledge on triage for priorities of patient transportation with legal and ethical consideration.	1,2,3,4					

			SEMESTER	R – IV							
Cours	e Title		Introduction to	Resear	ch M	ethodo	ology				
Cours	e code	24BEDM2206R	Total credits: 3	L	T	P	S	R	O/F	C	
			Total hours: 45T	3	0	0	0	0	0	3	
	quisite	Nil	Co-requisite				Ni				
	amme		f Science in Trauma						agement		
Sem	ester		all / IV semester of s								
Course Objectives		<ol> <li>To gain a basic understanding of key concepts and principles in research, including the scientific method, hypothesis testing, and variables, sampling, and data analysis.</li> <li>Familiarize with ethical principles and guidelines governing research involving human subjects, animals, and sensitive data.</li> <li>Acquire knowledge of various research designs, methodologies, and data collection techniques.</li> </ol>									
C	01	_	tal knowledge on the	princip	les an	d type:	s of res	search.			
CO	)2	_	nsive understanding								
CO	)3	Acquire basic know	wledge on the signific	cance an	d con	duction	n of lit	erature	review.		
CO	)4	Classify various ty	pes of data collection	n method	ls and	techni	iques.				
CO	<b>D</b> 5	Understand the diff	ferent types of resear	ch ethics	salon	g with	plagia	rism.			
Unit- No.		Content	t	Contac Hour		Le	arning	Outco	ome	KL	
110.	Introd	uction to research		Hour							
I	<ul><li>Impo</li><li>Type</li><li>quan</li><li>Rese</li></ul>	<ul> <li>Definition of research</li> <li>Importance and purpose of research</li> <li>Types of research (basic, applied, quantitative, qualitative, etc.)</li> <li>Research process</li> </ul>			Describes the knowled research, its important types.				_	1,2	
П	Research design  • Formulating research questions and • hypotheses • Variables and operationalization Experimental, correlation, and descriptive research designs • Choosing an appropriate research design			10	de	xplains esign, v esign, v	g creative	1,2			
Ш	<ul><li>Cond</li><li>Evaluation</li><li>Ident</li><li>Impo</li></ul>	ifying research gaps ortance of literature r	ing research	5	re w	escribe eviewir riting, resear		1,2			
IV	<ul><li>Surve</li><li>Inter</li><li>Obse</li><li>Expe</li><li>Case</li><li>Seco</li><li>Samp</li></ul>	ervations eriments studies ndary data analysis pling techniques		Illustrate the methods of collection and use it efficiently.					of data	1,2	
V		rch ethics cal considerations in	research	15		Describes the ethics related to research and keeping in mind					

Informed consent	about the plagiarism.
Confidentiality and anonymity	
• Institutional review boards (IRBs)	
Avoiding plagiarism and other forms of	
academic misconduct	

T1: Vivek Singh "Research methodology"

T2: Kitab Mahal "Fundamental of research methodology"

#### **REFERENCE BOOKS:**

R1: Nichols Walliman "Research methods the basic"

R2: C.R. Kothari "Research methodology methods and techniques"

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Develop fundamental knowledge on the principles and types of research.	6					
2	Develop comprehensive understanding on research design.	6					
3	Acquire basic knowledge on the significance and conduction of literature review.	6					
4	Classify various types of data collection methods and techniques.	6					
5	Understand the different types of research ethics along with plagiarism.	6					

		SEMESTI	ER – IV							
Course Tit	ele	Basic	Life Sav	ing Sk	ills					
Course coo	de 24UULS2201R	Total credits: 1	1 L	T	P	S	R	O/F		C
Course co	1C 2400L32201K	Total hours: 30	P 0	0	2	0	0	0		1
Pre-requisi		Co-requisite				Ni				
Programm		f Science in Traun						gement		
Semester Fall / IV semester of second year of the programme										
		1.To learn and demonstrate essential Basic Life Support (BLS) techniques for assisting in								
		medical emergencies before professional help arrives.								
Course		munication, teamwo		onflict	resolu	tion sk	ills to	improve		
Objective		fessional interaction								
		ne Triage system, re	-				-	nd classify	7	
		l emergencies to pri	_				•			
CO1		ledge and skill to po	erform Cl	PR use	an AE	D, and	l respo	nd to chol	cin	g in
	adults and children									
CO2	_	nificance of commu								
CO3		and skill about pre-l	hospital c	are and	d mana	gemen	t of tra	uma		
	emergencies.									
CO4		nciples and purpose					thcare	settings.		
CO5	Identify and manag	ge common medical			ditions	S				
Unit-No.	Conte	Content				arning	Outco	ome	l	KL
			Hour							
	Basic Life Support (	·								
	• Introduction of BLS		In	troduc	tion ah	out bas	sic life			
	<ul> <li>Chain of survival</li> </ul>	5				the cha				
I	• ABCs Assessment						essment		1,2	
	CPR and Ventilation			techniques.						
	• AED				1					
		Choking for adult and children								
	Soft skills									
	<ul> <li>Introduction</li> </ul>				Illustrates different					
II	Communications Sk	tills	4		communication skills, situational awareness including teamwork.					1,2
	<ul> <li>Situational Skills</li> </ul>		-							-,-
	• Team Work			te						
	- Other Soft Skills									
	Trauma emergencies	5								
	<ul> <li>Introduction</li> </ul>									
	• Priorities of Initial a	pproach in pre-								
	hospital care									
	a) Scene safety									
	b) Primary assessmen	t			_		differe			
III	c) Bleeding control		10			_	ncies a			1,2
	d) Helmet removal						naging	trauma		- ,-
	e) Care of amputated			en	nergen	cies.				
	f) Extrication of victing	ns and safe								
	transfer									
	g) Cervical spine stab									
	h) Cervical collar app									
	- Splinting of broken	Limbs								

IV	<ul> <li>Triage system</li> <li>Introduction</li> <li>Flow chart approach of Triage</li> <li>Triage of Multiple Casualties in Pre-Hospital setting</li> <li>Triage of Single casualty</li> </ul>	5	Illustrates the triage system and explains about multiple causality operations.	1,2
V	<ul> <li>Medical emergencies</li> <li>Introduction</li> <li>Victim centred approach in medical emergency</li> <li>Management of:- <ul> <li>a) seizures</li> <li>b) heart attack</li> <li>c) asthma</li> <li>d) diabetic emergencies</li> <li>e) emergency childbirth</li> <li>f) stroke recovery position</li> </ul> </li> </ul>	6	Describes different types of medical emergencies and its management.	1,2

T1: Nancy Caroline's Emergency Care in the streets Seventh edition by Jones and Bartlett

T2: First Aid book by LC Gupta

T3: Advance Cardiovascular life support and Basic life support provider manual @ American Heart Association (AHA).

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Demonstrate knowledge and skill to perform CPR use an AED, and respond to choking in adults and children.	2,3,4					
2	Understand the significance of communication and teamwork in various situations.	2,5,7					
3	Apply knowledge and skill about pre-hospital care and management of trauma emergencies.	2					
4	Understand the principles and purpose of the Triage system in healthcare settings.	2,3,4,7					
5	Identify and manage common medical emergency conditions.	2					

SEMESTER – IV													
Course	Title		Enhanced		1	1	I	1	1				
Course	code	24UBPD2201R	Total credits: 1	L	T	P	S	R	O/F	C			
D	••4	NI\$1	Total hours: 30P	0	0	2	0	0	1				
Pre-req		Nil	Co-requisite	E or		l Diag	Nil						
Progra Seme			of Science in Trauma Fall / IV semester of s		-				gement				
Seille	ster		s the essential element						e to over	nomo			
Cour Objec		the fear of speak 2. To enhance stude speech. 3. To guide student professional resu	ing in public. ents' ability to effective es through the process of me.	ely uso	e non-verb	al cues	s whe	n deliv	vering a po				
CO	1	Identify and effect associated fears.	ively utilize key eleme	ents of	public spe	aking	while	overc	oming				
CO	)2		pility to use non-verbal	1 cues	to enhance	their	nublio	e speed	ches.				
CO			it a polished, professio										
CO			ent interview types, inc										
CO	5		ommon interview quest		_					thics.			
Unit-		Cox	ntent		Contact	I o	arnii	<b>να Ου</b>	tcome	KL			
No.		Col	ntent		Hour					KL			
Presentation Skills  • Introduction  • Essential characteristics  • Preparation of a good present the second				on	3	Write a technical document that introduct the principles of pipes and cisterns, while explaining the concept clearly and illustrating application through solving different types questions.			troduces pipes le oncept rating its	1,2			
п	<ul><li>Fea</li><li>Und Spe</li><li>Con</li><li>Phy</li><li>Tip</li><li>Pro</li><li>Del</li></ul>	eaking infidence and Controvsiology and Stress- s for Presentations a s for Using Visual A cess for Preparing a ivering Presentation	ercoming Fear of Public ol Control/Process and Public Speaking, Aids in Presentations, and Creating Presentati	ons	3	Explain the im of conducting analysis for pedevelopment a SMART goals the significant personal hygie professional arsettings.			SWOT onal I setting as well as of e in	1,2			
Ш	Writ Prep • Pra • Cre	ing cover letter &I aration, submission	n & screening of Resu ver letter screening ses	ume	3	Explain various strategies for de vocabulary, included the use of phrase and idioms in conversation.				1,2			
IV		ership & Managen ncepts of Leadership			3	Explain common							

	<ul> <li>Leadership Styles</li> <li>Manager VS Leader</li> <li>How to be an Effective Leader</li> <li>Mock/Practice Session</li> </ul>		effective answering strategies, as well as the importance of dress code ethics during interviews.	
V	<ul> <li>Interview Skills &amp; Dress code Ethics</li> <li>Types of interview-telephonic, virtual &amp; face to face</li> <li>Online interview, personal interview</li> <li>Panel interview,</li> <li>Group interview,</li> <li>JAM session,</li> <li>Types of interview questions traditional/common</li> </ul>	3	Identify common grammar errors related to word stress and syllable division.	1,2

T1: Barrett, Grant "Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speak" 2016

T2: McDowell, Gayle Laakmann "Cracking the Coding Interview" Indian Edition

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Identify and effectively utilize key elements of public speaking while overcoming associated fears.	6					
2	Demonstrate the ability to use non-verbal cues to enhance their public speeches.	6					
3	Produce and submit a polished, professional resume suitable for job applications.	6					
4	Understand different interview types, including telephonic, virtual, and face-to-face.	6					
5	Learn to answer common interview questions and adhere to appropriate dress code ethics.	6					

SEMESTER – IV  Course Title Personal Financial Planning										
Course Tit	le	Personal F	inancial Pl	anniı	ng					
Course coo	le 24UUFL2201R	Total credits: 1	L	T	P	S	R	O/F	C	
Course co	16 2400FL220TK	Total hours: 30P	0	0	2	0	0	0	1	
Pre-requisi		Co-requisite				Nil				
Programn		of Science in Trauma						ement		
Semester		Fall / IV semester of se								
		1.To create awareness among students about the need for possessing financial literacy								
Course	education									
Objective		money as a working ass								
	_	y to make better financi			0.01					
CO1		d be able to understand	_					-	Į.	
		plans and budgets and pl							. ,	
CO2		d be able to understand	the need an	d var	10US I	kind o	t bank	ing institu	utions	
	instrument and the		• ,	· ·			•	. 1		
CO3		l be able to describe the	importance	or in	ısuran	ce ser	vices a	as social		
CO4	security measures.			ا عاماء		- CC 4	1			
CO4 CO5	I .	be able to manage the								
Unit-	The students woul	d be able to manage the	Contact		iigita	HIIAIK	ei.			
No.	Co	ntent	Hour		<b>Learning Outcome</b>			come	KL	
110.	Presentation Skills		11041							
	• Introduction		11	Illustrates the techniques to						
I	• Essential character	6		improve presentation			-	1,2		
_	presentation			skills.				1,2		
	• Preparation of a go			MILLIO.						
	Public Skills	you presentation								
	• Fear of Public Spear	akino								
	-	Overcoming Fear of								
	Public Speaking	overcoming rear or								
	• Confidence and Co	ontrol								
	<ul> <li>Physiology and Str</li> </ul>				•			iques of		
	• Tips for Presentation				_	-		fidence		
II	Speaking,	ons and I done	6				_	e fear of	1,2	
	• Tips for Using Vis	ual Aids in				speak				
	-	cess for Preparing and		V	isual	aids, p	ractic	ıng.		
	Creating Presentati									
	• Delivering Present									
	• Doubt Clearing and	•								
	Points	•								
	Practical session on	Resume,								
	Curriculum Vitae,	Writing cover letter								
	&LinkedIn Profile	Preparation,		Il	lustra	ites the	e meth	ods of		
TTT	submission & scree	ning of Resume		W	Illustrates the methods of writing resume, CV,				1.2	
III	• Practical session of	n cover letter	6	p	resen	tation	by sev	veral	1,2	
	screening session			p	ractic	e sess	ons.			
	• Creating profile in	LinkedIn								
	• How to utilize it									
	• Creating profile in	LinkedIn			practice session					

IV	<ul> <li>Leadership &amp; Management Skills</li> <li>Concepts of Leadership</li> <li>Leadership Styles</li> <li>Manager VS Leader</li> <li>How to be an Effective Leader</li> </ul>	6	Explains the concept of leadership and self development to become an effective leader.	1,2
V	<ul> <li>Mock/Practice Session</li> <li>Interview Skills &amp; Dress code Ethics</li> <li>Types of interview-telephonic, virtual &amp; face to face</li> <li>Online interview, personal interview</li> <li>Panel interview,</li> <li>Group interview,</li> <li>JAM session,</li> <li>Types of interview questions traditional/common</li> </ul>	6	Illustrates different types of interview and performing them.	1,2

T1: George S." The Richest Man in Babylon"

T2: Dr. Purvi Kothari and, Mr. Keyur "Financial literacy to financial planning"

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	The students would be able to understand the importance of financial Knowledge and prepare financial plans and budgets and plan and manage personal finances.	7
2	The students would be able to understand the need and various kind of banking institutions' instrument and their utilities	7
3	The student would be able to describe the importance of insurance services as social security measures.	7
4	The student would be able to manage the money and debt more effectively.	7
5	The students would be able to manage the money flow of digital market.	7

SEMESTER – V											
Course	Title		Clinical Observation	I (Emo	erge	ncy Pati	ient C	are)			
Course	code	24BEDM3101R	Total credits: 4	L	T		S	R	O/F	C	
			Total hours: 120P	0	0	0 8 0 0 0					
Pre-req		Nil	Co-requisite				N				
Progra			f Science in Trauma						agement		
Seme	ster		Fall / V semester of t				ogran	nme			
Cou		^	observation skills in atient care practices a			•					
Objec	tives	3. To develop skills	s to assess patient con	ditions	and	emerger	ncy res	ponses	S.		
СО	1	Understand the role care.	e, workflow and esser	ntial equ	iipm	ent of e	mergei	ncy roo	om for pati	ent	
CO	2	Learn a comprehen emergencies.	sive assessment for p	riority a	and t	reating p	patient	effect	ively in		
CO	3		ergency procedures for								
СО	4	Apply knowledge t side effects.	o assess pain levels a	nd skill	s to	manage	pain a	s well	as monitor	the	
CO	5	Learn infection cor	ntrol and safety protoc	cols, ens	surin	ng safe e	nviron	ment.			
Unit- No.		Conten	t	Contac Hour		Lea	arning	g Outc	ome	KL	
	Intro	duction to Emerger	ncy Patient Care								
I	role • Esse roon • Eme	ential equipments pr m and protocols of the ergency Codes	esent in emergency	12	] ] !	Describes about emergency patient care, explains difference protocols in emergency situations and identify different equipments.			different cy y	1,2	
		Safety									
		cal And Trauma A		]	Explains about assessment of						
-		ngement		trauma, emergency triage						1,2	
II		ergency triage	12		system, initial and on-going						
		ial assessment and n	-			assessment and management.					
		going assessment ar									
		gency Procedures	And Techniques								
		way management									
		morrhage control									
		cture stabilization	a con	4.6		Describe		_	-	1.0	
III		delines and practices		12		medical	_			1,2	
		delines and practices			1	maintain	ung gu	ııdeline	es.		
		delines and practices									
		delines and practices	-								
		brillator Minor inva	-								
		cal Care In Emerge									
		ial treatment of patie	ents with heart		]	Explains	critic	al care	in		
	atta					emergen					
		ognition, initial care	_			_		-	nergency	- بر	
IV	_	cocols of ischemic ar	nd haemorrhagic	12		situation			-	1,2	
	stro					manager					
		ognition and initial a	assessment of			crucial ti					
	• Rec	ognition, initial care	of shock								

	<ul> <li>Recognition, initial care of asthma, COPD, respiratory failure</li> <li>Recognition, initial care of diabetic emergencies</li> </ul>			
V	<ul> <li>Infection Control And Safety</li> <li>Hand hygiene-moments and techniques</li> <li>PPE- types ,usage, donning and doffing</li> <li>Aseptic techniques</li> <li>Infection control precautions-airborne, droplets and contact infection; isolation protocols</li> <li>Environmental hygiene</li> <li>Spillage management</li> <li>Needle prick injury</li> <li>Waste management</li> </ul>	12	Illustrates the infection control protocols and maintaining safety environment.	1,2

T1: Nancy Caroline's Emergency Care in the streets Seventh edition by Jones and Bartlett

T2: First Aid book by LC Gupta

T3: Advance Cardiovascular life support and Basic life support provider manual @ American Heart Association (AHA)

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Understand the role, workflow and essential equipments of emergency room for patient care.	1,4
2	Learn a comprehensive assessment for priority and treating patient effectively in emergencies.	1,3
3	Learn essential emergency procedures for immediate life-saving interventions.	1,3
4	Apply knowledge to assess pain levels and skills to manage pain as well as monitor the side effects.	2,3
5	Learn infection control and safety protocols, ensuring safe environment.	1,2

			SEMESTER -	- <b>V</b>							
Course Ti	tle	Clinical C	Observation II (Advan	ced (	Concept	s and	l Spec	ialized	Care)		
Course co	de	24BEDM3102R	Total credits: 4	L	T	P	S	R	O/F	С	
			Total hours: 120P	0	0	8	0	0	0	4	
Pre-requis		Nil	Co-requisite				Ni				
Programm			f Science in Trauma E						gement		
Semeste	r		Fall / V semester of the								
		•	nced procedures and me				•			es	
Commo			bly specialized intervent		_			_	_		
Course		comfort.	ures and medications to	opu	ımze tre	aume	nt em	cacy an	ia patient		
Objective	es		ficionar in administarir	or on	d monit	orin a	odvon	and ma	diactions	and	
		_	ficiency in administerir ring patient safety and	_		_				and	
CO1		_						ie care	process.		
CO1			re injury stages and mar								
CO2			patient monitoring tech					n and i	nvention.		
CO3			iency in blood sample								
CO4		•	e and skills on how to p								
CO5		-	how to administer medi	catio	n safely	and	accura	tely fol	lowing		
		established protoco	ls.		7 4 4					<del></del>	
Unit-No.		Con	ntent		Contact Learning Outcom				tcome	KL	
	Dw	aggrupa Industry			Hour					+	
		essure Injury Definition, causes, cl	assification	Do				Describes the type			
I				12		Describes the types of pressure injury and					
1		Assessment and prev		12	_			ana	1,2		
		Management and trea			management.						
		Complication and lor				711				-	
		vanced Patient Mo	_				Illustrates techniques of advanced patient				
TT		Continuous monitori	-		10			-	1.2		
II		Advance cardiac moi	•		12	monitoring techniques including cardiac,				1,2	
		Fluid and electrolytes	· ·			l l	_	itoring.			
		Neurological Monito	ring			IIC	urolog	ic mon	ntoring.	-	
		mple Collection	:								
			niques for specialized								
		lood sampling proce				Ex	plains	the sar	nple		
III		Selection and used o ollection tubes	specialized blood		12	co	llection	n techn	iques	1,2	
			na storogo and			an	d avoi	ding ha	zards.		
		Blood sample handling	-								
		ransportation protoc									
		lvanced Procedures	chniques, interpretation	1		T11					
		<b>Evanced Procedure</b> s Central line	•					s some			
		Arterial line						_	dure like rial line,		
IV		Chest tube			12			es incli		1 2	
1 4			agement procedures		12			l woun	•	1,2	
		Advance airway man Thoracentesis	agement procedures						agement		
		Advance wound care	technique			l l	chnique	-	gement		
		edications:	comique	+				the usa	age of		
V			leage and Dranamation		12	l l		types of	Ū	1,2	
¥		Sound-alike-look-ali	sage and Preparation		14	l l		• •	71	1,4	
	د ا	ound-anke-100K-all	NC(LADA)	1		medications in					

• High	Risk ,high Alert	emergency situations.	
• Narc	otic Drugs		
• Drug	Selection and Stocking		
• Disp	ensing and Administration		
• Stora	ge and Handling		
• Docu	mentation		
• Tech	niques of administration through		
• diffe	rent routes		

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T3: Advance Cardiovascular life support and Basic life support provider manual @ American Heart Association (AHA)

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Understand pressure injury stages and management strategies.	1,2
2	Analyze advanced patient monitoring techniques for early detection and invention.	2,3
3	Demonstrate proficiency in blood sample collection techniques.	2,3,4
4	Develop knowledge and skills on how to perform any advance procedures.	1,2,3
5	Develop a skill on how to administer medication safely and accurately following established protocols.	1,3

		SEMESTER	$\mathbf{I} - \mathbf{V}$							
Course Ti	tle Clinical O	bservation III (Comn	nunica	tion A	nd Do	cume	ntatio	n Skills)		
Course co	de 24BEDM3103R	Total credits: 4	L	T	P	S	R	O/F	C	
		Total hours: 120P			8	0	0	0	4	
Pre-requis		Co-requisite Nil								
Programm		f Science in Trauma						agement		
Semeste		Fall / V semester of the								
		<ol> <li>Enhance abilities in documenting patient information comprehensively and precisely.</li> <li>Improve verbal and non-verbal communication skills for effective patient interaction</li> </ol>								
Course	and teamwork.	and non-verbar commit	umcano	III SKII	18 101 6	Hecu	ve pan	em mierac	uon	
Objective	29	d legal standards in cl	inical o	hearw	ation o	locum	antatio	n and		
	communication.	d legal standards in Ci	iiiicai 0	USCI V	ation, c	iocum	Ciitatii	ni, and		
CO1		iency in utilizing vario	ous con	muni	cation	techni	anes			
CO1		eiency in asking clear a						levant med	lical	
CO2	information from p		and spec	ciric q	uestioi	115 10 0	nen re	ic vant med	arcar	
		anguage and commun	ication	techni	iques to	o docu	ment s	sensitive		
CO3	conversations with				1					
604		ately document proced	lures, in	cludii	ng indi	cation	s, tech	niques use	d,	
CO4	and patient respons	es.						_		
CO5	Apply legal and eth	Apply legal and ethical standards in documentation, including confidentiality, privacy,								
COS	and HIPAA compl	ance.								
Unit-No.	Conto	ent	Contac Hour		Learning Outcome				KL	
	Communication					41 4-				
	• Types of communication	ntion Techniques		l l	Describe the types of					
I	Importance of comm	unication	12		communication techniques, importance of good					
1	<ul> <li>History taking techn</li> </ul>	iques			communication for proper			roper	1,2	
	Special consideration	ns during			history taking.		торы			
	communication				5001 J 10					
	Patient Interview Ski			T11	ustrate	effec	ive			
	Effective Questioning	g			Illustrate effective questioning, active			stening		
II	Active Listening		12	_		_		patient	1,2	
	Note-taking Method				terviev		r	1		
	• Empathy and Rappo	-								
	Sensitive Discussions			E	nlains	แรลฐล	of em	pathetic		
	Empathetic Languag	e:		l l	nguage	_		-		
III	• End-of-Life Care		12		cision			_	1,2	
	Professional Tone				uation		U	,		
	• Informed Consent									
	Documentation of Pr	ocedures and								
	Treatments:	4-4:			ustrate					
IV	Procedure Documen     Tracture and Disease.	tation:	12					ods and	1,2	
	• Treatment Plans			l l	itical tl		-	_		
	• Response to Interver	ntions		De	tter tre	aunen	ı pıan.			
	<ul> <li>Patient Education</li> </ul>									

T1: Nancy Caroline's Emergency Care in the streets Seventh edition by Jones and Bartlett

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T3: Advance Cardiovascular life support and Basic life support provider manual @ American Heart Association (AHA)

CO PO Mapping		
SN	Course Outcome (CO)	Mapped Program Outcome
1	Demonstrate proficiency in utilizing various communication techniques.	7
2	Demonstrate proficiency in asking clear and specific questions to elicit relevant medical information from patients.	2,7
3	Apply empathetic language and communication techniques to document sensitive conversations with patients.	7
4	Analyze and accurately document procedures, including indications, techniques used, and patient responses.	2,7
5	Apply legal and ethical standards in documentation, including confidentiality, privacy, and HIPAA compliance.	6,7

	SEMESTER – V								
Course Title		Summer Internship							
Course code	24BEDM3104R	Total credits: 4	L	T	P	S	R	O/F	С
Course code	24DEDW13104K	Total Credits. 4	0	0	0	0	0	24	4
Pre-requisite	Nil	Co-requisite				N	il		
Programme	Bachelor of	Science in Trauma	Emerg	gency	and D	isaste	r Mana	agement	
Semester	]	Fall / V semester of third year of the Programme							
Course Objectives	2. To gain a compression network.	enhance specific profes whensive understanding oursue personal and ca	g of th	e indu	stry ar	nd buil	d a pro	fessional	path.
CO1	Understand and bed	come familiar with the	work	enviro	nmen	t.			
CO2	Understanding and	practicing workplace	profes	sional	ism.				
CO3	Develop specific skills like communication, teamwork, or technical abilities.								
CO4	Develop a clear sco	Develop a clear scope of career aspect.							
CO5	Develop practical k	nowledge and skills fo	or app	licatio	n in re	al time	·.		

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Understand and become familiar with the work environment.	3,5,6,7,8				
2	Understanding and practicing workplace professionalism.	3,4,5,6,7,8				
3	Develop specific skills like communication, teamwork, or technical abilities.	5,6,7,8				
4	Develop a clear scope of career aspect.	3,5,6,7,8				
5	Develop practical knowledge and skills for application in real time.	1,3,4,5,6,7,8				

	SEMESTER – VI Course Title Trauma Care										
Course	e Title		Total credits:	rauma Ca 5	re L	Т	P	S	R	O/F	C
Course	<b>Code</b>	24BEDM3201R	Total hours: 4		L	0	4	0	0	0	5
Pre-re	quisite	Nil	Co-requi	site			ı	Ni			
Progra		Bachelor of S	cience in Traum	a Emergei	ncy a	nd Di	saste	r Ma	nage	ment	
Semest	ter	1. This course is	ahout managing	trauma	from	min	or in	inry	to h	umanita	arian
	irse ctives	emergencies, including principal goal of 2. Learn basic techn hour, of a patient 3. Understand the princluding psychostress.	luding injuries in improving quality niques of triage a s's arrival at the hosychosocial impablogical trauma,	women, cy of care an nd emerge ospital ct of traum grief, cop	childrend patincy considerate and pating residual consisterate and residual con	en, ar ient s are w patier necha	afety. vithin nts, fa	the f milie s, an	rly, a irst, r s, and d pos	nd with nost cri I caregiv st-traun	tical vers,
C	<b>D1</b>	Comprehend knowled different trauma centr		letermining	g the i	mecha	anısm	01 11	ıjury a	and idei	ntify
CO		Understand diverse fa assess and effectively Proficiency in evalua	ncets of soft tissu manage shock in	cidents.							
	<i>,</i> ,	thoracic cavities, inclu						, 1		1 .	1 . •
CO	)4	Develop knowledge a system.	nd skills to asses	s and man	age in	ıjurie	s rela	ted to	mus	culoske	letal
CO	)5	Apply skills to assess heat injury, etc.	s and manage dif	ferent type	es of	injuri	es su	ch as	light	ning st	rike,
Unit- No.		Content		Contact Hour		Lea	rnin	g Outcome		KL	
I	Traum -Energy •	a systems and mechan y Biomechanics and Kin Trauma centres Types of traumas	, ,	6	expl trau	roduction of trauma systemularing biomechanics trauma, different traumatres and types of trauma.		es of rauma	1,2		
	Soft tis	sue injury and Bleedir	ng and Shock								
II		Review of Cardiovascu Anatomy and physiolo Pathophysiology of Ha Assessment and manag bleeding patient Pathophysiology of she Assessment and manag shock Wound healing Closed versus open wo injuries Blast injuries Assessment and manag tissue injury Management of crush	f Cardiovascular system and physiology of skin siology of Haemorrhage ent and management of patient siology of shock ent and management of ound healing ersus open wounds Crush  ries ent and management of soft		from different sites i management and illustrate th		eeding its	1,2			
Ш	Burns, Injurie • •	Abdominal Injuries & s  Pathophysiology of But Assessment & Manage Review of anatomy and	arns ement of Burns	8	burr	ı t	echni	ques	ne typ of nagem		1,2

	<ul> <li>abdomen</li> <li>Pathophysiology, assessment and management of abdominal injuries</li> <li>Pathophysiology Assessment</li> </ul>			
	&Management of Thoracic Injuries  Musculoskeletal injuries, Head and face an			
IV	<ul> <li>Spinal Injuries</li> <li>Review of anatomy Assessment and management of head and facial injuries</li> <li>Assessment and management of spinal injuries</li> <li>Spinal immobilization</li> </ul>	10	Explains about musculoskeletal injuries of different parts of the body including its assessment and management.	1,2
V	Environmental Emergencies  Heat Illness Cold Injuries Drowning Diving Injuries Attitude Illness Lightning Strike Bites and Stings	8	Illustrates different types of injuries associated with environment such as heat, cold, lightning, etc.	1,2

## **TEXT BOOK:**

T1: Nancy Caroline's Emergency care in the streets, Seventh Edition, Series Editor: Andrew N.Pollak, MD, FAAOS: Lead Editors: Bob Elling, MPA, EMT-P Mike Smith, BS, MICP: JONES AND BARTLETT LEARNING: (2012)

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Comprehend knowledge and skills in determining the mechanism of injury and identify different trauma centres.	1,3
2	Understand diverse facets of soft tissue, and capable of utilizing this understanding to assess and effectively manage shock incidents.	1,2,3
3	Proficiency in evaluating and addressing injuries associated with the abdominal and thoracic cavities, including the effective management of burns.	2,3
4	Develop knowledge and skills to assess and manage injuries related to musculoskeletal system.	1,2,3
5	Apply skills to assess and manage different types of injuries such as lightning strike, heat injury, etc.	2,3

	SEMESTER – VI										
Course	Title		Disaster Mana	agement i	n Hea	alth (	Care				
Course	code	24BEDM3202R	Total credits: 5		<u>L</u>	T	P	S	R	O/F	C
Pre-req	nicito	Nil	Total hours: 45T		3	0	4	0 Nil	0	0	5
Prograi		· ·	f Science in Traum		ncv a	nd D	isaste			ment	
Semeste					<u> </u>		1000000		·		
	te knowledge of driv										
		_	nniques and underst	_			know	ledge	of te	chnique	es on
Course			ctions and maintenante te knowledge of tecl				ran a	mhul	ance v	zehicle i	nrior
Object			during the run, wh								
3			ning to quarters.			, ,		,		1 /	
			ng the disaster							reparedi	ness,
			nd recovery) in the a	_						uant tren	as of
CO	1	patient transportation	anding on the basic	operation	or an	amo	uranc	e and	unie	tent type	es oi
GO	•		etency in the knowle	edge and s	kills f	or pr	ovidi	ng co	mpre	hensive	care
CO	<u></u>	in mass casualty inc	cidents.								
CO	3		nental knowledge			mate	erials	and	the	process	s of
			d treatment in case of edge on preservati			cconc	000	l har	v to	work	with
CO	4		partments in special							WOIK	witti
CO	_		een man-made a							the eff	ects,
CO	3	management and tre	eatment of injuries c			lisast	ers.				
Unit-		Content		Contact Hour		Le	arnin	ıg Ou	tcom	e	KL
No.	Ambu	lance operations, m	edical incident	Hour							
	comm	<del>-</del>									
	•	Understanding you	r ambulance								
	•	Ambulance staffing			Demonstrate the ability to				•		
	•	Emergency vehicle	1		*			ncident			
I	•	Air medical transpo	•	8	simulated scenarios, includ		during	1,2			
	•	The incident comm			triage management	and					
	•	Standard operating			resource allocation.						
	•	Medical incident co	_								
	•	Triage	Jiiiidid								
	Terro	rism and weapons o	of mass								
		ction, Rescue awar									
	operat	•	ciess and								
	opera	Terrorism									
	•	Weapons of mass of	lestruction								
	•	Paramedic Respons			Ana	alyze	resp	onse	gui	delines	
	•	Chemical agents				_		ls fo		ndling	
II	•	Biological agents		10		mical lologi	*	and		ogical, nuclear	1,2
		Radiological/nucle	ar devices			_				y steps	
	•	Guidelines for oper							perati		
	•	Steps of special res									
		rescue scene proce									
	_	-									
	_	Assisting rescue cr	cws								
	•	Patient Care									

III	<ul> <li>Hazardous material incidents</li> <li>Identification of hazardous materials</li> <li>Hazardous scene management</li> <li>Contamination and toxicology</li> <li>Decontamination and treatment</li> </ul>	8	Identify various types of hazardous materials commonly encountered in emergency situations, explaining their potential risks and appropriate handling procedures.	1,2	
IV	<ul> <li>Crime scene awareness</li> <li>Highway incidents</li> <li>Residential incidents</li> <li>Violence on the streets</li> <li>Hostage situations</li> <li>Contact and cover</li> <li>Self-defines</li> <li>Preserving crime scene evidence</li> </ul>	8	Assess the techniques such as contact and cover procedures, self-defence strategies, and evidence preservation methods to maintain crime scene integrity and ensure responder safety.		
v	Disaster management  Understanding natural and manmade disasters Understanding effects of disasters Prevention, preparation, response Medical response to disasters Mock drill	8	Evaluate response effectiveness, and refine strategies for preventing, preparing for, and responding to disasters.	1,2	

# **Textbook:**

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	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Develop an understanding on the basic operation of an ambulance and different types of patient transportation.	1,8				
2	Demonstrate competency in the knowledge and skills for providing comprehensive care in mass casualty incidents.	1,2,3				
3	Implement fundamental knowledge on hazardous materials and the process of decontamination and treatment in case of contact.	2,6				
4	Apprehend knowledge on preservation on crime scene and how to work with interdisciplinary departments in special cases such as hostage situations.	1,7				
5	Differentiate between man-made and natural disasters including the effects, management and treatment of injuries caused by such disasters.	1				

	code uisite mme	F	Introduction To Emo Total credits: Total hours: 45T- Co-requisite f Science in Trauma E	5	L		rvico P	es S	R	O/E	C
Pre-req Program Semes	uisite mme	Nil Bachelor of	Total hours: 45T- Co-requisite	L			P	S	D	O/E	$\mathbf{C}$
Pre-req Program Semes	uisite mme	Nil Bachelor of	Co-requisite	+60P	3	( <b>)</b>				O/F	
Program Semes	mme	Bachelor of				U	4	0	0	0	5
Semes		F	i Science in Trauma E	'm ou con or	, and	Digo	atom	Nil			
Cour	stei		fall / VI semester of th						agen	nent	
			f the working principles						11520	e and	
		Course Objectives  Course  Course Objectives  Cours					rationation /loca with wide	n of I progr ation/ hin E rs, ind	EMS am an vehic MS s cludin rofess	nd disc ele ystems ng pati ional	s.
CO	1	•	ledge of the different le te to professionalism in					nedica	al law	s and	
CO2	2		ledge on the componen								
CO3	3		and role of Public Hea	ılth along	with tl	ne im	port	tance	of in	jury an	d
		illness prevention.	wnos of EMS Commun	ications	nd into	r pr	ofoss	nion ol			
CO4 Illustrate different types of EMS Communications and inter-professional communication.											
GO.	_		ental knowledge on the	purpose,	impor	ance	anc	l type	s of		
CO	5	documentation alor	ng with legal issues with	h patient c	are re	ort.					
Unit- No.		Conte	nt	Contact Hour		Lear	rnin	g Ou	tcom	e	KL
I	<ul><li>EMS</li><li>Licer</li><li>Leve</li><li>Parar</li><li>Addi</li><li>Work</li><li>Profe</li><li>Roles</li><li>Medi</li></ul>	systems system developments as a certification and of education and to education and to education at the education and type of transpacing with other professionalism and responsibilities call direction are earch	nd registration  orts  ession	9	and syst orga	evol ems, aniza	ution incl tion on v	deve n of I luding al stru vith h	EMS g thei ucture	r e and	1,2
II	<ul><li>Comp</li><li>Stress</li><li>Copin</li><li>Disea</li><li>Prote</li></ul>	ponents of well-beir s ng with death and dy ase transmission ecting Yourself health: of Public Health	ng	9	tech stra dea env situ Exp	niquategie ing varion ation lain	es and s for with ment s.  prince on an area.	ss ma nd co r para high- ss and ciples nd de rogra	ping medi stres	cs s	1,2

	<ul> <li>EMS interface with public health</li> <li>Injury and illness prevention and EMS</li> <li>Principles of injury and prevention</li> </ul>		tailored to community needs and healthcare settings.	
IV	<ul> <li>EMS communication</li> <li>EMS communication system</li> <li>Communication by radio</li> <li>Communication with healthcare professionals, dispatching, therapeutic communication</li> </ul>	9	Explain the unique considerations in air ambulance operations, including air physics, patient care during transport, and critical care capabilities.	1,2
V	<ul> <li>Documentation</li> <li>Introduction</li> <li>Legal issues of patient care report</li> <li>Purposes of documentation</li> <li>Types of patient care report Documentation for every EMS call</li> </ul>	9	Discuss the legal framework governing paramedic practice, emphasizing scope of practice, documentation standards, and ethical considerations.	1,2

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	CO PO Mapping				
SN	Course Outcome (CO)	Mapped Program Outcome			
1	Understand and become familiar with the work environment.	1,3,6,7,8			
2	Understanding and practicing workplace professionalism.	1			
3	Develop specific skills like communication, teamwork, or technical abilities.	1,2,3			
4	Develop a clear scope of career aspect.	6			
5	Develop practical knowledge and skills for application in real time.	6,8			



# **Assam down town University**

# Curriculum and Syllabus

# Bachelor of Medical Laboratory Technology

OUTCOME BASED EDUCATION FRAMEWORK CHOICE BASED CREDIT SYSTEM

Version: 2.2

# **FACULTY OF PARAMEDICAL SCIENCES**

July, 2024

# **PREAMBLE**

Assam down town University is a premier higher educational institution which offers Bachelor, Master and Ph.D. degree Programmes across various faculties. These programmes, collectively embodies the vision and mission of the university. In keeping with the vision of evolutionary changes taking place in the educational landscape of the country, the university has restructured the course curriculum as per the guidelines of National Education Policy 2020. This document contains outline of teaching and learning framework and complete detailing of the courses. This document is a guidebook for the students to choose desired courses for completing the Programme and to be eligible for the degree. This volume also includes the prescribed literature, study materials, texts and reference books under different courses as guidance for the students to follow. Recommended by the Board of Studies (BOS) meeting of the Faculty of Paramedical Sciences held on dated 20/06/2024 and approved by the 51st Academic Council (AC) meeting held on dated 26/07/2024.

Chairperson, Board of Studies

Smolh

Member Secretary, Academic Council

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## Vision

To become a Globally Recognized University from North Eastern Region of India, dedicated to the Holistic Development of Students and Making Society Better.

## **Missions**

- 1. Creation of curricula that address the local, regional, national, and international needs of graduates, providing them with diverse and well-rounded education.
- 2. Build a diverse student body from various socio-economic backgrounds, provide exceptional value-based education, and foster holistic personal development, strong academic careers, and confidence.
- 3. Achieve high placement success by offering students skill-based, innovative education and strong industry connections.
- 4. Become the premier destination of young people, desirous of becoming future professional leaders through multidisciplinary learning and serving society better.
- 5. Create a highly inspiring intellectual environment for exceptional learners, empowering them to aspire to join internationally acclaimed institutions and contribute to global efforts in addressing critical issues, such as sustainable development, Climate mitigation and fostering a conflict-free global society.
- 6. To be renowned for creating new knowledge through high quality interdisciplinary research for betterment of society.
- 7. Become a key hub for the growth and excellence of AdtU's stakeholders including educators, researchers and innovators
- 8. Adapt to the evolving needs and changing realities of our students and community by incorporating national and global perspectives, while ensuring our actions are in harmony with our foundational values and objectives of serving the community.

# **Programme Details**

#### **Programme Overview**

Bachelor of Medical Laboratory Technology program offers to candidate's in-depth knowledge about the laboratory equipment and their usage in diagnostic procedures. A degree in Bachelor of Medical Laboratory Technology can open up job opportunities in areas such as healthcare clinics, government and private hospitals, medical laboratories, research laboratories etc.

Duration of Bachelor of Medical Laboratory Technology program is 3 (three) years degree course composed with 6 (six) semester and 6 (six) months internship program.

## I. Specific Features of the Curriculum

Well equipped with physical facilities such as spacious and well-furnished classrooms, laboratories, skill centers, library and hostels for enriching knowledge and to serve rural community and slums dwellers through this knowledge.

Qualified and trained faculty who can foster research in different disciple and well versed to scientifically formulae, implement and monitor community-oriented programs and projects especially where level of involvement in adoption of innovative and appropriate technology involved.

# II. Eligibility Criteria:

He/she has passed the Higher Secondary (10+2) with Science (PCB) or equivalent examination recognized by any Indian University or a duly constituted Board with pass marks in Physics, Chemistry and Biology or 50% of marks in mathematics separately.

Minimum percentage of marks: 45% aggregate.

#### **III.** Program Educational Objectives (PEO):

**PEO1:** AdtU Medical Laboratory graduates will be prepared for successful career paths as medical lab technologist, laboratory system analyst, health outreach coordinator, health and safety officers, and spanning private and government healthcare settings.

**PEO2:** Graduates of Medical Laboratory technology will be academically prepared to excel as specialized professionals in medical laboratory environments, ready to make impactful contributions to healthcare advancement and human welfare.

**PEO3:** MLT graduates will be engaged in professional activities to enhance their competency and professional stature; and will be successful in higher education in areas of Medical Laboratory technology if pursued.

#### IV. PROGRAM SPECIFIC OUTCOMES (PSO):

**PSO1: Practice-in-Industry:** Demonstrate clinical practice proficiency and laboratory testing efficiency in clinical posting and healthcare industry.

**PSO2: Professional Proficiency:** Apply a comprehensive understanding of pathological, biochemical and microbiological concepts, Medical Laboratory Technology processes and standard operating procedures encompassing multidisciplinary approaches to conduct precise investigations improving diagnostic accuracy and healthcare service quality.

**PSO3:** Global Competency: Apply international and industry-focused certification courses to enhance professional skills and excel globally in the field.

#### V. Program Outcome (PO):

**PO1:** Healthcare Knowledge: Apply knowledge of human anatomy, physiology, biochemistry and pathological cum microbiological testing processes in the diagnosis of diseases.

**PO2: Problem-Solving:** Identify pre-analytical, analytical and post-analytical problems and select adequate processes and instruments for reaching substantiated solutions in investigating diseases.

**PO3:** Modern Analytical Competency: Apply a comprehensive understanding of techno- analytical processes and adherence to standard procedures in operating modern analytical instruments to deliver high-quality laboratory investigations.

**PO4: Sample Collection and Carriage:** Demonstrate competency in clinical sample collection, transportation and preservation related to hematology/ hemostasis, clinical biochemistry, blood banking, microbiology, and serology/ immunology.

**PO5: Ethical Practices:** Apply ethical principles, commit to professional ethics, and maintain good hospital practices.

**PO6: Communication:** Execute effective communications with patients, attendants and healthcare professionals.

**PO7: Teamwork:** Demonstrate functional proficiency to work independently and collaboratively within a multidisciplinary healthcare team.

**PO8:** Environment and Sustainability: Apply eco-friendly practices in laboratory procedures and biomedical waste disposal practices minimizing environmental impact.

PO9: Lifelong Learning: Ability to engage in independent and lifelong learning in the

broadest context of technological advancements in the profession.

VI. Total Credits to be earned: Total credit need to sore for the successful completion of BSc Medical Laboratory Technology degree program is 133.

VII. Career Prospects: Medical Laboratory Technicians can earn employment in pathology labs, hematology, Biochemistry, microbiology, cytotechnology, research labs, immunology, pharmaceuticals, and Clinics or hospitals. They can also ensue a career in the education line as a lecturer or clinical instructor.

Some of the job roles offered to Bachelor of Medical Laboratory Technology graduates includes:

Laboratory Technician

Blood Bank Technician

Medical Record Technician

Laboratory Manager

# **EVALUATION METHODS**

The student performance shall be evaluated through In-semester (Sessional) and semester-end examinations. A weightage of 40% or as prescribed by the Programme shall be added to the score of the end-semester examination.

# A. INTERNAL ASSESSMENT:

The teacher who offers the course shall be responsible for internal assessment by conducting insemester (sessional) examination and evaluating the performance of the students pursuing that course. The components for internal assessment are illustrated in the table given below.

S.N.	Components/ Examinations	Marks Allotted
1.	In-Sem Exam – I (ISE-I) (Written Examination) *	30
2.	In-Sem Exam – II (ISE-II) (Written Examination) *	30
3.	Assignment	10
4.	Presentation (SP)	10
5.	Quiz	5
6.	Class Performance based score*	5

^{*}are compulsory

Note: Total Internal assessment should be out of 40

#### **INSTRUCTION**

- If a student fails to appear in the any of the component without any valid reason, he/she shall be
  marked zero in that component. However, the course teacher at his discretion may arrange for
  the missed test on an alternate date for the absentee students after determining ground with
  genuine/valid reasons for the absent.
- 2. The report of evaluation of an activity towards the in-semester (sessional) component of a course shall be duly notified by the concerned course teacher within a week of completion.
- 3. The program coordinators should upload the in-semester marks to the ERP and forward acknowledgement of all the courses of the program to the Controller of Examinations before the start of the End-semester examination.

#### **B. SEMESTER END EXAMINATION:**

Time table for end semester examination is published at least 25 days prior to the start of Examination.

#### I. Pre-Examination:

## Eligibility Criteria for a student to appear in University Examinations:

The student shall only be allowed to appear in a University Examination, if:

- i) He/ She is a registered student of the University;
- ii) He/ She is of good conduct and character;
- iii) He/ She has completed the prescribed Programme of study with minimum percentage of attendance as laid down in the Regulations of the Programme concerned.

Under special cases, a student may be allowed to appear for an examination without being registered in the University but the result of the said student will be kept on hold till the registration of the concerned student is completed.

#### II. Admit Card:

Admit card for the examination may be downloaded through ERP where the system will generate a Unique ID Cards through online.

The University shall have the right to cancel admission for examination of any candidate on valid grounds.

## **III. Pattern of Question Papers:**

The question paper shall follow the principles of Bloom's Taxonomy.

S.N.	Level	Questions /verbs for test
1	Remember	List, Define, tell, describe, recite, recall, identify, show who, when, where, etc.
2	Understand	Describe, explain, contrast, summarize, differentiate, discuss, etc.
3	Apply	Predict, apply, solve, illustrate, determine, examine, modify
4	Analyze	Classify, outline, categorize, analyze, diagrams, illustrate, infer, etc.
5	Evaluate	Assess, summarize, choose, evaluate, recommend, justify, compare etc.
6	Create	Design, Formulate, Modify, Develop, integrate, etc.

Note: No course is to be evaluated on basis of all 6 knowledge levels.

The format of the question paper across all the program follows a unique pattern and the total marks is 60

**Table 1: Question paper pattern for End semester examination** 

S.N.	Question pattern	Total marks
1	MCQs (10 Questions)	10
2	2 Marks questions (10 Questions)	20
3	4 Marks questions (5 Questions)	20
4	10 Marks questions (1 Question)	10

#### **IV.** Examination Duration:

Each paper of 60 marks shall ordinarily be of two hours duration.

#### V. Practical Examinations, Viva-Voice etc.:

- i) Practical examination shall be conducted in the presence of one external expert and one or more internal examiners.
- ii) Viva-Voce, Oral examinations of the Project report, Dissertation etc. shall be undertaken by a Board of Examiners constituted by the respective Dean of Program with the advice of Supervisor(s).

#### VI. Procedure of Expulsion:

If any candidate is found to be using any unfair-means during the examination, the invigilator may cease his/her answer sheet and report it directly to the Officer-in- Charge. The Office-in-Charge of the center may take appropriate decisions as per the rules and procedure of the examination. The Officer-in-Charge may allow the students to write the exam with new answer sheet or may expel the student from appearing the paper depending on the nature of unfair-means. In case of Computer based test, the students may be directed to write an apology letter and sign in the prescribe expulsion form. The student may not be allowed to write that examination.

#### VII. Instruction to the Students:

- (i) The students shall not bring to the Examination Hall, any electronic gadget used as a means of communication or record except electronic calculator, if required.
- (ii) The students shall not receive any book or printed or hand written or photo copy (Xerox) or blank-paper from any other person while he/she is in the examination-room or in

- laboratory or in any other place to which he/she is allowed to have access during course of examination.
- (iii) The students shall not communicate with any other candidate in the examination room or with any other person in and outside the examination-room.
- (iv) The students shall not see, read or copy anything written by any other candidate, nor shall he/she knowingly or negligently permit any other candidate to see, read or copy anything written by him/her or conveyed by him/her.
- (v) The students shall not write anything on the Question Paper or in other paper or materials during the examination, or pass any kind of paper to any other candidate in the examination-room, or to any person outside the room.
- (vi) The students shall not disclose his/her identity to the examiner by writing his/her name or putting any sign / symbol in any part of his answer-script.
- (vii) The students shall not use any abusive language or write any objectionable remark or make any appeal to examiner by writing in any part of his answer-script.
- (viii) The students shall not detach any page from the answer-script or insert any authorized or unauthorized loose sheet into it. He /she shall also not insert any other answer-script / loose sheet by removing the pins of the origin answer scripts and re- fixing it.
- (ix) The students shall not resort to any disorderly conduct inside the examination- room or misbehave with the invigilator or any other examination official.

#### VIII. Provision for an Amanuensis (writer):

- (i) A candidate may be provided with an Amanuensis (writer) to write down on dictation on his / her behalf on ground of his / her physical disability to write down by himself / herself due to accident or any other reason. The amanuensis may be provided till he / she recovers from the physical disability. The physical disability to write down by himself / herself must be supported by Medical Certificate from a competent Medical Officer.
- (ii) The qualifications of the amanuensis so provided must not be equal or higher than that of the candidate. This is also to be supported by Certificate from the Faculty of Study where the Amanuensis is provided.
- (iii) Such candidates are to be accommodated in a separate room under the supervision of an invigilator so that the fellow candidates are not disturbed in the process.

#### C. Credit Point:

It is the product of grade point and number of credits for a course, thus,  $CP = GP \times CR$ 

#### i. Credit:

A unit by which the course work is measured. It determines the number of hours of instructions required per week. 'Credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. Credits assigned for a single course always pay attention to how many hours it would take for an average learner to complete a single course successfully.

#### ii. Grade Point:

Grade Point is a numerical weight allotted to each Grade Letter on a 10-point scale.

#### iii. Letter Grade:

Letter Grade is an index of the performance of students in a said paper of a particular course. Grades are denoted by letters O, A+, A, B+, B, C, P, F and Abs. Student obtaining Grade F / Grade Abs shall be considered failed/ absent and, will be required to appear in the subsequent ESE. The UGC recommends a 10-point grading system with the following (Table: 1) Letter Grades:

- (i) A Letter Grade shall signify the level of qualitative/quantitative academic achievement of a student in a Course, while the Grade Point shall indicate the numerical weight of the Letter Grade on a 10-point scale.
- (ii) There shall be 08 (eight) Letter Grades bearing specific Grade Points as listed in Table 1, where the Letter Grades 'O' to 'P' shall indicate successful completion of a course.
- (iii) Apart from the 08 (eight) regular Letter Grades listed in Table 1, there shall be 03 (three) additional Letter Grades, which shall be awarded if a Course is withdrawn or spanned over the next Semester or remains incomplete as stated in Table 2.

**Table 2: Letter Grades and Grade Points** 

Letter Grade	Grade Points	Description
О	10	Outstanding
A+	9	Excellent
A	8	Very Good
B+	7	Good
В	6	Above Average
С	5	Average
P	4	Pass
F	0	Fail
Abs	0	Absent
UFM	0	Unfair Means

#### iv. Grade Point Average:

### a. SGPA (Semester Grade Point Average)

The SGPA of a student in a Semester shall be the weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered in that Semester, irrespective of whether he/she could or could not complete the Courses. More specifically, the calculation of SGPA shall take into account the Courses graded with Letter Grades 'O' to 'F' as given in Table 1.

$$SGPA = \frac{\sum_{i=1}^{n} C_{i G_{i}}}{\sum_{i=1}^{n} C_{i}}$$
 (1.1)

The SGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.1) up to two decimal places, where n is the total number of Credit Courses registered by the student in that Semester, Gi is the Grade Point secured in the ith registered Course and Ci is the Credit (weight) of that Course.

# b. CGPA (Cumulative Grade Point Average)

(i) The CGPA of a student in a Semester of a Programme shall be the accumulated weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered and successfully completed so far starting from the enrollment in the Programme. In other words, taking into account all the Courses graded with 'O' to 'P' as given in Table 1.1, generally the CGPA of a student shall be calculated starting from the first Semester of his/her enrolled Programme, while the CGPA of a lateral-entry student shall be calculated starting from the Semester of his/her enrollment.

(ii) The CGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.2) up to two decimal places, where N is the total number of Credit Courses registered and successfully completed so far by the student, Gi is the Grade Point secured in the ith completed Course and Ci is the Credit (weight) of that Course.

$$SGPA = \frac{\sum_{i=1}^{N} c_{i G_{i}}}{\sum_{i=1}^{N} c_{i}}$$
 (1.2)

The CGPA shall be convertible into equivalent percentage of marks using Equation Conversion of CGPA to percentage marks: = CGPA*10

#### c. Post-Examination

#### i. Transcript or Grade Card or Certificate:

A marking certificate shall be issued to all the registered students after every Semester. The Semester mark sheet will display the course details (code, title, number of credits, grade secured) along with total credit earned in that Semester.

#### ii. Grievance Readdress Mechanism:

Students with any dissatisfaction or grievance regarding the marks awarded in any of the Papers / Courses may appeal to the Controller of Examinations for remedial action such as Re-evaluation within 10 days of the declaration of result.

- (i) A student has options to appeal for re-evaluation of his /her answer script to the Controller of Examination.
- (ii) Application for re-evaluation / re-scrutiny of answer scripts shall be made in the definite proforma available with the Examination Office through the head of the respective departments within 10 days of declaration of the results of the respective examinations.
- (iii) The Controller of Examination may appoint an examiner for re-evaluation and will consider and recognize the evaluation done by a university appointed examiner.
- (iv) There shall be no provision for re-evaluation of the Practical Papers, Project Work, and Dissertation etc. However, the students fail in practical examination

- or viva voce and wish to appear again may apply to be evaluated can do so with the next schedule.
- (v) After screening the application for re-evaluation, the CoE may send the answer scripts of the student to the examiners appointed by the CoE with the approval of Vice Chancellor.
- (vi) The marks/grades achieved by the students after the re-evaluation shall be final and binding.
- (vii) Fresh Marks sheets / Grade Card shall be issued only if the candidate secures pass marks / passing grade in the re-evaluated paper.
- (viii) Revaluation of answer scripts shall be deemed to be an additional facility provided to the students with a view to improving upon their results at the preceding examination result for any reason whatsoever shall not confer any right upon them for admission to next higher class which matters always be regulated in accordance with the relevant rules or regulations framed by the University.
- (ix) If as a result of revaluation of the candidate attracts the provision of condonation of deficiency, the same may be applied to his/her only for fresh attempt.

# INSTRUCTION TO TEACHERS AND STUDENTS

#### (Teaching and Learning Methods)

In all the courses the teacher has to select topics for teacher-method which should not be less than 20 percent. The approach will be direct classroom teaching through a series of lectures delivering concepts using ITC facilities, white or blackboard. Notes may also be circulated to the students; however, the students are to be involved in the preparation of the notes. The teacher will be responsible for selecting the best note for circulation. The teacher-centric methodology has recently fallen out of favour because this strategy for teaching is seen to favour passive students.

## 1. Student- centric / Constructivist Approach:

The topics of the courses may be selected at the start of the class and assigned one topic to each of the students for studying by themselves, prepare presentations, notes, etc., and present at respective class time after consultation and discussion with the course teachers. The teacher facilitates the learning of the students by guiding and providing input and explaining concepts. 60 percent of the course contents may be selected for this purpose. To avoid behavior problems, teachers must lay a lot of groundwork in student-centric classrooms. Typically, it involves instilling a sense of responsibility in students. In addition, students must learn internal motivation.

- **a. Project-Based Learning:** The teacher may select 5 percent of topics for the purpose and may conduct visits to the laboratory for experiments or field surveys. The selection of the topic may be done considering the available facility for the purpose. However, in the final semester of each of the Programme the student has to undergo project-based learning at least 4 months duration. This approach will help the student to think critically, evaluate, analyze, make decisions, collaborate, and more.
- **b. Inquiry-Based Learning:** The teacher/ students are supposed to list at least five questions in each contact hour and student solve these question or search for answer which becomes the home work for the students "question-driven" learning approach. The teacher may look for the correctness of the solution or the best possible answer and discuss in the successive class. This will help in the preparation for various competitive examination and develop a habit for search for solutions.
- **c. Flipped Classroom:** About 10 percent of the course content has to be completed by this method. In this approach the students are asked to watch video or lecture prepared by the teacher or any video available (relevant to the course). A set of questions may be given to the students for searching answers by the students. The idea is that students should have more time in-

classroom focusing on achieving these higher levels of thinking and learning. The Flipped classroom is also an acronym. The letters FLIP represent the four pillars included in this type of learning: Flexible environment, Learning culture shift, Intentional content, and Professional educator. As you can see, the second pillar refers to a culture shift from the traditional approach where students are more passive to an approach where students are active participants. As a result, this approach is also a student-centric teaching method.

**d. Cooperative Learning:** The remaining five percent has to be completed by cooperative learning approach. In this approach, the students are allotted problems. During library hours the students along with the teacher visit the library and search for probable solutions for the assigned problem. The same has to be done in groups so that the students discuss among themselves for the appropriate answers. Essentially, cooperative learning believes that social interactions can improve learning. In addition, the approach recreates real world work situations in which collaboration and cooperation are required.

#### The percentage categorization for the completion of a theory course

Teacher-centric or Direct Classroom Teaching: Delivery by series of lectures	20%
Student-centric Approach, Students present and deliver lectures in the presence	
of teacher and supervised by teacher	60%
Students visit fields or perform experiments or teachers perform demonstration	05%
Flipped Classroom approach	10%
Cooperative learning approach	05%

#### Inquiry-based approach has to be followed in all of the classes

The teacher has to distribute the topics to be considered for teaching by the above-mentioned approaches and prepare a lesson plan for execution and maintain a file.

# **Breakdown of Credits**

Sl. No	Category	Title of the Course	Total number of Credits
		Skill Enhancement Course (SEC)	
		Ability Enhancement Course (AEC)	08
1	University Core (UC)	Field Training (FT)	
		Discipline Specific Elective (DSE)	
		Value Added Course (VAC)	08
2	University Elective	Multidisciplinary Course (MDC)	09
2	(UE)	Value Added Course (VAC)	
		Discipline Specific Core (DSC)	88
2	Durante Carra (DC)	Field Training	01
3	Program Core (PC)	Research /Industry Internship	06
		Summer Internship	04
4		Discipline Specific Elective (DSE)	
4	Program Elective (PE)	Value Added Course (VAC)	
_		Skill Enhancement Course (SEC)	09
5	Faculty Core (FC)	Ability Enhancement Course (AEC)	
		Total	133

# **Breakdown by categories of courses**

Sl. No.	Category	Credits	%
1	Paramedical Sciences	124	93.23%
2	FOCT	02	1.50%
3	Commerce and Management	01	0.75%
4	CLPDP	06	4.51%
	Total	133	100%

# SEMESTER WISE COURSE DISTRIBUTION

	G 3.1	G G I	G WILL	Course			Enga	agei	mer	ıt		Ma	ximun	ı Mar	ks for
	S.N.	Course Code	Course Title	Category	L	T	P	S	R	o	С	IA*	SEE*	PE*	Total
	1.	24BMLT1101R	Human Anatomy and Physiology I	DSC (Major)	4	0	4	0	0	0	6	40	60	100	200
	2	24BMLT1102R	General Biochemistry	DSC (Major)	3	0	2	0	0	0	4	40	60	100	200
	3	24BMLT1103R	Basic Principle of Hospital Practice and Patient Care	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	100
ster ]	4	24BMLT1104R	Techno Professional Skills I	SEC	0	0	2	0	0	0	1	0	0	100	100
Semester I	5	24UBPD1101R	Basic Communicative English (PDP)	AEC	0	0	2	0	0	0	1	0	0	100	100
	6	24BMLT1101M	MOOCs (CBCS)	VAC	2	0	0	0	0	0	2	100	0	0	100
	7	24BMLT1105R	Medical Psychology	MDC	3	0	0	0	0	0	3	40	60	0	100
	8	24UBEC1101	Extra-Curricular/ Co- Curricular	Extra - Curricular	0	0	0	4	0	0	1	0	0	100	100
			Total		14	0	10	4	0	0	20	260	240	500	1000
	S.N.	Course Code	Course Title	Course			Enga	agei	mer	ıt		Ma	ximun	ı Mar	ks for
	D.11.	Course code	Course Title	Category	L	T	P	S	R	O	C	IA*	SEE*	PE*	Total
	1.	24BMLT1201R	Human Anatomy and Physiology II	DSC (Major)	4	0	4	0	0	0	6	40	60	100	200
	2	24BMLT1202R	Biochemistry: Biomolecules and their Metabolism	DSC (Major)	3	0	2	0	0	0	4	40	60	100	200
er II	3	24BMLT1203R	Fundamental of Patient Care and Safety	DSC (Major)	2	0	0	0	0	0	2	40	60	0	100
Semester	4	24BMLT1204R	Self-Study (Seminar/ Presentation)	AEC	0	0	2	0	0	0	1	0	0	100	100
Se	5	24UBPD1201R	Functional English	AEC	0	0	2	0	0	0	1	0	0	100	100
	6	24URSH1201M	Radiation Source and Hazards	MDC	3	0	0	0	0	0	3	40	60	0	100
	7	24UBES1201R	Environmental Studies	VAC	2	0	0	0	0	0	2	40	60	0	100
	8	24UBCC1201	Co- Curricular	Co- Curricular	0	0	0	4	0	0	1	0	0	100	100
			Total		14	0	10	4	0	0	20	200	300	500	1000

	S.N.	Course Code	Course Title	Course			Eng	gage	ment	t		Ma	aximum	Marl	ks for	
	D.1 1.	Course Coue	Course Title	Category	L	T	P	S	R	O	C	IA*	SEE*	PE*	Total	
	1	24BMLT2101R	Bacteriology	DSC (Major)	2	0	4	0	0	0	4	40	60	100	200	
	2	24BMLT2102R	Pathology	DSC (Major)	2	0	4	0	0	0	4	40	60	100	200	
	3	24BMLT2103R	Metabolic Biochemistry	DSC (Minor)	2	0	4	0	0	0	4	40	60	100	200	
Ш	4	24BMLT2104R	Biomedical waste Management	DSC (Minor)	4	0	0	0	0	0	4	40	60	0	100	
ster	5	24BMLT2105R	Techno Professional Skill II	SEC	0	0	2	0	0	0	1	0	0	100	100	
Semester	6	24URSP2101R	Radiation Safety and Protection	MDC	1	0	0	0	0	0	1	40	60	0	100	
	7		Design Thinking and Entrepreneurship	SEC	1	0	0	0	0	0	1	40	60	0	100	
	8	24UBPD2101R	Executive English	AEC	0	0	2	0	0	0	1	0	0	100	100	
	9	24UDLS2101R	Digital Literacy	VAC	0	0	2	0	0	0	1	0	0	100	100	
	10	24UULS2101R	Basic Acclimatizing Skills	MDC	0	0	2	0	0	0	1	0	0	100	100	
	11	24BMLT2106R	Field Training	FT	0	0	0	0	0	8	1	0	0	100	100	
		Т	Total	ı	12	0	20	0	0	8	23	240   360   800   1400     Maximum Marks for				
	S.N. Course Code Course Title		Course			Eng	gage	ment	t		M	aximun	ı Mar	ks for		
	S.N.	Course Code	Course Title		T	т		C	D		C	TA*		DE*	Total	
				Category DSC		<b>T</b>	P	S	R	0	C	IA*	SEE*	PE*	Total	
	1. 2	Course Code  24BMLT2201R  24BMLT2202R	Course Title  Parasitology  Clinical Pathology	DSC (Major) DSC	2 2	<b>T</b> 0		<b>S</b> 0 0	<b>R</b> 0 0		<b>C</b> 4	<b>IA*</b> 40 40		PE* 100 100	<b>Total</b> 200 200	
	1.	24BMLT2201R	Parasitology Clinical Pathology Analytical and Nutritional	Category  DSC (Major)	2	0	<b>P</b> 4	0	0	0	4	40	<b>SEE*</b> 60	100	200	
Δ.	1.	24BMLT2201R 24BMLT2202R	Parasitology Clinical Pathology Analytical and	DSC (Major) DSC (Major) DSC	2	0	<b>P</b> 4	0	0	<b>O</b> 0 0	4	40	<b>SEE*</b> 60 60	100	200	
mester IV	1. 2	24BMLT2201R 24BMLT2202R 24BMLT2203R	Parasitology  Clinical Pathology  Analytical and Nutritional Biochemistry Laboratory	DSC (Major) DSC (Major) DSC (Major) DSC (Major) DSC	2 2	0 0	<b>P</b> 4 4	0 0	0 0	0 0 0	4 4	40 40 40	60 60 60	100 100 100	200 200 200	
Semester IV	1. 2 3	24BMLT2201R 24BMLT2202R 24BMLT2203R 24BMLT2204R	Parasitology  Clinical Pathology  Analytical and Nutritional Biochemistry  Laboratory Instrumentation  Medical Record Keeping and Roles of MLT	DSC (Major) DSC (Major) DSC (Major) DSC (Major) DSC (Major) DSC (Major)	2 2 1	0 0 0	4 4 0	0 0 0	0 0 0	0 0 0 0	4 4 1	40 40 40 40	60 60 60	100 100 100 0	200 200 200 100	
Semester IV	1. 2 3 4	24BMLT2201R 24BMLT2202R 24BMLT2203R 24BMLT2204R 24BMLT2205R	Parasitology  Clinical Pathology  Analytical and Nutritional Biochemistry  Laboratory Instrumentation  Medical Record Keeping and Roles of MLT Professionals  Techno Professional Skills III  Enhance Professional	DSC (Major) DSC (Major) DSC (Major) DSC (Major) DSC (Major) DSC (Major)	2 2 2 1 3	0 0 0 0	4 4 0	0 0 0 0	0 0 0 0	0 0 0 0	4 4 1 3	40 40 40 40	60 60 60 60	100 100 100 0	200 200 200 100	
Semester IV	1. 2 3 4 5 6	24BMLT2201R 24BMLT2202R 24BMLT2203R 24BMLT2204R 24BMLT2205R 24BMLT2206R	Parasitology  Clinical Pathology  Analytical and Nutritional Biochemistry  Laboratory Instrumentation  Medical Record Keeping and Roles of MLT Professionals  Techno Professional Skills III  Enhance Professional	DSC (Major) DSC (Major) DSC (Major) DSC (Major) DSC (Major) DSC (Major) SEC	2 2 2 1 3	0 0 0 0	P 4 4 4 0 0 4 4	0 0 0 0	0 0 0 0 0	0 0 0 0 0	4 4 4 1 3	40 40 40 40 0	60 60 60 60 0	100 100 100 0 0	200 200 200 100 100	
Semester IV	1. 2 3 4 5 6 7	24BMLT2201R 24BMLT2202R 24BMLT2203R 24BMLT2204R 24BMLT2205R 24BMLT2206R 24UBPD2201R	Parasitology  Clinical Pathology  Analytical and Nutritional Biochemistry  Laboratory Instrumentation  Medical Record Keeping and Roles of MLT Professionals  Techno Professional Skills III  Enhance Professional Skills Self- Study (Seminar/ Project) Financial Literacy	DSC (Major) DSC (Major) DSC (Major) DSC (Major) DSC (Major)  DSC (Major)  SEC (Major)	2 2 2 1 3 0	0 0 0 0 0	P 4 4 4 0 0 0 4 2	0 0 0 0 0	0 0 0 0	0 0 0 0 0	4 4 4 1 3 2	40 40 40 40 40 0	60 60 60 60 60 0	100 100 100 0 0 100	200 200 200 100 100	
Semester IV	1. 2 3 4 5 6 7 8	24BMLT2201R 24BMLT2202R 24BMLT2203R 24BMLT2204R 24BMLT2205R 24BMLT2206R 24UBPD2201R 24BMLT2207R	Parasitology  Clinical Pathology  Analytical and Nutritional Biochemistry  Laboratory Instrumentation  Medical Record Keeping and Roles of MLT Professionals  Techno Professional Skills III  Enhance Professional Skills Self- Study (Seminar/ Project)	DSC (Major) DSC (Major) DSC (Major) DSC (Major) DSC (Major)  DSC (Major)  AEC  AEC	2 2 2 1 3 0 0	0 0 0 0 0 0	P 4 4 4 0 0 4 2 2	0 0 0 0 0 0	0 0 0 0 0	0 0 0 0 0 0	4 4 1 3 2 1	40 40 40 40 40 0 0	60 60 60 60 0 0	100 100 0 0 100 100 100	200 200 200 100 100 100	

	G 3.7	G G I	G FILE	Course			Eng	agen	nent			Ma	aximum	Mark	s for
	S.N.	Course Code	Course Title	Category	L	Т	P	S	R	o	C	IA*	SEE*	PE*	Total
	1.	24BMLT3101R	Virology and Immunology	DSC (Major)	2	0	4	0	0	0	4	40	60	100	200
	2	24BMLT3102R	Histopathology	DSC (Major)	2	0	4	0	0	0	4	40	60	100	200
	3	24BMLT3103R	Clinical Biochemistry	DSC (Major)	2	0	4	0	0	0	4	40	60	100	200
ster V	4	24BMLT3104R	Laboratory Infrastructure and Design	DSC (Major)	4	0	0	0	0	0	4	40	60	0	100
Semester	5	24BMLT3105R	Techno Professional Skills IV	SEC	0	0	4	0	0	0	2	0	0	100	100
	6	24BMLT3106R	Bio-Hazard	SEC	0	0	4	0	0	0	2	0	0	100	100
	7	24BMLT3107R	Internship (Summer Training)	Internship	0	0	0	16	0	0	4	0	0	100	100
	8	24BMLT3108R	Research/ Industry Internship	Research/ Industry Internship	0	0	0	0	12	0	2	0	0	100	100
			Total		10	0	20	16	12	0	26	160	240	700	1100

	S.N.	Course Code	Course	Engagement							M	aximun	n Mark	s for	
	9.1N.	Course Code	Course Title	Category	L	Т	P	S	R	0	С	IA*	SEE*	PE*	Total
	1	24BMLT3201R	Cytopathology	DSC (Major)	2	0	4	0	0	0	4	40	60	100	200
er VI	2	24BMLT3202R	Metabolic Errors and Quality Control in Clinical Biochemistry	DSC (Major)	2	0	4	0	0	0	4	40	60	100	200
Semester	3	24BMLT3203R	Medical Mycology	DSC (Major)	2	0	4	0	0	0	4	40	60	100	200
Sei	4	24BMLT3204R	Principle of Laboratory Management	DSC (Major)	4	0	0	0	0	0	4	40	60	0	100
	5	24BMLT3205R	Research/ Industry Internship	Research/ Industry Internship	0	0	0	0	24	0	4	0	0	100	100
	6		Finishing School	AEC	0	0	4	0	0	0	2	0	0	100	100
			Total		10	0	16	0	24	0	22	160	240	500	900

^{*}IA: Internal Assessment, SEE: Semester End Examination, PE: Practical Examination

			SEME	STER – I	[									
Course	Title		Huma	n Anaton	ny and Phys	siolo	gy I							
Course	code	24BMLT1101R		redits: 4 ours: 60T		L 4	T 0	P 4	S	R 0	O/F 0	C 6		
Pre-req	uisite	Nil	C	o-requisit	e				ľ	Vil				
Progra	mme	Ba	Bachelor of Medical Laboratory Technology											
Semest	er	Fall/ I Semester of First Year of the Programme												
Cou Objec		<ol> <li>To learn about the anatomical positions, gross and microscopic structure of the organs and skeleton in the human body.</li> <li>To assist students in developing a better grasp of the anatomical structure and basic physiological functions of various body regions.</li> <li>To recognize and differentiate between different types of tissues under a microscope.</li> </ol>												
CC	)1	Discuss the anatomical	terms and	l basic stru	icture and fu	ıncti	on o	f cel	ls					
CC	)2	Explore knowledge of features and functions.	Musculo	skeletal sy	ystem and b	ones	s alc	ong	with	the	ir spe	cial		
CC	)3	Describe the composition	on of the l	human dig	estive syste	m an	d the	eir s	peci	fic f	unctio	ns.		
CC	)4	Explain respiratory system and classify various respiratory disorders.												
CC	)5	Describe the anatomy and physiology of the cardiovascular system, fluid composition and distribution in the body.												
Unit No.		Content		Contact Hour	Lear	rning	g Ou	tcoı	ne		K	L		
I	Basic S Level of Areas, anatom Structur	tructure and Function of Organization – Body P Planes and Sections. C ical terminology re and Function of ane, Cellular Transport	f Cell arts and Common	10	Explain the anatomical directional location structures.	l po	sitio ns to	on a	and cribe	use	:	2,3		
П												3,4		
Anatomy of gastrointestinal tract and accessory organs of digestive system. Composition and functions of gastric, pancreatic, intestinal, and biliary secretion.  Analyze the anatomy gastrointestinal tract accessory organs digestive system.										:	,3			

IV	Respiratory System- Anatomy of the respiratory tract Mechanisms and Regulation of respiration. Gaseous exchange in lung and tissues. Lung volumes and capacities. Respiratory abnormalities: Hypoxia, cyanosis, dyspnea, Asphyxia, hyperventilation, hypoventilation, tachypnoea and bradypnea  Specific Program  ECC: Intrapleural and intrapulmonary pressures and their changes with respiration, Hypoxia.  For Specific programs- ECC: Description of larynx, trachea, and respiratory centers	10	Identify and describe the major anatomical structures of the respiratory tract and understand respiratory abnormalities.	1,2,3
V	Cardio-vascular System and Blood:  Mediastinum—division Structure of heart and blood vessels. Systemic circulation, pulmonary circulation, and coronary circulation Cardiac output, cardiac cycle, conducting system of heart. Heart sounds, pulse, blood pressure and their regulation. Composition and functions of blood, Plasma, and body fluids. Functions of RBC, WBC, and platelets. Hemoglobin. Blood hemostasis Blood groups	16	Integrate knowledge of the cardiovascular system and blood components to develop a comprehensive presentation on how these systems work together to maintain homeostasis and respond to physiological challenges.	2,4,5
Practical	<ol> <li>Study of Skull, Vertebrae, Ribs and bones of upper limb</li> <li>Study of compound Microscope</li> <li>Measurement of blood pressure, Arterial pulse</li> <li>Bleeding time (BT), Clotting time(CT)</li> </ol>	30	Discuss a comprehensive understanding of anatomical structures and physiological measurements.	1, 2, 3, 4, 5

# **TEXT BOOKS:**

T1: Fundamentals of Anatomy: Pamela K Levangie, Cynthia C Norkin

T2: Fundamentals of Medical Anatomy: Duane Nudson

T3: Ross and Wilson Anatomy and Physiology

## **REFERENCE BOOKS:**

R1: JP Bros Medical Publishers, Bangalore, 1st Indian Ed 1997: Medical Anatomy

R2: Agarwal/ Arya: Anatomy & Physiology

R3: Robert K. Clark: Anatomy and Physiology

# **OTHER LEARNING RESOURCES:**

https://openstax.org/books/anatomy-and-physiology-2e/pages/1-1-overview-of-anatomy- and physiology

	CO PO Mapping					
S.N.	Course Outcome (CO)	Mapped Program Outcome				
1	Discuss the anatomical terms and basic structure and function of cells	1,2,4				
2	Explore knowledge of Musculoskeletal system and bones along with their special features and functions.	1,2,4				
3	Describe the composition of the human digestive system and their specific functions.	1,2,4				
4	Explain respiratory system and classify various respiratory disorders.	1,2,4				
5	Describe the anatomy and physiology of the cardiovascular system, fluid composition and distribution in the body.	1,2,4				

	SEMESTER – I											
Course T	Course Title General Biochemistry											
Course code		24BMLT1102R	Total Credits: 4 Total Hours: 45T+30P			T 0	P 2	<b>S</b> 0	R 0	O/F 0	<b>C</b>	
Pre-requ	isite	Nil	Co-rec	uisite		1 1		Nil				
Program	me	Bache	elor of Medi	ical Labor	atory Tech	nolog	y					
Semester	•	Fall/ I Semester of First Year of the Programme										
Course Objectives		<ol> <li>To impart the knowledge in the technical aspects of biochemical studies specially focusing on the clinical findings in various body metabolites.</li> <li>To explain the energy flow in the form on ATP in the human body and cells.</li> <li>To demonstrate a practical knowledge for the qualitative determination of carbohydrate, proteins and lipids.</li> </ol>										
CO1					process of C	arboh	vdra	ites				
CO2	2	Explain the sources, functions and metabolism process of Carbohydrates  Identify various classification of amino-acids and recognize the significance of Protein.										
CO3	3	Describe the significance, classification and functions of lipids.										
CO4	ı	Comprehend the structure and functions of Nucleic Acids.										
COS	5	Explain the fundamentals and importance of acid, base and buffers										
Unit-No.		Content		Contact Hour	Learni	ng Oı	utco	me		KL	1	
I	Defini carbol Examp (Gluco Starch	CARBOHYDRATES: Definition and classification of carbohydrates Example of some common carbohydrates (Glucose, Fructose, Starch, Glycogen, Starch), their sources and structures. Biological significance of Carbohydrate			hydrates, encompassing their definitions, classifications.						,	
II PROTEINS: Definition of Proteins along with the biological significance, Amino acids and its, classification: Essential and Non-essential amino acids				10	Define explain the significance cellular fun	e in	biol v	ogic		1,2	,	
Class Exam		tion and classification fication of Fatty Acids ples and functions of som (Phospholipids, Glycolipid	10	Oclassify fatty acids based on their saturation and explain how these classifications influence lipid function and physiological impact.				nd se ce	1,3			
IV	NUCLEIC ACIDS: Basics on the structure of DNA and RNA Function of DNA and RNA			8	Explain functions (storage and genetic and RNA.	of nd tra	nsm	DN issio	A on	1,4		

V	ACID-BASE BUFFERS: Basics about acids, bases, pH, pOH, pKa and Buffer		Explain the concepts of acids, bases, pH, pOH, pKa, and buffers.	3,4,5
Practical	<ol> <li>Identification and Demonstration of Biochemistry Laboratory Glassware's and Apparatus.</li> <li>Identification and Demonstration of Biochemistry Laboratory Instruments (Principle and its applications).</li> <li>To perform Fehling's test for determination of reducing and non-reducing sugar in an unknown sample</li> <li>To perform Benedict's test for determination of reducing and non-reducing sugar in an unknown sample.</li> <li>To perform Molisch's test for Determination of sugar in an unknown sample.</li> </ol>	30	Explain the principles behind the operation of biochemistry laboratory instruments and describe the chemical basis of the test.	1,2,3,4,5

#### **TEXT BOOKS:**

T1: Textbook of Biochemistry: U Satyanarayana and U Chakrapani

T2: Text book of Biochemistry for medical students: DM Vasudevan, Sreekumari S, Kannan Vaidyanathan

#### **REFERENCE BOOKS:**

R1: Dr. J.L Jain, Dr. Sunjay Jain, Nitin Jain: Fundamentals of Biochemistry

R2: David L Nelson, Michael M. Cox: Lehninger Principles of Biochemistry

## **OTHER LEARNING RESOURCES:**

https://www.khanacademy.org/science/biology/human-biologyhttps://open.oregonstate.education/

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Explain the sources, functions and metabolism process of Carbohydrates	1,3,4					
2	Identify various classification of amino-acids and recognize the significance of Protein.	1,3,4					
3	Describe the significance, classification and functions of lipids.	1,3,4					
4	Comprehend the structure and functions of Nucleic Acids.	1,3,4					
5	Explain the fundamentals and importance of acid, base and buffers	1,3,4					

	SEMESTER – I										
Course	Title	Basic Principle of Hospital Practice and Patient Care									
Course Code		24BMLT1103R		Credits: 2   Hours: 30T		<u>L</u>	T 0	P S 0		0/F 0	<b>C</b> 2
Pre-req	uisite	Nil		Co-req	+		- 1	N	Vil		
Prograi	nme	Bacl	helor of l	Medical La	boratory Te	echr	olog	$\mathbf{y}$			
Semeste	er	Fall/ I Semester of First Year of the Programme									
Course Objectives		<ol> <li>To impart the knowledge in patient in a holistic approach for the overall wellbeing of the patient.</li> <li>To impart a comprehensive knowledge on medical ethics and the quality and functions of medical professionals.</li> <li>To provide a gross knowledge on the legal hazardous of medical profession.</li> </ol>									
CC	<b>)</b> 1	Discuss different functions components of hospital n	•		ecord keepir	ng,	repo	rting	and	essen	tial
CO	02	Explain the basic principles, golden rules of First Aid and effectively implement the skills in certain medical emergencies.									
CO	03	Apply fundamental knowledge of patient safety and care to ensure basic care needs of patients.									
CO	04	Assessment of common laboratory accidents and its effective management.									
CO	<b>D5</b>	Describe vital signs and effectively manage the abnormalities.									
Unit No.		Content Contact Lo			Les	arn	ing (	Outco	ne	K	L
I	Definiti Classifi departm hospital Definiti Different Values records	nents of hospitals Managem	and nent of reports reports nee of	5	Discuss di process of reporting component managemen	re a			ing, ntial	1,	2
П	First aid Prioritic aid qua aider. Simple condition bite Scot &/r1 W Analyzi	Il Profession Al and Is of Medical Profession d Aims & objectives of fires of first aid Golden rules of ditties & responsibilities of first aid measures in secons like—food poisoning orpion bite Dog bite Charles Board, ppt aing evaluating foreign bootongans Burns & Hemorrha	rst aid of first of first elected Snake . 7/t1	5	Illustrate the golden rule effectively skills in emergencies	es of in cen	f Firs	st Aid nent	and the	2,	3

Ш	HYGIENE AND BASIC CARE NEEDS OF PATIENTS Personal Hygiene and Maintenance of Hygiene Maintaining therapeutic environment Safety factors for patients such as safety from mechanical injury, thermal &chemical injury, radiation & bacteriological injury, safety from allergens. Different positions of the body: Supine position, Prone Position, Cardiac position, Lateral Position, Fowler's position	6	Execute the knowledge on personal hygiene and basic care needs of patients.	1, 2
IV	SAFETY IN THE LABORATORY Common laboratory accidents from Physical injuries Electrical shock Chemical injury Bleeding, Burn, Eye accidents biological hazards.	4	Illustrate the basic principles, Golden rules of First Aid and Effectively implement the skills in certainmedical emergencies.	1, 2
V	VITAL SIGNS OF PATIENTS: Body temperature Maintenance of body temperature Factors influencing body temperature Different types of fever Stages of rigor Management of pyrexia	10	Examine the importance of vital signs of patients- Body temperature, Pulse, Blood pressure and Respiration.	3, 4
	Pulse Common pulse sites Factors influencing pulse rate Characteristics of Pulse Abnormal pulses Reading of pulse			
	Blood Pressure Definition Factors influencing B.P. Abnormalities of B.P. Recording of B.P. Respiration Regulation of respiration Factors causing variations in respiration Abnormal respirations Reading of respiratory rate. Different methods of Artificial Respiration			

# **TEXT BOOKS:**

T1: Principles of Hospital Practice and Patient Care: Srinivasulu Reddy

T2: Hospital and Patient Care Management: Dr. Vidhya Srinivasan, Dr. Akshay Ch. Deka

# **REFERENCE BOOKS:**

R1: Sylvia McKean: Principles and Practice of Hospital Medicine

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Discuss different functions, process of record keeping, reporting and essential components of hospital management.	1,2,5,8					
2	Explain the basic principles, golden rules of First Aid and effectively implement the skills in certain medical emergencies.	1,2,5,8					
3	Apply fundamental knowledge of patient safety and care to ensure basic care needs of patients.	1,2,5,8					
4	Assessment of common laboratory accidents and its effective management.	1,2,5,8					
5	Describe vital signs and effectively manage the abnormalities.	1,2,5,8					

			SEMESTE									
Course	Title		Phlebotomy (Tec									
Course of	code	24BMLT1104R	Total Credits: 1 Total Hours: 30	L 0	T 0	P 2	S 0	R	0/F 0	C 1		
Pre-requ	iisite		Co-requisite		U		Ni		0			
Progran			Bachelor of Medi	cal labo	ratory	Tech						
Semest			Fall/ I Semester of l									
Cours Objecti		2. The students phlebotomists other specime the procedure 3. Safety and inf will also be ta	diagnostic purpose.  2. The students will also be given the knowledge on the role and responsibilities of phlebotomists, learning how to perform the venipuncture process, drawing blood and other specimen into the correct tubes with the proper additives, accurately learning the procedure.									
CO ₂		and Patient Care.	nt samples for collec									
CO3	3	Demonstratethesec	uenceofcollectionand	limportai	ncesof	labelli	ngofs	ample	es			
CO4	ı	Recognize the com	mon errors and signif	ficance o	f speci	men r	ejecti	on.				
COS	5	Categorize the type	es of infections, its ca	usative a	gents	and ste	eps fo	r man	agemei	ıt.		
Unit- No.		Conte	ent	Contac Hour		Lea	rning	Outc	ome	KL		
I	Ph •	llebotomist, Role a Patient Care	nd Responsibilities	5	ide	entify	cha	alleng	tuation es ar the spo	d 1, 2,3		
II	Ty	rpe of Samples and Blood Urine Body fluid, Seme		5		prove mmun		abilit effect	•	0 2,3		
III	Sp •	ecimen Collection: Order Of Draw Labeling Of Samp		5	pri	oility oritize sks.	to e, a		organiz			
IV		ommon errors ejections: Hemolysis Hematomas Specimen Rejecti	and Specimen	5	pro	emons ofession ofession ofession ofession ofession ofession ofession ofession ofession ofession ofession ofession ofession ofession ofession ofession ofession ofession ofession ofession ofession offession o	onal	attitu				
V	•	fety And Infection Osha (Occupational Act) Types of Infectio Pathogens, Airborn PPE (Personal Prote Finger stick Injury medical Waste Man	Controls: Safety and Health ns: Blood Borne e Pathogens ective Equipment)	5	ex	oility perien rsonal		refleto to gths	ect c identif	n 1, 3, 4		

- 1. Textbook of Medical Lab Technology–PrafulB.Godkar, DarshanP.Godkar.
- 2. Textbook of Medical LabTechnology-RamnikSood.
- 3. Clinical chemistry-Michael.L.Bishop
- 4. Essentials in Haematology and Clinical pathology-Ramdas Nayak
- **5.** Textbook of Microbiology–Ananthanarayan & Paniker

## **REFERENCE BOOKS:**

- 1. Textbook of Medical Lab Technology–PrafulB.Godkar, DarshanP.Godkar.
- 2. Textbook of Medical Lab Technology– Ramnik Sood.
- 3. Clinical chemistry-Michael.L.Bishop
- 4. Essentialsin Haematology and Clinical pathology- Ramdas Nayak
- 5. Textbook of Microbiology–Ananthanarayan & Paniker

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Program Outcome							
1	Understanding Phlebotomy and underlining the roles and responsibilities of a Phlebotomist and Patient Care.	1, 4, 6							
2	Identifying different samples for collection, example: blood, urine, Body fluid, Semen, Pus, scrapping.	4, 5							
3	Demonstratethesequenceofcollectionandimportancesoflabellingofsamples	4							
4	Recognize the common errors and significance of specimen rejection.	2, 4							
5	Categorize the types of infections, its causative agents and steps for management.	2							

			SE	MESTER -	- I								
Course	Title		Ba	sic Commu	ınicative l	Engl	ish						
Course	Code	24UBPD1101R	Total Cred			L	T	P	S	R	0/	F	C
		240DI D1101K	Total Hour			0	0	2	0	0	0		1
Pre-req		Compulsory		-requisite					Ni	il			
Progra				of Medical					_				
Seme	ster		ester of Firs			`							
Cou Objec		<ol> <li>To enhance co</li> <li>To learn and to</li> </ol>	ommunication anderstand the	skills throu importance	of English grammar and their application.  Sugh listening and speaking exercises.  See of pronunciation of words.								
writing skills.				nable the students to improve the speaking and									
CO		It enables the learn				1							
CO		It will strength bot											
CO		It will strengthen t		· ·				4 - 1	4 .		1 1.		
CO Unit-	5	It will give an intro	oduction on the	ne concept o	Contact	_	on, 1	ts 1m	porta	ınce a	na b	arrı	ers.
No.		Con	tent		Hour		Lea	rning	g Ou	tcom	e	ŀ	ΚL
I					6			about , arti		v to w etc.	rite		2,3, - ,5
II	• S		v		6			about ntence		v to w	rite		2,3,
III	• Sy	nle 3- ling Vocabulary monyms ntonyms			6		earn nange	abore the		how I.	to	l	2,3,
IV Module 4- Speaking Skills Introduction and greetings Pronunciation Asking and offering information Video Recording for self-analyze			6		earn oeak.	abo	out	how	to		2,3, - ,5		
<ul> <li>Video Recording for self-analyze</li> <li>W Module 5-         <ul> <li>Communication Skills</li> <li>Introduction to Communication,</li> <li>Importance of Communications kills,</li> <li>Purpose of Communication,</li> <li>Types of Communication,</li> <li>Barriers to Communication,</li> </ul> </li> </ul>			lls,	8		earn omm	abo unica		how	to		2,3,	

- T1: Wren & Martin. (2017). High School English Grammar and Composition. S.Chand Publishing.
- T2: Pal, Rajendra. Suri, Premlata (2022). English Grammar & Composition. Sultan Chand and Sons Publishing.
- T3: Debnath, Adhir. (2018). A Textbook of English Grammar and Composition. Bina Library

## **REFERENCE BOOKS:**

- R1: Mitra, Barun. (2016) Personality Development and Soft Skills 2/E, Oxford University Press.
- R2: Murphy, Raymond, (2012) English Grammar in Use Book with Answers: A Self-Study and Practice Book for Intermediate Learners of English, Cambridge University Press

#### OTHER LEARNING RESOURCES:

- 1. https://youtu.be/53SIKuCuHv0
- 2. https://youtu.be/Ljjiw9mC_Cg
- 3. https://youtu.be/xQfYiHbAjJo

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	The application of grammatical rules will enable the students to improve the speaking and writing skills.	1,6,8							
2	It enables the learners to use the language effectively.	1,6,8							
3	It will strength both listening and speaking skills.	1,6,8							
4	It will strengthen their vocabulary and use of words.	1,6,8							
)	It will give an introduction on the concept of communication, its importance and barriers.	1,6,8							

			SEMEST	ER – I									
Course 7	Γitle		Medical F	Psychology									
Course C	Code	24BMLT1104R	Total Credits: 3 Total Hours: 4		1 L 3	T 0	P 0	S 0	R	0/F 0	<b>C</b> 3		
Pre-requ	isite	Nil	Co-requ		3	U	U	Ni		U	<u> </u>		
Progran		]	Bachelor of Med		atory T	Γechr	ıolog	y					
Semest			all/ I Semester of										
Cours Objecti	se .	<ol> <li>Aims to provide st mental processes.</li> <li>Explore various ps abnormal psycholo</li> <li>To be equipped with</li> </ol>	<ol> <li>Explore various psychological domains such as cognitive, developmental, social, and abnormal psychology, gaining insights into how individuals think, feel, and act.</li> <li>To be equipped with critical thinking skills and an appreciation for the complexities of human behaviour, enabling them to apply psychological concepts to real-world situations.</li> </ol>										
CO1		Understand the signif	icance, history, so	cope and br	anches	of ps	ychol	ogy.					
CO2		Discuss the biology o	f human behavior	ur and sensa	ation.								
CO3		Identify the different sit.  Understand the concentrate of stress	cept and types										
CO5		Apply skills to assess		d identify th	ne warn	ing s	igns (	of poo	or mer	ntal hea	lth.		
Unit-	Jnit- Content			Contact					utcon				
No. I	Defi Evo	oduction to Psychology inition of psychology lution of modern psychoch of psychology		Hour 7		ology		evol		ledge in mo	of dern		
п	Bod proc Brai neur Asse	logy of Behavior y mind relationsh tess in health and illnes in and behavior: ne rons and synapse, ociation cortex, Ri ispheres.	ervous system,	10	_					havioui ( functi			
Ш							nent						
IV	Mot theo in adju illne Stre & co	ivation and Emotional ivation: meaning, cories, motives and behabition: definition, compensations, theories estimates, emotions ess.  ss: stressors, cycle, efforing and management flicts and frustra	oncepts, types, avior. conents, changes es, emotional in health and fects, adaptation t.	8	Explains the techniques of keeping or motivated and maintaining emotion processes.								

	resolution.		
V	Mental Hygiene and Mental Health Concepts of mental hygiene and mental health. Characteristics of mentally healthy person Warning signs of poor mental health, Promotive and preventive mental health – strategies and services. Guidance counselling and Rehabilitation.	10	Explain the warning sign of poor mental health ways of preventing it and characteristics of a healthy person.

T1: Medical Psychology, Robert Dunn, (2023), Legare Street Press.

T2: Psychology for Medicine and Healthcare, Ayers Susan, Sage Publications Ltd.

## **REFERENCE BOOKS:**

R1: Psychology - by Baron/Misra (2016). Pearson Education India.

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Program Outcome							
1	Understand the significance, history, scope and branches of psychology.	1,2							
2	Discuss the biology of human behaviour and sensation.	1,3							
3	Identify the different stages of human growth and development and the factors influencing it.	1,4,7							
4	Understand the concept and types of motivation, emotion, stress along with the management of stress and conflict.	3,5							
5	Apply skills to assess mental health and identify the warning signs of poor mental health.	3,5							

			SE	MESTE	R I									
Cou	rse Title			Extra	a-Curricu	ılar								
Con	rse Code	24UBC1101	Total C	redits: 1		L	T	P	S	R	O/F	C		
Cou	rse Code	24UBC1101	Total H	ours: 60		0	0	0	4	0	0	1		
Pre-	requisite	Nil	(	Co-requisi										
Anti-	-requisite				Nil									
Programmes Bachelor of Medical Laboratory Technology														
Se	emester	Fal	ll/ I seme	ester of fi	rst year	of th	e Pr	ogra	mme					
		1. To ascertain phy								and s	elect	best		
		Performers for sta												
	Course	2. To enhance and i						sports	s, yoga	a, mus	ic, Da	nce,		
Obj	jectives :	drama, etc. throug	-				•							
		3. It is to develop th	e social a	nd soft ski	lls and to	prom	ote a	holis	tic de	velopn	nent of	f the		
		learners.												
(	CO1	Students will deve							ractic	al acti	vities	and		
		projects, fostering teamwork and decision-making abilities.												
(	CO2	Students will deve				analy	zing	comp	lex is	sues, e	evalua	ting		
`		evidence, and prop												
(	CO3	Students will enga								orts, p	promo	ting		
`		social justice, envi			•				_					
(	CO4	Students will unle		creative po	otential by	y expl	oring	new	ideas	s, expe	rimen	ting		
		with different med												
(	C <b>O</b> 5	Through mock interviews and resume workshops, students will enhance their												
`	003	employability and	prepare fo	or future c	areer opp	ortuni	ties							
Unit		Content		Contact	Learning Outcome KL									
No.				Hour										
I		cular activities cover		60	Skill De	_				-		1, 2		
		experiences and purs						vork,		adershi				
		ent academic learnin			commun			d crit	tical tl	hinking	g.			
		ally organized and r			Holistic									
		educational instituti			Supporti	_					nd			
		nmunities and play a crucial role in physical development alongside												
		levelopment. Some e	_		academic learning.									
		rts and Physical A Activities:	cuvities		_	Building Networks:								
		Activities: c Clubs and Competi	tions			Creating opportunities to interact with								
					peers, mentors, and professionals.									
		ity Service and Volun ip and Personal Devel				Personal Fulfillment: Providing avenues for creativity, self-expression								
		and Hobby-based Act			and expl			•		•	OII			
	Creative	and Hoody-based Act	1 vIttle8		and expi	ornig	hers(	ліаі І	meres	is.				

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Program Outcome							
1	Students will develop effective leadership qualities through practical activities and projects, fostering teamwork and decision-making abilities.	5,7,9							
2	Students will develop critical thinking skills by analyzing complex issues, evaluating evidence, and proposing innovative solutions.	5,7,9							
3	Students will engage in community service projects or advocacy efforts, promoting social justice, environmental sustainability and ethical leadership.	5,7,9							
4	Students will unleash their creative potential by exploring new ideas, experimenting with different mediums	5,7,9							
5	Through mock interviews and resume workshops, students will enhance their employability and prepare for future career opportunities.	5,7,9							

			SEM	ESTER –	II							
Course	Title				d Physiology I	I						
Course	Code	23BMLT121R	Total Credi Total Hours		P	1 4	T 0	P 4	S 0	R 0	O/F 0	<b>C</b>
Pre-req	uisite	Nil	Co-requ			•	U	•	Ni	-	U	<u> </u>
Program	nme	Bachelor of Medical Laboratory Technology										
Semeste	er	S	pring/ II Sem	ester of Fi	rst Year of the	Pro	gra	mm	e			
Cou Objec		function of the 2. To provide a co	<ol> <li>To provide a comprehensive concept of all the anatomical position and physiological function of the human body.</li> <li>To provide a comprehensive concept of physiological function of the human body</li> <li>To understand the underlined mechanism and regulation of the human body.</li> </ol>									
CC	)1	Explain the struct	ure and function	on of excre	etory system.							
CC	)2	Describe the sens	ory organs and	l nervous s	ystem along wi	th th	eir f	unc	tions	S		
CC	)3	Identify different	types of immu	ne cells ar	nd lymphatic sy	stem	in t	he b	ody			
CC	)4	Explain the struct	ure and function	ons of male	e and female re	prod	ucti	ve s	ystei	n.		
CC	)5	Describe the endo	ocrine system a	and their re	gulation							
Unit No.		Content	Contact				Learning Outcome				K	IL.
I	I Urinary System Structure of kidney, ureter, Urinary bladder, male and female urethra. Functions of kidneys, nephron. Urine formation.			15	Explain the process of urine formation, including the role of nephrons in filtering blood.  Describe the organization and function of the central and peripheral nervous systems, including the roles of sensory and motor pathways.							,2,3
Ш	fluid Sensory Organs: Skin, Ear, Nose, Tongue Eye  Lymphatic and Immunological System Structure of lymphatic system and functions. Immunity— Antigen, Antibody, and Immune response. Acquired immunity			15	Describe the structure and functions of the lymphatic system in supporting immune function.							,2
IV	Acquired immunity			10	Identify and explain the structure of male and female reproductive organs and their functions.							,2

V	Endocrine System Different endocrine glands Hormones and functions of endocrine glands Regulation of secretion hormones.	10	Explain the structure and function of various endocrine glands and identify the hormones they secrete.	3,4
Practical	<ol> <li>Study of pelvic bones and bones of lower limbs of human body.</li> <li>Study of organs: Brain, heart, lung, liver, kidney</li> <li>Blood group</li> <li>DLC</li> <li>Total count of RBC and WBC</li> </ol>	60	Demonstrate a thorough understanding of the structure and function of pelvic bones, major organs, and blood groups.	1,2,3,4

T1: Anatomy & Physiology- Ross and Wilson.

T2: Anatomy and Physiology: Understanding the Human Body by Clark. T3: Anatomy and Physiology for nurses by Evelyn Pearce.

## **REFERENCE BOOKS:**

R1: Anatomy and Physiology for nurses by Pearson. R2: Anatomy and Physiology by N Murgesh.

## OTHER LEARNING RESOURCES:

https://openstax.org/books/anatomy-and-physiology-2e/pages/1-1-overview-of-anatomy-andphysiology

CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Program Outcome						
1	Explain the structure and function of excretory system.	1,2,4						
2	Describe the sensory organs and nervous system along with their functions	1,2,4						
3	Identify different types of immune cells and lymphatic system in the body.	1,2,4						
4	Explain the structure and functions of male and female reproductive system.	1,2,4						
5	Describe the endocrine system and their regulation	1,2,4						

			SEMEST	TER – II					
Cour	se Title		Biochemistry:			<b>Ietaboli</b>	ism		
Cour	se Code	24BMLT1202R	Total Credits: Total Hours:		L T P 3 0 2	S 0	R	0/F 0	<u>C</u>
Pre- r	requisite	Nil	Co-requis		3   0   2	Nil	_	· ·	-
Prog	gramme		Bachelor of M	edical Lab	oratory Techn	ology			
Sen	nester	Sp	oring/ II Semeste	er of First	Year of the Pro	ogramn	ne		
Cou Objec		focusing on the 2. To explain abo 3. To provide info	knowledge in the eclinical finding ut the energy flow ormation and un functions, regulat	s in various w in the for derstanding	s body metabol m on ATP in th g on the basic	ites ie huma idea ab	n body out th	and c	ells. ymes,
C	CO1	Describe classifica	ation, mechanism	n of enzyme	es, and factors a	ffecting	genzyı	ne acti	ions.
C	CO2	Define the mechan	nism of carbohyd	rate metabo	olism in the boo	dy.			
C	CO3	Explain the metab					ent org	ans of	body.
C	CO4	Describe the proce	ess of Lipids met	abolism and	d associated cli	nical co	nditio	ıs.	
	CO5	Determine the cosources and sign		in the body		als, the	eir cl	assific	ation,
Unit- No.		Content		Contact Hour	Learnin		KL		
I	Basics Mechan	MES: on and classification of co-enzyme, hism of enzyme A affecting enzyme	iso-enzyme. ction.	7	Describe the enzyme action the factors that activity in bio	on, and at affect	analy enzyn	ze ne	1,2
II	META Glycoly Kreb's Glucon		Glycogenesis	10	Analyze ti involved metabolism a significance production a blood glucose	carbo nd expl in and regu	energ lation	ite eir gy	1,2,3
III	Transar Urea C	EIN METABOL nination Deamination yele and its Signification Testion	on cance	10	Explain the protein degradation, metabolism	sy	ynthes	is,	1,2,5
IV	β-oxida Ketosis Functio	METABOLISM tion of Fatty Acids. and ketoacidosis n Tests)	Ketone bodies LFT (Liver	8	Demonstrate understanding metabolism, processes of l	includi	lip ing t	id he	2, 5
V	Definition according according sources vitaming Deficier Individual phosphicopper,	ncy.	on of vitamins of individual  (calcium, sium fluoride, lenum etc.) –	10	Understand between the and fat-solub their key metabolism as	e water le vitan role	solub nins aı in tl	le nd	2,3,4

	1. To perform precipitation test to	30	Determine the presence of	1,2,3,4,
	determine the presence of proteins in an		proteins and lipids in urine	5
	unknown urine sample.		samples, enhancing their	
7	2. To perform heat and acetic acid test to		diagnostic skills in clinical	
Practical	determine the presence of proteins in an		laboratory practice.	
rac	unknown urine sample			
_	3. To perform Heller's test to determine the			
	presence of proteins in an unknown urine			
	sample			
	4. To perform lipid solubility test			

T1: Textbook of Biochemistry for Paramedical Students: P Ramamoorthy

T2: Fundamentals of Biochemistry: U. Satyanarayana, U. Chakrapani

## **REFERENCE BOOKS:**

R1: Text book of Biochemistry for medical students: DM Vasudevan, Sreekumari S, Kannan Vaidyanathan

R2: Lehninger Principles of Biochemistry: David L Nelson and Michael M Cox

	CO PO Mapping	
S.N.	Course Outcome (CO)	Mapped Program Outcome
1	Describe classification, mechanism of enzymes, and factors affecting enzyme actions.	1, 3,4
2	Define the mechanism of carbohydrate metabolism in the body.	1, 3,4
3	Explain the metabolism of protein and its significant effects on different organs of body.	1, 3,4
4	Describe the process of Lipids metabolism and associated clinical conditions.	1, 3,4
5	Determine the different types of vitamins and minerals, their classification, sources and signs of deficiencies in the body	1, 3,4

		SI	EME	STER – II									
Course	Гitle	Fun	dam	ental of Pati	ient Car	e and	Safet	y					
Course (	Code	24BMLT1203R		otal Credit tal Hours:		L 2	T 0	P 0	S 0	R 0	O/F 0	C 2	
Pre-requ	isite	Nil		Co-requ	ıisite				Nil			l	
Progran	nme	Bachelor of Medical Laboratory Technology											
Semest	ter	Spring/ II Semester of First Year of the Programme											
Course Objectives		the patient.  2. To impart a comprehent functions of medical prof	<ol> <li>To impart the knowledge in patient in a holistic approach for the overall wellbeing of the patient.</li> <li>To impart a comprehensive knowledge on medical ethics and the quality and functions of medical professionals.</li> <li>To provide a gross knowledge on the legal hazardous of medical profession.</li> </ol>										
CO	1	Describe signs and symptom	s of o	common po	oisoning	s and	its in	nmed	liate	man	ageme	nt	
CO	2	Explain the medical ethics ar	nd its	importanc	e on the	healt	hcare	syst	em				
CO	3	Identify the different types o	f sho	ck along w	ith the r	nanag	emer	ıt.					
CO	4	Determine the signs and simmediate management	symp	toms of h	hyperglycemia and hypoglycemia and its								
CO	5	Proficient in performing of management											
Unit-No		Content		Contact Hour	]	<b>Learning Outcome</b>						<b>KL</b>	
I	Defin Source poison Antid Carbo MED LEG. PROD Quali Profe. Negli corpo protec Profe.	res of Poisoning Symptoms ning First aid &Managem otes Common drugs poisoning on monoxide poisoning of MEDICAL PROFESSIONAL AND AL HAZARDS OF MEDICAL PROFESSION ties and Function of mediassional Ethics of Mediassion Malpractice Capence Clinical negliger rate negligence Consur	of nent g  ND AL ical ical ivil nce mer ical ion,	8	Describe the basic introduction of poisoning and learn about the Symptoms of poisoning, First aid& Management, Antidotes.  Illustrate the knowledge on the Medical Professional and Legal Hazard.							2,3	
Ш	SHO Defin Featu Inves	CK ition Types of shock General res of shock tigations of shock Management & first aid	eral	5	5 Understanding about SHOCK. Types of shock, Gene Features of shock, Investigation of shock Initial managem &first aid of shock.								

IV	HYPERGLYCEMIA AND HYPOGLYCEMIA Definition Clinical features Diabetes laboratory tests for diabetes Different types of glycosuria Ketone bodies Glucose tolerance est. Definition, Etiology, Clinical Features, Investigation and Management for Hypoglycemia	6	Explain about Hyperglycemia and Hypoglycemia and their investigations.	2,4
V	INVESTIGATION AND LABORATORY SETUP Preparation of patients and equipment's Collection of specimens of urine, stool, sputum, blood, CSF, Pericardial fluid, Peritoneal fluid, Pleural fluid, etc. Laboratory designing and management Different laboratories Disposal of wastes Reporting of tests of laboratory Quality control and accreditation Control of fire, infection, corrosive chemicals, toxic fumes, broken glasses, carcinogen. Legal and ethical regulation Characteristics of Pulse	6	Describe, illustrate and explain medical ethics along with the guidelines and management of different laboratories in the hospital	1,2,3

- T1: Textbook of Biochemistry by Dr D. M Vasudevan, Sreekumari S, Jaypee Publishers, New Delhi.
- T2: Biochemistry by V. Satyanarayan, Books and Allied Pvt. Ltd. Calcutta
- T3: Textbook of Medical Biochemistry by Chatterjee and Shinde
- T4: Text of Medical Laboratory Technology by Prafula Godkar

## **REFERENCE BOOKS:**

- R1: Satyanarayana, U. Biochemistry. Elsevier Health Sciences, 2013.
- R2: Kumar, Vijay, and Kiran Dip Gill. Basic concepts in clinical biochemistry: a practical guide. Springer Singapore, 2018.
- R3: Bender, David A. Nutritional biochemistry of the vitamins. Cambridge university press, 2003.
- R4: Masoro, E. J. "Lipids and lipid metabolism." Annual Review of Physiology 39, no. 1 (1977): 301-321.

	CO PO Mapping	
S.N.	Course Outcome (CO)	Mapped Program Outcome
1	Describe signs and symptoms of common poisonings and its immediate management	1,2,5,8
2	Explain the medical ethics and its importance on the healthcare system	1,2,5,8
3	Identify the different types of shock along with the management.	1,2,5,8
4	Determine the signs and symptoms of hyperglycaemia and hyperglycaemia and its immediate management	1,2,5,8
5	Proficient in performing quality laboratory investigation process and laboratory management	1,2,5,8

			SEMEST	ER – II									
Course 7	Γitle		Fu	nctional E	nglish								
Course C	`ode	24UBPD1201R	<b>Total Credits</b>	• • –	L T	P	S	R	O/I	F	C		
			Total Hours:		0 0	2	0	0	0		1		
Prerequ		Basic English	Co-requisi	L			N	i <b>l</b>					
Progran	nme		Bachelor of Med	dical Labo	oratory [	<b>Techn</b>	ology						
Semest	ter	Spr	ring/ II Semester	r of First Y	ear of t	ne Pr	ogran	ıme					
Cours Objecti		<ol> <li>To introduce the students to the basics of English grammar and their application.</li> <li>To enhance communication skills through listening and speaking exercises.</li> <li>To learn and understand the importance of pronunciation of words.</li> </ol>											
CO1		The learner will be a	The learner will be able to analyse and use the techniques in language use										
CO2		Communication and	behavioural skil	ls will boo	st their s	elf-re	liance.						
CO3		Students will learn the effective and efficient utilization of the time.											
CO4		It will strengthen their vocabulary and use of words.											
CO5		It will give an introduction on the concept of communication, its importance and barriers.											
Unit No.		Content		Contact Hour	Le	arnin	g Out	come		ŀ	KL		
I	Gran Inter Exc Typ	dule 1- mmar Interchange of rrogative and Assertiv lamatory and Assertiv es of Tenses nmon Errors		6	Learn a sentence Gramm	1,2,	3,4 ,5						
II		dule 2 - Vocabulary monyms Homophones	3	6	Learn a	bout	vocab	ulary		1,2,	3,4 ,5		
III	Tecl	ding Skills nniques of Effective R nering ideas and infor	-	6	Learn a	bout	the rea	ading		1,2,	3,4 ,5		
IV	<b>Def</b> i Typ	dule 4 - Conflict Maninition e of Conflict Manager ects of Conflict Manager	nent	6	Learn a			et		1,2,	3,4 ,5		
V	Intro Imp	dule 5 - Time-Manage oduction To Time Manage ortance of Time Manage to Maintain Time.	nagement,	6	me	1,2,	3,4 ,5						

- T1: Wren & Martin. (2017). High School English Grammar and Composition.S.Chand Publishing.
- T2: Pal, Rajendra. Suri, Premlata (2022). English Grammar & Composition. SultanChand and Sons Publishing.
- T3: Debnath, Adhir. (2018). A Textbook of English Grammar and Composition. Bina Library

#### **REFERENCE BOOKS:**

- R1: Swan, Michael., (2014) Practical English Usage, Cambridge University Press
- R2: Taylor J.and Wright, J., IELTS Advantage Reading Skills: A step-by-step guide to a highIELTS reading score, Delta Publishing by Klett.

#### **OTHER LEARNING RESOURCES:**

1. https://clockify.me/time-management-techniques

	CO PO Mapping									
S.N.	Course Outcome (CO)	Mapped Program Outcome								
1	The application of grammatical rules will enable the students to improve the speaking and writing skills.	1,6,8								
2	It enables the learners to use the language effectively.	1,6,8								
3	It will strength both listening and speaking skills.	1,6,8								
4	It will strengthen their vocabulary and use of words.	1,6,8								
5	It will give an introduction on the concept of communication, its importance and barriers.	1,6,8								

			SE	MESTER-	II								
Cour	se Title		1	adiation So	urces &	Haza		1	ı		1		
Cours	se Code	24URSH1201R		redits: 3	1 L 3	T	P	S	R	O/F	C		
Pre- r	equisite			ours: 45T requisite	3	0	0	0	0	0	3		
	ramme			of Medical	 Laborat	ory T	`echn	ology					
	nester	Sn		mester of Fi					me				
	urse ectives	<ol> <li>To provide know</li> <li>To identify and posed by radiati</li> <li>To familiarize s</li> </ol>	<ol> <li>To provide knowledge of various sources of radiation and types of ionizing radiation.</li> <li>To identify and understand the biological, environmental, and occupational hazards posed by radiation exposure.</li> <li>To familiarize students with international radiation safety symbols and signage for hazard identification and compliance.</li> </ol>										
C	01	Explain the concep	t of radiati	on and differ	entiate t	he var	ious	types o	f radi	ation.			
C	O2	Describe the discov	ction and pro	operties	of X-r	ays.							
C	03	Explain the princip	les of inter	action of x-r	ays with	matte	er.						
C	04	Classify the differe and signage used in	• 1				•				•		
C	05	Understanding the	biological	effects of ior	nizing rad	diatio	n.						
Unit- No.		Content		Contact Hour		Lear	ning	Outco	me		KL		
I	• 3	Radiation Types of Radiation Sources of Radiation		9	The student of Rac types of The st	1,2							
	• I • I • I	Action to X-rays: History Production of x-rays Properties			discov	ery an	id pro	ductio	n of X	-rays.			
III	• ( • ( • H	tion of X-rays with a Coherent scattering Compton effect Photoelectric effect Pair-production Photodisintegration	9	The series recognized underse for meand of professions.	e of ctions azards								
IV	• 7	on Hazards: Types of hazards Radiation symbols /si	gnage	9	The st about r radiation	adiati on w	on ha	zards a	nd int	erpret			
V			ionizing	9	The stu knowle	3,4,5							

- T1: Radiological Science for Technologist: Physics, Biology and Protection, 8th Edition, 2004, Bushong, Stewart C.
- T2: Safety code for medical diagnostic X-ray equipment and installations, 1986, Radiological Safety Division, AERB.
- T3: Radiological safety in Enclosed Radiography installations, 1986, Radiological Safety Division, AERB.

## **REFERENCE BOOKS:**

R1: Radiological safety in Enclosed Radiography installations, 1986, Radiological Safety Division, AERB.

	CO PO Mapping	
S.N.	Course Outcome (CO)	Mapped Program Outcome
1	Explain the concept of radiation and differentiate the various types of radiation.	1,5
2	Describe the discovery, production and properties of X-rays.	1,3
3	Explain the principles of interaction of x-rays with matter.	1,3
4	Classify the different types of radiation hazards and interpret standard radiation symbols and signage used in facilities, equipment, and environments where radiation is present.	1,3,5
5	Understanding the biological effects of ionizing radiation.	1,5

	SEMESTER-II												
Course Title		Environme	ntal St	udies									
Course Code	24UBES1201R	<b>Total Credits: 2</b>	L	T	P	S	R	O/F	C				
Course Code	24UDES12UIK	<b>Total Hours: 30T</b>	2	0	0	0	0	0	2				
Pre- requisite		Co-requisite											
Programme		Bachelor of Medical Laboratory Technology											
Semester	Sp	Spring/II Semester of First Year of the Programme											
Course Objectives	environmental is 2. To develop a wo and its associa motivations and	ents for careers as leade ssues from a problem-or, orld population that is aw ted problems and wh commitment to work in ents collectively towards	iented, /are of ich ha dividua	interdand co s the ally.	iscipl onceri kno	inary p ned abo wledge	erspeout the	ective. e envir ills, at	ronment ttitudes,				
CO1		e able to appreciate the sues and the links between							context				
CO2	Students will learn Human activities or	about natural resource, in natural resource.	its impo	ortance	e and	enviro	nmer	ntal im	pacts of				
CO3	Gain knowledge ab	out environment and eco	osysten	n									
CO4	Students will be ab	le to understand the cond	cept of	biodiv	ersity	y and re	espec	t them					
CO5	•	bout the conservation lems of environmental pes			•		•						

### **Course Contents:**

- **Unit 1-** Multidisciplinary nature of environmental studies: Definition, scope and importance (2 lectures) need for public awareness.
- Unit 2- Natural Resources: Renewable and non-renewable resources: Natural resources and associated problems. Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. Case studies. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.
- Unit 3- Ecosystems Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the Following ecosystem: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) (6 lectures)
- **Unit 4-**Biodiversity and its conservation Introduction Definition: genetic, species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels. India as

a mega diversity nation• Hot-sports of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity (8 lectures).

**Unit 5:** Environmental Pollution Definition Cause, effects and control measures of:-Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards. Solid waste

Management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies. Disaster management: floods, earthquake, cyclone and landslides. (8 lectures)

- Unit 6: Social Issues and the Environment from Unsustainable to Sustainable development. Urban problems related to energy. Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns. Case Studies. Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. Waste land reclamation. Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Issues involved in enforcement of environmental legislation. Public awareness.(7 lectures)
- **Unit 7:** Human Population and the Environment Population growth, variation among nations. Population explosion Family Welfare Programme. Environment and human health. Human Rights. Value Education. HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health. Case Studies. (6 lectures)
- **Unit 8:** Field work Visit to a local area to document environmental assets river/ forest/ grassland/ hill/ mountain. Visit to a local polluted site-Urban/Rural/Industrial/Agricultural. Study of common plants, insects, birds. Study of simple ecosystems-pond, river, hill slopes, etc. (Field work Equal to 5lecture hours)

#### **TEXT BOOKS:**

- Harucha E. B, Textbook of Environmental Studies, Orient Blackswan Publishing.
- Tiwari V. K A Textbook of Environmental Studies, Himalaya Publishing House
- Chatwal G. R. & Sharma H. Environmental Studies, Himalaya Publishing House

#### **REFERENCE BOOKS:**

- Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Stadards, Vol I and II, Enviro Media (R)
- Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
- Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad 380 013, India, Email:mapin@icenet.net (R)
- Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)

#### OTHER LEARNING RESOURCES:

The students will be able to appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems. Students will be able to understand the concept of biodiversity and respect them. Course Contents: Unit 1- Multidisciplinary nature of environmental studies: Definition, scope and importance (2 lectures) need for public awareness.

	SEMESTER II													
Cou	ırse Title			C	o-Curricular									
Con	ırse Code	24UBEC1201		Credits:1	_	L	T	P	S	R	O/F	C		
Cou	ii se Coue	240BEC1201	Total H	Iours: 60		0	0	0	4	0	0	1		
Pre	-requisite	Nil		Co-Requ	iisite				Ni	il				
Anti	-requisite				Nil									
Pro	grammes		Bachelo	r of Med	ical Laborato	ory T	Гесŀ	nolo	gy					
Se	emester	Spi	ring/ II S	emester	of First Year	of t	he F	rogr	amn	ıe				
		1. To ascertain physical and mental development of the students and select best												
		Performers for s	Performers for state, national and international level competition.											
(	Course	2. To enhance and improve student's talents in the field of sports, yoga, music, Dance,												
Ob	ojectives:	drama, etc. through AdtU club activities and workshops.												
		3. It is to develop	the social	l and soft	skills and to p	pron	note	a ho	listic	deve	elopme	nt of		
		the learners.		11.00			•			. 1	,			
	CO1	The students will be engaged in different activities headed under different clubs namely												
		dance, music, photography, drama, literacy, etc.  The students will participate in regular club activities like workshops, competitions as												
	CO2		per their interest and hobbies.											
		The students will b			ent ADTII in	vari	0116	inter	univ	ercity	v state	and		
	CO3	national level com				vari	ous	mici	uiii v	C151t.	y, state	una		
	G0.4		The students will be given a platform to earn from invited experts in their respective											
	CO4	fields.		-				-			-			
	CO5	The students will get an exposure of 360-degree learning methodology considering the												
		overall growth alor	ng with th											
Unit		Content		Contact	Le	earn	ing	Outc	ome			KL		
No.	Comerion	lar activities cover	o wido	Hour 60	Skill Devel	onn	ont	Enl	nonoi	na o	Jzi11c	1, 2		
I		xperiences and purs		00	such as			ork,			ship,	1, 4		
		nt academic learnin			communicat									
		lly organized and r	_ ,		Holistic Gro			. 01101			-8.			
		ducational instituti			Supporting	en	otic	onal,	soc	cial	and			
		es and play a crucia			physical development alongside									
		velopment. Some e			academic learning.									
		s and Physical A	ctivities		Building Ne			4		4	:41-			
	Cultural A	natitions		Creating opp						with				
	Academic		peers, mento Personal			roies nent:			ding					
	1	y Service and Volunt and Personal Develo	_		avenues for						_			
		nd Hobby-based Activ	•		and explorin			•			,			

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Program Outcome						
1	The students will be engaged in different activities headed under different clubs namely dance, music, photography, drama, literacy, etc.	5,7,9						
2	The students will participate in regular club activities like workshops, competitions as per their interest and hobbies.	5,7,9						
3	The students will be trained to represent ADTU in various inter university, state and national level competitions.	5,7,9						
4	The students will be given a platform to earn from invited experts in their respective fields.	5,7,9						
5	The students will get an exposure of 360-degree learning methodology considering the overall growth along with the academics.	5,7,9						

		SEMI	ESTER – II	I							
Cor	urse Title		Bacte	riology							
Cou	ırse Code	7/18//11/19/14/19	d Credits:		L 2	T 0	P 4	S 0	R	0/F 0	<b>C 4</b>
Pre	-requisite	Nil	d Hours: 30 Co-requis		4	U	4	N		U	4
	ogramme	Bachelor of Medical Laboratory Technology									
S	emester	Fall/ III Seme	ster of Seco	ond Year of	`the	Pro	grar	nme	;		
	Course ojectives	<ol> <li>The candidates who are pursuing medical laboratory technology will learn about the sample processing and identification of various bacteria using different techniques.</li> <li>The basic knowledge of different diseases caused by bacteria are also imparted.</li> <li>The training is aimed at making the students competent to isolate and identify the causative micro-organisms.</li> </ol>									
	CO1	Understand the microbial gro			l req	uire	nen	ts.			
	CO2	Differentiate between gram pathogenesis	positive	and gram-ı	negat	tive	bac	teria	a's	and t	heir
	CO3	Demonstrate the morpholog of medically important bacte		teristics, pa	athog	gene	sis a	and	lab	diagn	osis
	CO4	Examine the importance of the	e Antibiotic	s susceptibi	ility t	testi	ng ir	ı bac	terio	logy.	
	CO5	Recognize the causative ager		1						<u> </u>	
Unit- No.		Content	Contact Hour	L	earn	ing	Out	com	e		KL
П	Nutritional Nutritional growth fact Bacterial growth fact Bacterial growth fact application  Gram Pobacteria Classificati Cultural ch Laboratory spp. Streptococc Escherichia spp. Salmo	rowth curve Media- Types and their s.  sitive and Gram-Negative ons, Morphology, aracteristics, Pathogenesis and diagnosis of: Staphylococcus cus spp. Pneumococcus spp. a coli, Klebsiella spp. Shigella nella spp. Vibrio cholera -		microbial nutrition and growt facilitating further study at application in microbiology.  Understand and differentiate between the Gram positive at Gram-negative bacterial Characteristics, pathogeness and diagnostic methods for ear species.					nd land land land	1,2,3	
Ш	Morphology, cultural characteristics, Pathogenesis and Laboratory diagnosis of: Pseudomonas aeruginosa Corynebacterium diphtheriae Rickettsia Spirochetes Mycobacterium spp. Clostridium spp.			Describe morpholo differentia characteri when gr media.	ate stics rown	of o	featu ne each n	ires c bac appro	ultui teriu opria	nd ral m tte	1,2,4
IV	**		4	Define ant their mo understand	des	of	ac	ction	aı		2,3

	Various methods of Antibiotic susceptibility testing.			
V	Nosocomial infections Causative agents, transmission methods, prFalltion and control Hospital borne infections.	4	Understand the complexities of nosocomial infections, their Causative agents, transmission methods, and strategies for prFalltion and control within Hospital settings.	1,2, 3
Practical	Preparation of culture media Staining: Preparation of smears, Gram's stain, AFB stain, Negative stain Hanging drop preparation Biochemical tests: Catalase test, Coagulase test, Oxidase test, IMViC test, TSI test, Sugar fermentation test Antibiotic Susceptibility Testing	60	Demonstrate and interpret essential microbiological techniques, aiding in the identification and characterization of microorganisms and their susceptibility to antibiotics.	1,2,3,4,

T1: Textbook of Microbiology by CP Baveja, 7th edition. T2: Microbiology-An introduction, Tortora, Funke, Case.

T3: Textbook of Microbiology by Ananthanarayan and Paniker

## **REFERENCE BOOKS:**

R1: Textbook of microbiology and immunology by S.C. Parija

R2: Microbiology by Prescott, Harley, Kleis

R3: Textbook of Microbiology by Ananthanarayan and Paniker.

## **OTHER LEARNING RESOURCES:**

https://www.ncbi.nlm.nih.gov/books/NBK7627/ https://www.ncbi.nlm.nih.gov/books/NBK546149/

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Program Outcome						
1	Understand the microbial growth and their nutritional requirements.	1,2,4						
2	Differentiate between gram positive and gram-negative bacteria's and their pathogenesis	1,2,4						
3	Demonstrate the morphological characteristics, pathogenesis and lab diagnosis of medically important bacteria.	1,2,4						
4	Examine the importance of the Antibiotics susceptibility testing in bacteriology.	1,2,4						
5	Recognize the causative agents of HAIs.	1,2,4						

SEMESTER – III												
Co	urse Title			Patholo	gy							
Co	urse Code	24BMLT2102R	Total Credit Total Hours		•	<u>L</u>	T 0	P 4	<b>S</b> 0	<b>R</b> 0	0/F 0	4
Pre	e-requisite	Nil	Co-requ	uisite					N	il		ı
Pr	ogramme		Bachelor of M	Iedical lab	orator	y teo	chno	ology	7			
S	emester	Fall	/ III Semester	of Second	Year o	f the	Pro	ogra	mme	e		
	Course ojectives	clinical laborate 2. They should be hematological t 3. They should be	clinical laboratory investigation (blood, urine etc.).  2. They should be able to provide technical help for selected sophisticated hematological techniques with adequate knowledge of various principles.									
	CO1	Describe the basics preservation of block	٠.	y and unde	erstandi	ng tl	ne fo	orma	tion	, coll	ection	and
	CO2	Describe about RB0	and the relati	on between	n hemo	glob	in a	nd A	nem	ia.		
	CO3	Execute the knowle	dge on WBCs,	its morpho	ologica	l unc	lerst	andi	ng o	n let	ıkemia	
	CO4	Understand the hen	Understand the hemostasis in details									
	CO5	Examine on Bone n	narrow smear a	and staining	g techni	iques	S.					
Unit No.		Content		Contact Hour		Lea	rnin	ıg O	utco	me		KL
I	I Introduction to Hematology Blood–formation, composition Method of blood collections, Preservation of blood for routine examination and others (anticoagulant), Preparation of thin and thick smears, staining of smears, Romanowsky dyes, preparation and staining procedures of blood smears.				Descrithe hemat preparation wariou method	bas tolog re l us he	ic gy, bloo	co: and od s	ncep l le smea	ts arn rs a	of to and	1,2
П	Red Blood Morphology clinical imp Hemoglobin Reticulocyte Anemia—de classificatio Anaemia Causes Types Lab investig Laboratory j Clinical imp Thalassemia	8	Describe, illustrate and explain Normal blood cells and various red cells disorders related with RBC.				ells	,2,3				
III	Formations Functions, I Methods of co (preparate	d Cells (WBC) Types life morphology counting, WBC and tion of smears) and its classification	d differential	6	Descriexplain function technic	in th	ne r	norp f	WBC	gy a	and and	,2,4

IV	Platelets	6	Describe, illustrate and	1,2,3
	Formation, morphology, Function		explain the morphology and	
	Method of counting, normal abnormal counts		functions of platelets and	
	with clinical importance  Hemostasis and coagulation		techniques to count the morphology and functions of	
	Normal hemostasis mechanism of blood		platelets	
	coagulation and nor fibrinolytic system		placets	
	Investigation of hemostasis mechanism - BT,			
	CT, white blood coagulation time test, PT,			
	PTT			
	Hemophilia—Definition			
V	Bone marrow	4	Describe, illustrate and	
	Method of preparation of bone marrow		explain different techniques of	1,2
	smears. Different types of staining of bone marrow smear		staining bone marrow.	
	marrow sinear			
	HAEMATOLOGY	60	Describe, illustrate and	1,2,3,4
	1. Study of instruments.		explain various hematological	
	2. Study of Microscope		techniques and carry out	
	3. Collection of blood		microscopic examination.	
	<ul><li>4. Anticoagulants its uses and preparation</li><li>5. Preparation of blood thin film and</li></ul>			
	staining and study of RBC morphology.			
	6. Preparation of blood thick film and			
	staining and study of blood parasite			
Practical	7. Total RBC counts			
acti	8. Total WBC counts			
Pr	9. Differential WBC counts			
	10. Absolute counts of platelet, eosinophil			
	11. Hemoglobin estimation by various methods.			
	12. ESR estimation			
	13. PCV estimation			
	14. Reticulocyte count			
	15. Sickle cell preparation			
	16. BT, CT, PT, PTT and APTT			

T1: Clinical Haematology Principles, procedure, correlations by E. Anne Stiene Martin, Cheryl A. Lotspiech – steininger, John A. Koepke.

### **REFERENCE BOOKS:**

- R1: Textbook of Medical Lab Technology Praful B. Godkar, Darshan P. Godkar R2: Clinical Haematology in Medical Practice de Gruchy
- R3: Medical Laboratory Technology Methods & interpretation Ramnik Sood

## **OTHER LEARNING RESOURCES:**

https://vdoc.pub/documents/dacie-and-lewis-practical-haematology-44o9vf6jei70

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Program Outcome							
1	Describe the basics on haematology and understanding the formation, collection and preservation of blood samples.	1,2,3,4							
2	Describe about RBC and the relation between haemoglobin and Anaemia.	1,2,3,4							
3	Execute the knowledge on WBCs, its morphological understanding on leukaemia	1,2,3,4							
4	Understand the haemostasis in details	1,2,3,4							
5	Examine on Bone marrow smear and staining techniques.	1,2,3,4							

			SEMEST	ER – III											
Cour	rse Title		Meta	abolic Bio	chemistr	y									
Cour	rse Code	24BMLT2103R	Total Credits: 4 Total Hours: 3		L 2	T 0	P 4	S 0	R 0	O/F 0	C 4				
Pre-i	requisite	Nil	Co-requisit			U	<b>-</b>		<u> </u>		-				
	gramme		Bachelor of Mo		oratory	Tech	nolo	gy							
Ser	mester	F	all/ III Semester o	of Second	Year of	the P	rogi	amn	ne						
		1. The candidates								the fi	eld of				
	ourse ectives	Clinical biochemistry.  2. They are taught the technique of collection of clinical samples and their processing.  3. The students will also be given the basic knowledge of chemistry and metabolism of various metabolites which are routinely estimated in different diseases so that a clear understanding of the different tests is obtained, in addition to basic training in safety measures													
(	CO1	Define carbohyd	rate and describe i	ts metabol	ism.										
(	CO2	Explain the gene	ral and integrated	pathways o	of protein	n.									
(	CO3	Describe the met	abolism of lipids.												
(	CO4	Explain the proce	ess of DNA replica	ation and F	Protein sy	nthe	sis								
	CO5 Discuss the formation of bile pigm														
Unit- No.		Content		Contact Hour		Lea	rnin	g Ou	tcom	е	KL				
I	and Glycoge Citric a cycle, glucose Metabol	lism of carbohyd absorption of enesis, Glycogenol- acid cycle, energet Gluconeogenesis, metabolism, Metabolism of Galactose lucose concentration ic pathways of	carbohydrates. ysis, Glycolysis, ic of citric acid Regulation of olism of Fructose, Regulation of n, Integration of	8	Explain process metabo includin and var	es lism ng di	of igest	olved carb ion,	oohyd absor	the rates, ption	1,2				
П	1 ,			8	Unders of prot signific metabo	ein ance	meta ir	bolis 1 n	m an nainta	d its ining	2,3,5				
III	Metabolism of Lipids: Digestion and absorption of lipids. Role of liver in fat metabolism, Beta Oxidation of fatty acid, Biosynthesis of lipids, Prostaglandin, Cholesterol metabolism, formation of bile acids, plasma lipoproteins, Integration of metabolic pathways of fats.			8					the l the	1,4,5					
IV		eplication and Pro ion and Transcription	n and Protein synthesis:		Underst process and pro regulati	es o otein	f D	NA	replic	ation	1,3				

V	Catabolism of heme: Formation of bile pigments, metabolism of bilirubin, catabolism of heme.	3	Describe the enzymatic processes involved in the breakdown of heme and explain their metabolism.	2,4
Practical	<ol> <li>Study of instruments, and appliances.</li> <li>Calculation and preparation of percentage solution.</li> <li>Calculation and preparation of Molar solution.</li> <li>Calculation and preparation of Normality solution.</li> <li>Collection and preservation of blood serum and plasma</li> <li>Urine R/E- Biochemical examination – reducing sugar, protein, ketone bodies, bile salts, bile pigments, urobilinogen, and blood.</li> <li>Qualitative estimation of carbohydrates, protein and amino acids.</li> </ol>	60	Describe and explain the preparation of percentage and Normality solution also demonstrate the routine examination of urine sample for determination of presence of protein, ketone bodies, urobilinogen and blood.	1,2,3,4

- T1: Biochemistry-U. Satyanarayana, U. Chakrapani.
- T2: Textbook of Medical Biochemistry– MN Chatterjee, Kano Shinde.
- T3: Principle & Technique of Biochemistry–S Ramakrishnan, K.G. Prasanna, R. Rajan. T4: Principle & Techniques of Biochemistry& Molecular Biology–Keith Coilson
- T5: Textbook of Medical Lab Technology- Praful B. Godkar, Darshan P. Godkar

#### **REFERENCE BOOKS:**

- R1: Cummings, J. H. "Carbohydrate terminology and classification." *European Journal of Clinical Nutrition* 55, no. Suppl 3 (2001): S5-S12.
- R2: Kogoma, Tokio, and K. G. Lark. "DNA replication in Escherichia coli: replication in absence of protein synthesis after replication inhibition." *Journal of molecular biology* 52, no. 2 (1970): 143-164.
- R3: Gefter, Malcolm L. "DNA replication." Annual review of biochemistry 44, no. 1 (1975): 45-78.
- R4: Møller, Niels, and Jens Otto Lunde Jørgensen. "Effects of growth hormone on glucose, lipid, and protein metabolism in human subjects." *Endocrine reviews* 30, no. 2 (2009): 152-177.

### **OTHER LEARNING RESOURCES:**

https://www.ncbi.nlm.nih.gov/books/NBK21054/?term=Biochemistry

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Program Outcome						
1	Define carbohydrate and describe its metabolism.	1,2,3,4						
2	Explain the general and integrated pathways of protein.	1,2,3,4						
3	Describe the metabolism of lipids.	1,2,3,4						
4	Explain the process of DNA replication and Protein synthesis	1,2,3,4						
5	Discuss the formation of bile pigment, metabolism of bilirubin.	1,2,3,4						

	SEMESTER – III												
Cours	se Title		Biomed	lical Waste	Manage	emen	t		1	1	1		
Cours	se Code	24BMLT2104R		Credits: 4 Hours: 60T	-	<b>L</b> 4	T 0	P 0	S 0	R 0	O/I 0	?	<b>C</b>
Pre-re	equisite	Nil	Co	-requisite	requisite Nil						•		
Progr	amme	]	Bachelor	or of Medical Laboratory Technology									
Semes	ster			ester of Sec									
	urse ectives	<ol> <li>To acquaint the students with basics of biomedical waste and the severity of lives in jeopardy.</li> <li>To acquire the knowledge on various types of waste generated and their treatment methods.</li> <li>To ensure safe economical disposal of infectious wastes inappropriate medium.</li> </ol>											
CO1 Describe adequate knowledge on biomedical wast						te mai	nagei	nent.					
CO2 Understand the sources, type solution.				of biomedi	cal wast	te and	l a re	quire	ment	for a	an inte	egra	ted
C	O3	egation of wa	aste and	its si	gnifi	cance	e						
CO4 Identify and analyze differen				methods of	treatme	nt of s	solid	wast	e.		-		
	O5	Assess recent practic	ces and ha		aste mar	nagen	nent.						
Unit No.		Content	Contact Hour		Learning Outcome							L	
I		ortion on of Biomedical and Hazardous hea	8	Define biomedical wast distinguish between general ar hazardous healthcare waste.					′	1,	2		
II	Infectio Waste Categor Biomed Liquid I - Rac Chemic Hospit Human	of Biomedical Waste us waste, Genotoxic Sharps Cat rization, and compos ical waste. Biomedical Waste lioactive wastes, als & drugs al Generated Waste Blood and Blood P gical wastes, Conta	15	Categorize and describe different types of biomedical waste, including infectious, genotoxic, waste sharps, liquid biomedical waste, and radioactive wastes.						ste, cic,	1,	2	
Ш	Color C for dis	egregation of Biomedical waste olor Coding and types of containers or disposal of medical waste, egregation, collection & disposal.			Identify and apply the corr color coding and types containers for the segregation.					es	ect of	1,2	,3
IV	Disinfed autoclay	ving, Sharp waste co torage & transpo ving, Incineration, is/ Gasification	15	<i>U</i> , 1						ing	2,	3	

V	Recent Trends and Bioethics	10	Identify recent trends in 1,2,4
	Protective Devices, Bioethics and		biomedical waste management,
	Handling of Waste Management		understand the ethical
			considerations and principles of
			bioethics in waste handling.

- T1: Sumit Enterprises Biomedical Waste Management by Radhakrishan R.
- T2. Abhijeet Publications Medical Waste Management by Dr. P. N. Harikumar, Dr. Ann Naisy Jacob.
- T3. Jaypee Brothers Medical Publishers Biomedical Waste Disposal by Anantpreet Singh and Sukhjit Kaur.

## **REFERENCE BOOKS:**

- R1: V. J. Landrum, Medical Waste Management and disposal, Elsevier, 1991, ISBN: 978-0-8155-12646
- R2: A. Tabish, Principles of Hospital Management, OUP, Jaypee Publishers.6th Edition 2000.
- R3: S.L.Goel, Dr. R. Kumar, Encyclopedia of Hospital Management Text and Case Studies Hospitals in Health Care, I S B N (Hardbound): 8184502273, 9788184502275. 2010.

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Program Outcome						
1	Describe adequate knowledge on biomedical waste management.	1,5,8						
2	Understand the sources, types of biomedical waste and a requirement for an integrated solution.	1,5,8						
3	Explain the processes of segregation of waste and its significance.	1,5,8						
4	Identify and analyze different methods of treatment of solid waste.	1,5,8						
5	Assess recent practices and handling of waste management.	1,5,8						

			SEME	STER -	- III							
Cours	e Title	]	Laboratory Ac	cidents	and	Mana	gemen	t (TP	S-II)			
Course	e Code	24BMLT2105R	Total Credits:	otal Credits: 2 I otal Hours: 30P			P 2	S	R	O/F 0	C 1	
Pre-re	quisite	Nil	Co-requis		U	0	<i>2</i>	·	il		1 1	
Progr	amme		Bachelor of N	Medical	Lab	orator	y Tec	hnolo	gy			
Sem	ester	Fall/ III Semester of Second Year of the Programme										
Course Objectives		<ol> <li>Students are taught about the various biomedical wastes, types, and its management.</li> <li>The students will also learn about safety measures in the lab and documentation accidental records and information in the laboratory.</li> <li>Students will learn about the hazards related to handling chemicals, biologic specimens.</li> </ol>										
CO	01	Understanding the listing the responsi	•	•	ware	ness fo	or clini	cal la	borato	ry persor	nnel and	
CO	02	Appraise the hazar materials.	ds related to ha	andling	chen	nicals,	biolog	ic spe	cimen	s, and ra	diologic	
CC		Organize the precautionary measures when working with electrical equipment, cryogenic materials, and compressed gases.										
CO	)4	Demonstrate the correct means of waste disposal generated in the clinical laboratory.										
CO	<b>D</b> 5	Implement the step	s required in do									
Unit- No.		Content		Conta Hou		]	Learn	ing O	utcom	ie	KL	
I	REGU Occupa Safety	PRATORY SAFET FLATIONS ational safety and he awareness for clini nel, Signage and lab	alth cal laboratory	6	6 Implement best practices to prevent accidents and exposures, and comply with regulatory standards.							
I	Chemi-	TY EQUIPMENT cal fume hoods and total storage PPE and	•	6		Unders utilize chemic biosafe	safety cal f	ume		such as and	2,3	
III	Chemie	<b>FY</b> ical safety cal safety ion safety Fire safety	6	6 Demonstrate comprehensive knowledge and practices chemical safety, radiation safety, and fire safety protocols within laboratory environments.								
IV	MATE Biome classifi Chemi	DISPOSALOFHAZARDOUS MATERIALS Biomedical waste Management, classification, types Chemical Waste Radioactive waste Bio hazardous waste				Unders manag hazard biomeo biohaz	e thous m	nateria w	disposals, invaste	ectively al of cluding and	2, 4	
V		DENT DOCUM INVESTIGATION	IENTATION	6		Developrotoco trainin identif	ols, g pro	proce grams		safety and address	1, 3, 4	

T1: Text book on biohazard By Jesse Craignou.

## **REFERENCEBOOKS:**

R1: Text book of Microbiology by Ananthanarayan and Paniker.

R2. Text book on Biohazard–ByKen Alibek with Stephen Handelman.

	CO PO Mapping						
S.N.	S.N. Course Outcome (CO)						
1	Understanding the importance of safety awareness for clinical laboratory personnel and listing the responsibilities of employer.	5,6,7,8					
2	Appraise the hazards related to handling chemicals, biologic specimens, and radiologic materials.	4,5,8					
3	Organize the precautionary measures when working with electrical equipment, cryogenic materials, and compressed gases.	3,5,8					
4	Demonstrate the correct means of waste disposal generated in the clinical laboratory.	4,5,8					
5	Implement the steps required in documentation of an accident in the workplace.	5,7,8					

			SEN	MESTER	– III								
Cours	se Title		Execut	ive Engli	sh								
Cours	e Code	24UBPD2101R	Total Credits: 1			L	T	P	S	R	O/F		С
Prere	quisite	Nil	Total Hours: 30P			0	0	2	0	0 Nil	0		1
	ramme	Nil Co-requisite Nil  Bachelor of Medical Laboratory Technology											
	ester	Fal											
	urse ectives	<ol> <li>Fall/ III Semester of Second Year of the Programme</li> <li>To enable students to learn and comprehend about the proficiency of the English language.</li> <li>To improve the writing skill of the learners and enable them to prepare CV and cover letter for professional development.</li> <li>To evaluate certain attributes in a candidate that can be otherwise difficult for time consuming to a certain</li> </ol>											
C	01	It will develop their	writing ski	lls throug	h variou	us tec	hniq	ues o	of lan	guage	e use.		
CO	<b>D2</b>	It will enable the lea and productive way.		anage beh	aviours	s, tho	ughts	s, and	d emo	otions	in a co	nsc	cious
CO	<b>D4</b>	professional career. Accurately to conve	y ideas and	ideas and information with clarity and precision.  language, tone, and style for diverse audiences and contexts.									
Unit		Content		Contact		L	earni	ing (	Outco	me		]	KL
No.				Hour	- ·								
I		<b>nar</b> e of Prepositions ii. T testions.	ag	2	Basics	Basics of grammar							1,2
II		mar ctive and Passive Voi irect and Indirect Spe		3	Introd	luctio	on of	gran	nmar				2,3
III	• The arrival of the Particular of the Particula	ng Skills  the Basics of Writing;  the basics of Writing;  the basics of Writing;  the basics of Writing  the basics of Writing;  the basic of Writing of Writing;  the basic of Writing of Writing of Writing;  the basic of Writing of Writi	8	Learn								1,2, 3,4	
IV	• S' • G	Ianagement Skills WOT Analysis oal Setting ersonal Hygiene	5	Introd skill						ement	3	3,4,5	
V Non-Verbal Communication-Sciences of Body Language  • What is Non-Verbal Communication & Body Language • Types of Body Language • Importance and Impact			7	Learn	abou	ıt Bo	dy la	ingua	ges		3	3,4,5	

VI	Group Discussion (Theory)	5	Learn about effective communication	2,3,4,5
	• Importance,		skill	
	<ul> <li>Planning, Elements, and Skills assessed; Effectively on skills disagreeing, iv. Summarizing and</li> <li>Attaining the</li> <li>Objective</li> </ul>			

- T1. Lata, P. Kumar, S. (2015). Communication Skills, Second Edition. India: Oxford University Press.
- T2. Barrett, Grant. 2016. Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speaking, Zephyros Press.
- T3. Mc Dowell, Gayle Laakmann. 2008. Cracking the Coding Interview (IndianEdition)

#### **REFERENCE BOOKS:**

- R1. Zinsser, William. (2006) On Writing Well: The Classic Guide to Writing Non-fiction, Harper Perennial
- R2. Lacinai, Antonio. (2016) Understanding Body Language: 51 gestures and what they signal, Books on Demand.

#### **OTHER LEARNING RESOURCES:**

- https://learning.shine.com/talenteconomy/career-help/top-group-discussion-skills/
- https://www.thoughtco.com/what-is-nonverbal-communication-1691351

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Program Outcome						
1	It will develop their writing skills through various techniques of language use.	6,7,8						
2	It will enable the learners to manage behaviours, thoughts, and emotions in a conscious and productive way.	6,7,8						
3	It will develop their critical thinking ability and develop an independency in their professional career	6,7,8						
4	Accurately to convey ideas and information with clarityand precision.	6,7,8						
5	Utilizing appropriate language, tone, and style fordiverse audiences and contexts.	6,7,8						

		SE	MESTER III										
Cours	se Title		Digital 1	Literacy									
Cours	se Code	241 DLS2101R	al Credits: 2		L	T	P	S	R	O/F	C		
		Tot	tal Hours: 30		0	0	2	0	0	0	1		
	equisite	Nil	Co-requ					N	il				
	equisite	Nil  Rachalor of Madical Laboratory Toobnalogy											
	rammes	Bachelor of Medical Laboratory Technology											
Sem	nester	Fall/ III Semester of Second Year of the Programme											
Course Objectives:		<ol> <li>Students will be able to identify and analyze computer hardware, software and their uses.</li> <li>Students will be able to use MS-Office suite for various purposes.</li> <li>Students will be able to use the Internet efficiently for required information as well as for digital financial transactions.</li> </ol>											
C	01	Students will have basic understanding of Computer Hardware, Software and Computer handling.											
C	<b>CO2</b>	Student will be able to create, so	end, and man	age emails, atta	achn	nent	ts, a	nd fo	olde	rs			
C	CO3	Students will be able to solve basic information management issues using MS-Office Products.											
C	<b>CO4</b>	Students will be able to efficiently search the Internet for required information											
C	CO5	Students will be able to use computing technically ethically, safely, Securely and legally for day-to-day use											
Unit No		Contents	Contact Hours	Lear	Learning outcome H								
I	• Confunc	mentals of Computer Systems apponents of a Computer and the etions. Exercise Types of Computers and applications.		To identify reliable sources, detect misinformation, and ensure data accuracy and integrity.									
п	• Con • Offi  MS • Crea	duction to MS-Office omponents of the MS- frice suite. Creating documents with S- Word. eating Presentations with MS- werPoint. eating Spreadsheets with MS- ccel.  To identify reliable source detect misinformation, and ensure data accuracy and integrity.									,2,3, 4, 5		
III	• Intro and Wel brov • Sear Goo usin etc. • Crea	oduction to Internet & Cyber Coduction to Computer Network Internet. World Wide Webresites and Web portals, Webresites and Web Postals, Webresing. Web Searching, rich engines, Introduction togle Search Engine; How to search Engine; How to search Engine; How to search Engine is to provide the search Engine is to provi	s o, b o h t,	To identify detect misinfo data accuracy	orma	itio	n, ar	nd en	rces		,2,3, 4, 5		

IV	<ul> <li>Introduction to Social Media</li> <li>The Power of Social Media,</li> <li>Relevance of Social Media in presents scenario.</li> <li>Creating accounts and using some popular Social media portals and Apps like WhatsApp, Facebook, Twitter, Instagram, LinkedIn. Social Media Etiquettes</li> </ul>	6	To identify reliable sources, detect misinformation, and ensure data accuracy and integrity.	1,2,3, 4,5
V	<ul> <li>Digital Payments</li> <li>Introduction to Digital Payment Systems.</li> <li>Creating accounts and using Digital Payment Systems like Credit Cards, Debit Cards, Net banking, UPI.</li> </ul>	6	Demonstrate knowledge of digital payment systems, including account creation and usage of credit cards, debit cards, net banking, and UPI."	1,2,3, 4,5

- 1. Sinha Pradeep K. and Priti Sinha. Computer Fundamentals: Concepts Systems & Applications. 3rd ed. New Delhi: BPB Publications.
- 2. Goel, A, 2010. Computer Fundamentals, Pearson India.

#### **REFERENCE BOOKS:**

- 1. Balaguru swamy, E. 2009 Fundamentals of Computers, Tata McGraw-Hill Education.
- 2. Balaguru swamy, 2014. E. Fund Of Comp & Programming (Updated Ed Sem. I, Au) Tata McGraw-Hill Education.
- 3. Lawson, C. 2022. Introduction to Social Media, Oklahoma State University.

#### OTHER LEARNING RESOURCES:

- 1. https://www.w3schools.com
- 2. https://edu.gcfglobal.org
- 3. https://www.tutorialspoint.com
- 4. https://www.javatpoint.com/
- 5. Latest updates available in WWW.

	CO PO Mapping	
S.N.	Course Outcome (CO)	Mapped Program Outcome
1	The students will be engaged in different activities headed under different clubs namely dance, music, photography, drama, literacy, etc.	5,7,9
2	The students will participate in regular club activities like workshops, competitions as per their interest and hobbies.	5,7,9
3	The students will be trained to represent ADTU in various inter university, state and national level competitions.	5,7,9
4	The students will be given a platform to earn from invited experts in their respective fields.	5,7,9
5	The students will get an exposure of 360-degree learning methodology considering the overall growth along with the academics.	5,7,9

			SEMESTER	RIII								
Cor	urse title		Basic Acclim	atizing Sk	tills (BAS	<b>S</b> )						
Cou	rse Code	24UULS2101R	Total Credits: Total Hours: 3		L 0	T 0	P 2	S 0	R	O/F 0	<b>C</b>	
Pre-	requisite	Nil	Co-requ	isite				Nil		ı		
Anti	-requisite			Nil								
Pro	gramme	Bachelor of Medical Laboratory Technology										
Se	emester	Fall/ III Semester of second year of the Programme										
	ourse jectives:	<ol> <li>To impart know applications.</li> <li>Students will be a</li> <li>Students will be a</li> </ol>	ble to familiarize v	with the co	oking equ	aipmo	ent's		-		its	
(	CO1	Students will have bas	sic knowledge of c	ooking me	thods.							
	CO2	Students will gain the	knowledge of orga	anizing & (	Cleaning	of R	ooms	•				
	CO3	Students will be able t	to gain the travel m	nanagemen	t concept							
	CO4	Students will be able to-day use.	to acquire the kno	wledge of	basic hou	ısehc	olds'	amen	ities	for da	ay-	
Unit No		Contents		Contact hours	L	earn	ing o	utcoi	me		KL	
I	Telephon Rooms. C	etion to Accommodation to Accommodation to Accommodation to handling technique Cleaning agents. Cleaning Process.	e Organizing of	8	To accomm						1, 2	
II								1, 2				
III	Methods Different Use of Beverage Regional	8	To acc knowle of herbs	dge (	of di	fferer	it ty	pes	1, 2			
IV	Registrat	<b>Format's</b> C - form ion form Application form Legal	6	To gar forms a				ab	out	1, 2		

- 1. Arora K (2011). Theory of cookery, Frank brothers & company (pub) pvt ltd-New Delhi.
- 2. Bruce H. Axler, Carol A. Litrides (2010) Food and Beverage Service Volume 1ofWiley Professional Restauranteur, Guides.
- 3. Mohammed Zulfikar (2010) Introductions to Tourism and Hotel Industry Introduction to Tourism and Hotel Industry. Vikas Publishing.
- 4. Sudhir Andrews (2013) Food and Beverage Service: A Training Manual, Tata McGraw Hill.

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Students will have basic knowledge of cooking methods.	1,7,8					
2	Students will gain the knowledge of organizing & Cleaning of Rooms.	1,7,8					
3	Students will be able to gain the travel management concept.	1,7,8					
4	Students will be able to acquire the knowledge of basic households	1,7,8					
5	Students will be able to the physiological and psychological processes involved in acclimatization.	1,7,8					

			SEMESTER -	- III						
Course	e Title			Training	I - I		T ~			
Course	Code	24BMLT2106R	Total Credits: 1 Total Hours: 15		L T 0 0	P 0	S 0	R	O/F 8	C 1
Pre-rec	quisite		Co-requisite	2	0 0	"	N			
Progra	amme		Bachelor of Medical	Laborator	y Tech	nolog	y			
Seme	ester	Fa	ll/ III Semester of Sec	ond Year o	of the P	rogra	mme	•		
Cou Objec		2. Exploring Patient	Understanding Healthcare Systems and Hospital Operations.     Exploring Patient Care and Clinical Procedures.     Exposure to Medical Equipment and Technology.							
CC	<b>)</b> 1		e to describe the structuartments and the workf		-		_		cludir	ng the
cc	)2		e to explain the basics of ocols are followed to en	-			_		res,	
CC	)3		fy and understand the p nizing their role in diag	-	-					g.
co		how interdisciplinar Students will reflect	e to identify the roles of ry teams work together t on professional behavi hlighting the importance	to deliver poors and eff	atient c	are.	unica	tion o	bserv	ed
Unit- No.		Conte	nt	Contact Hour	Le	e	KL			
I	<ul><li>Introcultu</li><li>Safe</li><li>Code</li></ul>	are ty protocols and eme	environment and work		Abilit situati challe solutio	ons, nges,		ider l de	sess ntify vise	1,2,3, 4,5
II	• Trai tech	nology relevant to fi	tools, equipment, or eldwork		Impro			lity ective	to ely	1,2,3, 4,5
III	<ul> <li>Hands-on practice with supervision,</li> <li>Practical exercises to develop job-specific technical skills</li> <li>Emphasis on accuracy, efficiency, and best practices</li> </ul>			15	Abilit priorit tasks.	•		organ comp		1,2,3, 4,5
IV	inter clier • Trai	elopment of intercacting with colleagents ning in professional and written		Demo profes respec	siona	l atti		a and	1,2,3, 4,5	
V	and • Refl	-assessment exercise improvement areas ection on field ned, and personal gro	-		Abilit experi persor	ences	to		on ntify	1,2,3, 4,5

- 1. Arora K (2011). Theory of cookery, Frank brothers & company (pub) pvt ltd-New Delhi.
- 2. Bruce H. Axler, Carol A. Litrides (2010) Food and Beverage Service Volume 1ofWiley Professional Restauranteur, Guides.
- 3. Mohammed Zulfikar (2010) Introductions to Tourism and Hotel Industry Introduction to Tourism and Hotel Industry. Vikas Publishing.
- 4. Sudhir Andrews (2013) Food and Beverage Service: A Training Manual, Tata McGraw Hill.

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Students will be able to describe the structure and functioning of a hospital, including the roles of various departments and the workflows within the healthcare system.	5,6,7					
2	Students will be able to explain the basics of patient care and clinical procedures, observing how protocols are followed to ensure safe and effective treatment.	5,6,7					
3	Students will identify and understand the purpose of key medical equipment and technologies, recognizing their role in diagnostics, treatment, and patient monitoring.	5,6,7					
4	Students will be able to identify the roles of various healthcare professionals and explain how interdisciplinary teams work together to deliver patient care.	5,6,7					
5	Students will reflect on professional behaviors and effective communication observed during the visit, highlighting the importance of empathy, teamwork, and patient-centered communication.	5,6,7					

		SEM	ESTER –	IV							
Cou	rse Title		Para	sitology							
Cou	rse Code	23BM11221R	Credits: 4 Hours: 30	T+30P	L 2	T 0	P 4	S	R	O/F 0	<b>C</b>
Pre-	requisite		-requisite	71 1301		U	7	Nil	U	U	
Pro	gramme	Bachelor	of Medical	Laborator	y Tecl	hnol	ogy				
Se	mester	Spring / IV Sen	ester of So	econd Year	of the	e Pr	ogra	mme	:		
	Course jectives	<ol> <li>Students will acquire the knoclassification.</li> <li>The student will be taught laboratory diagnosis of parts</li> <li>The students will be able to</li> </ol>	about intro	duction, gen	neral (	chara	acter	istics	, life	cycle	and
	CO1	Discuss about parasites and its c	lassificatio	n.							
	CO2	Describe the morphology, lifecy	cle, pathog	enesis and la	borat	ory	liagn	osis	of Pro	otozoa	and
		flagellates.  Discuss the morphology, life	ecycle n	athogenesis	and	1ak	Orate	<b>71''</b>	diagr	nosis	and
	CO3	prophylaxis of Sporozoa and cil	•	atilogenesis	anu	iac	оган	лу	uragi	10818	and
	CO4	Complete knowledge on the n prophylaxis of Cestodes and Tre		, pathogene	esis a	nd l	abora	atory	diag	nosis	and
	CO5	Describe the morphology, lifect parasite.	ycle, patho	genesis and	labor	ator	y dia	gnos	is of	nema	tode
Unit No.		Content	Contact Hour	L	earniı	ng O	utcor	ne		K	<b>KL</b>
I	Introduct parasites.		2	Understand the basic principles and importance of parasitology.					s 1	.,2	
II	Morpholo laborator Entamoel Flagellat Morpholo	ion to protozoa. Protozoa: ogy, life cycle, pathogenesis, y diagnosis and prophylaxis ba histolytica es: ogy, life cycle, pathogenesis, y diagnosis and prophylaxis lamblia and Leishmania		Describe cycle, pa diagnosis, protozoan		enes l p	is,	logy, labo ylaxi	rator	y	2,3
III	Sporozoa Morpholo laborator Plasmodi falciparur Ciliates: Morpholo	ogy, life cycle, pathogenesis, y diagnosis and prophylaxis um vivax, Plasmodium and Toxoplasma gondii ogy, life cycle, pathogenesis, y diagnosis and prophylaxis		Describe cycles, p diagnosis clinical ma caused by	and anifes	enes u tatio	sis, nders on of	stand infe	rator the ction	y e	2,3
IV	Morpholo laborator			Develop the understand of helmints	the c	linic	cal in		-		3,4

V	Echinococcus granulosus  Trematodes: Morphology, life cycle, pathogenesis, laboratory diagnosis and prophylaxis Fasciola hepatica Schistosoma haematobium  Nematodes: Morphology, life cycle, pathogenesis, laboratory diagnosis, prophylaxis. Ascaris lumbricoides Hookworms Trichuris trichiura Wuchereria bancrofti	4	Acquire knowledge of the characteristics and clinical Management of nematode infections.	1,2
Practical	Sample collection and processing.  Examination of fasces: Macroscopic examination: Consistency, color, odor and presence of blood.  Microscopic examination: Normal saline preparation Iodine preparation.  Concentration method:  Floatation technique. Sedimentation techniques  Examination of blood and urine:  Wet mount preparation and stained blood smear.	30	Interpret macroscopic and microscopic examinations of feces, and examining wet mounts and stained blood smears for the detection of parasites in blood and urine samples.	1,2,3,4

T1: Textbook of Microbiology by CP Baveja, 7th edition. T2: Textbook of Parasitology by Dr C P Baveja

# **REFERENCE BOOKS**:

R1: Textbook of Microbiology and Immunology by S.C. Parija

R2: Microbiology by Prescott, Harley, Kleis

R3: Textbook of Microbiology by Ananthanarayan and Paniker.

# **OTHER LEARNING RESOURCES:**

https://www.ncbi.nlm.nih.gov/books/NBK7627/https://www.ncbi.nlm.nih.gov/books/NBK546149/

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Program Outcome						
1	Discuss about parasites and its classification.	1,2,4						
2	Describe the morphology, lifecycle, pathogenesis and laboratory diagnosis of Protozoa and flagellates.	1,2,4						
3	Discuss the morphology, lifecycle, pathogenesis and laboratory diagnosis and prophylaxis of Sporozoa and ciliates.	1,2,4						
4	Complete knowledge on the morphology, pathogenesis and laboratory diagnosis and prophylaxis of Cestodes and Trematodes.	1,2,4						
5	Describe the morphology, lifecycle, pathogenesis and laboratory diagnosis of nematode parasite.	1,2,4						

			SEN	MESTER -	- <b>IV</b>							
Cour	se Title				al Pathology							
Cour	se Code	24BMLT2202R		al Credits: al Hours: 3		L 2	T 0	P 4	S 0	R 0	O/F 0	C 4
Pre-r	equisite	Nil		Co-requisi		_			Nil			
Prog	ramme	Ba	chelor	of Medica	l Laborator	y Teo	chno	logy				
Sen	nester	Spring /	IV Sen	nester of S	econd Year	of th	ie Pr	ogra	mme	e		
	ourse ectives	<ol> <li>Students will be m components of uring the components.</li> <li>Physical, chemical the clinical three c</li></ol>	ne, bod l and mi	y fluids etc croscopic	examination	of bo	ody fl	uid.				erent
(	CO1	Discuss on the clinical	signific	ance of uri	ne analysis							
(	CO2	Assessing certain diagn	ostic m	ethods of s	tool							
(	CO3	Explain comprehensive	unders	tanding on	sputum anal	ysis						
(	CO4	Analyze various body f	luids, fo	ormation w	ith different	analy	yzing	met	hods			
(	CO5	Evaluation on importan	ce of bl	lood bankir	ng, donor scr	eenii	ng an	d blo	od co	ompo	onents	
Unit-		Content		Contact	Lea	arni	ng O	utco	me			KL
No.  I Urine Examinations:  Anatomy of urinary system, (Kidney. Ureter, Bladder) functions of kidneys, formation of urine and Clinical importance of urine analysis.  Collection and preservation (preservative) of urine for routine examination and special examination. Composition of urine, normal and abnormal. Physical, chemical, microscopic and bacteriological examination of urine and clinical importance.  Special examination, Methods etc. and its clinical importance of 24hrs.Urine examination for proteins. Occult blood test, Pregnancy test, Bence Jones Proteins Urobilinogen etc.				of ignif for rm ar or dia	urine icand coll id Int ignos	e ar ce ar ectir terpr iss.	nd nd ng et	,2,3				
ш	Formati Collection Normal Abnormal Chemical Occult method Clinical	y of GIT and its infection of stool on of stools for analysis composition, and composition physical composition physical and micros examination of stool examination importance.  The examination—	ysical, action.	3	normal Physiology of GIT and their physiological significance and proper techniques for collecting samples. Perform and interpret various stool examination for diagnosis.  Describe, illustrate and explain the					eir ad ag et or	2,3	
	i. Phys ii. Mica Neel	on of specimens sical examination coscopic-Gram's stain, Zie sen stain for AFB mical examination	ehl		collection sputum exa							

IV	Body fluids:  a. Semen analysis Formation of semen Method of collection of semen, Importance and method of semen analysis, motility test, total spermatozoa count. Normal and abnormal morphology of sperms. Medico-legal aspects of specimen analysis  b. Pleural fluid, ascetic fluid, pericardial fluid, synovial fluid and cerebrospinal fluid  - Collection, sample preparation and processing  - Physical examination  - Chemical examination  - Microscopic examination.  c. Other Body fluids—Amniotic fluid,	6	Describe, illustrate and explain various body fluids their physiological significance and proper techniques for collecting the body fluids samples. Perform and interpret the samples for diagnosis.	2,3,4
V	sweat, saliva etc.  Blood banking and Immune- Haematology  History of blood group  Importance types and Principle of blood grouping  Blood banking; Requirements  Blood components: — separation etc. Clinical importance of all relevant blood banking.  Blood components Introduction to Apheresis.  Methods of ABO blood grouping and Rh Type  Other Blood grouping system  ABO antibody Titration  Donor's screening  Cross matching, definition, types, methods.  Coomb's test  Transfusion reaction/complication.	8	Describe, illustrate and explain different techniques of staining bone marrow.	1,2
Practical	Urine collection for Routine examination Midstream Urine Collection, 24 hrs. Urine examination for proteins. Urine R/E- Physical Examination- Color, pH, Specific Gravity. Biochemical Examination- 1. Urine Sugar, Urine Protein, Bile salt, bile pigment Urobilinogen, Occult Blood, Ketone bodies Pregnancy test Bence Jones Proteins. Microscopic Examination. 2. Fluid-Pleural Fluid examination - Physical, Chemical, Cell count-DLC/TLC, Bacteriological	30	Describe, illustrate and explain various techniques to collect the samples and carry out routine, chemical, microscopic examination for diagnosis.	1,2,3,4

- G 1 1 1 TT 1 1	
3. Cerebrospinal Fluid	
(CSF)examination Physical,	
Chemical, Cell count–DLC/TLC,	
- Bacteriological	
4. Synovial fluid examination	
Physical, Chemical, Cell	
count-DLC/TLC,	
- Bacteriological	
5. Peritoneal/Pericardial Fluid	
examination Physical, Chemical,	
Cell count–DLC/TLC,	
- Bacteriological	
6. Semen analysis Physical	
Examination, Chemical	
examination, Sperm count,	
Motility, Morphology study etc.	
7. Stool analysis.	
8. Sputum analysis.	
9. Preparation of Blood cells for ABO	
grouping Preparation of Serum	
&Cells for reverse grouping.	
10. Blood grouping	
Forward grouping - Moist Chamber	
Slide method and tube method	
Reverse Grouping– Moist	
Chamber Slide method and tube	
method	
11. Cross matching	
Donor Screening	

T1: Clinical Haematology Principles, procedure, correlations by E. Anne Stiene Martin, Cheryl A. Lotspiech – steininger, John A. Koepke.

# **REFERENCE BOOKS:**

R1: Textbook of Medical Lab Technology – Praful B. Godkar, Darshan P. Godkar R2: Clinical Haematology in Medical Practice – de Gruchy

R3: Medical Laboratory Technology Methods & interpretation – Ramnik Sood

# **OTHER LEARNING RESOURCES:**

https://vdoc.pub/documents/dacie-and-lewis-practical-haematology-44o9vf6jei70

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Discuss on the clinical significance of urine analysis	1,2,3,4					
2	Assessing certain diagnostic methods of stool	1,2,3,4					
3	Explain comprehensive understanding on sputum analysis	1,2,3,4					
4	Analyze various body fluids, formation with different analyzing methods	1,2,3,4					
5	Evaluation on importance of blood banking, donor screening and blood components.	1,2,3,4					

			SEMEST	ΓER – IV								
Cou	rse Title		Analytical a	and Nutrit	ional Biocher	mist	ry					
Cou	rse Code	24BMLT2203R	Total Cr Total Ho	edits: 4 ours: 30T+	-30P	<b>L</b> 2		P 4	S 0	R 0	O/F 0	<b>C</b> 4
Pre-	requisite	Nil	Co-Requ						N	Vil		
Pro	gramme		Bachelor of N	Medical La	boratory Tec	hno	logy					
Se	mester	Spring	/ IV Semeste	er of Secor	nd Year of th	e Pr	ogra	am	me			
	ourse jectives	The students will ac     The students will le     The students will le     techniques common	arn about flu arn basic pri	id distribut nciples/me	tion and its batchanism, pro	ılanc cedu	ce in ares a	the	e bo	dy.		
	CO1	Correlating fluid dis	tribution in	body with	n its influenc	ing	fact	ors	١.			
	CO2	Explain metabolism o										
	CO3	Evaluate the mechani										
	CO4	Classify vitamins and										
Unit	CO5	Analyze the working Content	principle of r								17	L
No.		Content		Contact Hour	Learn	ıng	Out	COL	ne		, s	L
I				5	Explain the fluids in the factors influ distribution.	boo benci	dy ar	nd	ideı	ntify		2,3
II	Principal elements, metabolis	AL METABOLISM: mineral elements, ess Calcium and sm, Magnesium metabo per metabolism	phosphorus	5	Identify and principal minessential transbody and troles.	ice e	eleme	eme ent	ents s in	the		3,4
III	Steroid h	characteristics of		6	Describe characteristi mechanisms hormones.	ics	ne of a	acti	ger	neral and of		2,4
IV	VITAMINS Definition, Classification – water soluble and fat soluble, Fat soluble – A, D, E, K vitamins, Water soluble – C, B, Pectin, lipoic acid, inositol etc. RDA, Rickets, osteomalacia, scurvy, beriberi, pellagra, pernicious anaemia.						2,3					
V	BIOCHI Chromat Ion excl chromato Electrop Paper ele pH mete Photome	graphy, thin layer chron horesis ctrophoresis, Gel electr	anaemia.  TECHNIQUES IN  MISTRY  graphy  nge chromatography, Partition raphy, thin layer chromatography oresis rophoresis, Gel electrophoresis,  ry-Colorimeter,  TECHNIQUES IN  Describe and apply various modern biochemical techniques and understand their principles, methodologies, and applications in biochemical research and analysis.							,4,5		

Practical	<ol> <li>Identification of special instruments</li> <li>Blood sugar and protein estimation</li> <li>Estimation of Albumin</li> <li>Estimation of cholesterol</li> <li>Estimation of HDL cholesterol</li> <li>Estimation of Triglycerides</li> <li>Serum         electrolytes         Bicarbonate         Sodium         Potassium         Calcium         Chlorine         Electrophoresis demonstration Paper         chromatography demonstration</li> </ol>	30	Conduct, evaluate, and estimate the results of the blood test for biochemical analysis of specified analytes, while also understanding laboratory instruments, electrophoresis, and paper chromatography techniques	,5
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- T1: Biochemistry–U. Satyanarayana, U. Chakrapani Text book Of Medical Biochemistry–MN Chatterjee, Kano Shinde.
- T2: Principle & Technique of Biochemistry—S Ramakrishnan, K.G. Prasanna, R. Rajan.
- T3: Principle & Techniques of Biochemistry& Molecular Biology–Keith Coilson.
- T4: Textbook of Medical Lab Technology– Praful B. Godkar, Darshan P. Godkar. T5: Practical Clinical Biochemistry–Harold Varley, 4th edition.

#### **REFERENCE BOOKS:**

- R1: Nutritional Biochemistry, Sharma D. C. (2017). CBS Publishers & Distributors Pvt. Ltd.
- R2: Textbook of Nutritional Biochemistry Hardcover, Malik, D., Narayanasamy, N., Pratyusha, V.A. (2023). Springer Verlag, Singapore;

# **OTHERLEARNINGRESOURCES:**

file:///C:/Users/DELL/OneDrive/Desktop/biochemistry/Textbook%20of%20Medical%20Biochemistry%2

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Correlating fluid distribution in body with its influencing factors.	1,2,4					
2	Explain metabolism of important minerals.	1,2,4					
3	Evaluate the mechanism action of hormones.	1,2,4					
4	Classify vitamins and their disorders.	1,2,4					
5	Analyze the working principle of modern laboratory technique.	1,2,3,4					

			SEMESTE	R – IV								
Cou	rse Title		Laborato	ry Instrumen	tatio	n						
Com	rse Code	1 74KMH 177114R 1	Total Credit		L	T	P	S	R	0/1		C
			<u>Fotal Hours</u>		1	0	0	0	0	0		1
	requisite	Nil	Co-requ						Vil			
	gramme		elor of Medical Laboratory Technology Semester of Second Year of the Programme									
Sei	mester					he I	'rogi	amr	ne			
		1 10 minutistante outsie mis			-	no n	rinci	ale h	ehin.	dlaha	arat	Otv
_	ourse jectives											
On	jecuves	<ul><li>instruments.</li><li>To understand the importance of calibration of laboratory instruments.</li></ul>										
	CO1 To have basic concept on the general instruments used in the laboratory											
	CO2											
	CO2			•		incu	ious.					
`	COS	The students will learn the				-1-	د ا ما ما		11 41	a 1ala		40
	CO4	Students will be able to analyze the working principle behind all the laboratory										
	~~=	instruments.										
	CO5	Summarized on automation and importance on its approach.										
Unit No.		Content	Contact Hour	Lea	arnin	ıg O	utco	ne			K	L
110.	Introduc	tion of basic Instruments i		Students ca	n le	arn	the	hasi	ics 1	ike	1	,2
_	laborato			name and us					105 1	IKC	•	,2
II		g principle of the Instruments	3	Students car					umei	nts	2	,3
	VV OTRING	5 principle of the instrument		functions.	incui	1110	** 1110	111501	unio	its	_	,5
III	Maintan	ance of theInstruments	3	Students car	algar	n ho	w to	main	tain	tha	1 ′	2,3
1111	Mainten	ance of themstruments		instruments	incar	11 110	w to	mam	ıtam	uic	1,4	د,ی
IV	IV Quality control of the instruments 4 Students can learn how to run the QC.						1,2	2,3				
V		tion of the instruments.	3	Students car	n ler	rn (	hout	the	rece	nt	1 1	3,4
•	Automa	don of the modulicits.	3	automation	11 100	uII (	เบบนเ	шс	1000	111	1,,	۰,⊶

T1: MLT methods and Technology by Ramnik Sood.

T2: Textbook of MLT by Praful B. Godkar and Darshan P. Godkar.

# **REFERENCE BOOKS:**

R1: MLT methods and Technology by Ramnik Sood.

R2: Textbook of MLT by Praful B. Godkar and Darshan P. Godkar

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	To have basic concept on the general instruments used in the laboratory	1,2,3					
2	Students will get the idea on different type of sterilization methods.	1,2,3					
3	The students will learn the significance of quality control	1,2,3					
4	Students will be able to analyze the working principle behind all the laboratory instruments.	1,2,3					
5	Summarized on automation and importance on its approach.	1,2,3,4					

			SEMESTI	ER – IV									
Course T	<b>itle</b>	Med	lical Record Keepir	ng and Rol	es of l	MLT	Pro	fessio	nals				
Course C	ode	24BMLT2205R	Total Credits: 3 Total Hours: 457	7	L 3	T 0	P 0	S 0	R 0	O/F	C		
Pre-requi	isite	Nil	Co-requisite Sil						0	3			
Program		Bachelor of Medical Laboratory Technology											
Semeste		Sn							me				
Schiest			Spring / IV Semester of Second Year of the Programme  1. Explore the origins and formation of medical terms to build a strong foundation for										
Course Objectiv		understanding medical language.  2. Identify and interpret word roots, prefixes, and suffixes to construct and decipher medical terminology effectively.  3. Learn the principles of maintaining logs, reports, and records for accurate and traceable laboratory operations.											
CO1			oility to construct and		medic	al ter	ms us	sing r	oots, j	prefixe	s, and		
CO2		Accurately interpunderstanding of c	accurate spelling and pret medical abbra linical documentation records and utilize of	reviations, on.	•				•		nncing legal		
CO4			ole to accurately inte	rpret labora	tory t	est re	sults	using	g norn	nal refe	erence		
CO4		ranges for effective	e patient care.										
CO5			articulate the critica ling diagnostic test										
Unit-		Conte	ent	Contact			Lear	ning	Outc	ome	KL		
No. I	Fir	ndamentals of Med	lical Terminology	Hour 10	Ider	ntify a	and c	onstri	ict me	edical	1,2,4		
•	•	Derivation of med Define word roo suffixes. Basic medical t meanings. Spelling and p medical terms.	ical terms. ts, prefixes, and terms and their		term and accu	ns us	sing suffix	roots es, spelli	, pre	fixes, suring and	-, <del>-</del> , ·		
II	Ab	breviations and Sy	mbols in Medical	15	Ider	ntify	ar	nd	accu	rately	1,2,3		
	La	boratory Technolo General Abbrevia Laboratory Technolo Common Abb Laboratory Tests a Abbreviations for Tests Abbreviations for Abbreviations for Tests Abbreviations for and Transfusion	gy (MLT) utions in Medical blogy breviations for and Procedures or Microbiology Hematology Tests or Biochemistry  Blood Banking		interable used Technology production	rpret reviat d in hnolocedure are amuni umen	ions Med egy ( es, an	he and ical MLT nd eq	cor l syr Labor ) for uipme effe d acc	nmon nbols ratory tests, ent to ective curate ratory			
III		mmon Laboratory cord Keeping in M	•	10	Den	nonst	rate	accur	ate re	cord-	1,2,3,6		
		boratories  Data entry and electronic health systems.  Basics of laborato logs, reports, and related to the logs.	management in record (EHR)  ry documentation: records.	-	keep data elec syst	ping entry tronic ems,	pracy and whi	tices, man healtl le a	incl agem n r	uding ent in ecord			

	<ul><li>keeping, including confidentiality.</li><li>Error management and traceability in records.</li></ul>			
IV	<ul> <li>Introduction to Normal Values</li> <li>Normal Values for Hematological tests</li> <li>Normal Values for Biochemical tests</li> <li>Normal Values for Microbiological tests</li> </ul>	5	Students will learn to identify and understand the normal reference ranges for common laboratory tests, enabling them to accurately interpret clinical results and contribute to effective patient care.	1,2,3
V	Role of Medical Laboratory Professionals	5	Understand the key roles of Medical Laboratory Professionals in various fields like microbiology, pathology and their contribution to accurate diagnosis and patient care.	1,2,4

- T1: AnIntroductiontoMedical LabTechnologybyFJBakerandSilverton
- T2: Medical Laboratories Management- Cost effectivemethodsby Sangeeta Sharma, Rachna Agarwal, Sujata Chaturvedi and Rajiv Thakur.

# **REFERENCE BOOKS:**

- R1: AnIntroductiontoMedical LabTechnologybyFJBakerandSilverton
- R2: Medical Laboratories Management- Cost effectivemethodsby Sangeeta Sharma, Rachna Agarwal, Sujata Chaturvedi and Rajiv Thakur.

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Program Outcome						
1	Demonstrate the ability to construct and interpret medical terms using roots, prefixes, and suffixes, ensuring accurate spelling and usage.	1,2,3						
2	Accurately interpret medical abbreviations, symbols, and reports, enhancing understanding of clinical documentation.	1,4,6						
3	Maintain accurate records and utilize electronic health record systems, adhering to legal and ethical guidelines.	1,5,6						
4	Students will be able to accurately interpret laboratory test results using normal reference ranges for effective patient care.	1,2,4						
5	Understand and articulate the critical role of Medical Laboratory Technologists in healthcare, including diagnostic testing, quality assurance, and collaboration with healthcare teams.	1,6,7						

			SEMEST	ER – IV							
Course T	Title			Professiona	al Skills	s - II	I				
Course C	Code	24BMLT2206R	Total Credits: 2 Total Hours: 60F	•	L 0	T 0	P 4	S 0	R 0	O/F 0	C 2
Pre-requ	isite	Nil	Co-requisite				_	N		1 -	
Program	me		Bachelor of Me	dical Labo	oratory	Tec	hnol	ogy			
Semest	er	Sı	Spring / IV Semester of Second Year of the Programme								
Cours Objectiv		<ol> <li>To understand the basics of emergency care and life support skills.</li> <li>To Manage an emergency including moving a patient.</li> <li>To help prevent harm to workers, property, the environment and the general public.</li> </ol>									
Acquire knowledge on healthcare quality improvement and patient safe concepts, and methods at the micro-, meso and macro-system levels.						safet	ty prin	nciples,			
CO2		Understanding the	concept of infectio	n control.							
CO3		Understanding the	concept of control	and preven	tion of	bio r	nedio	cal wa	aste.		
CO4		Understanding the	knowledge of life s	saving drug	S.						
CO5		Understanding the	concept of differen	t norms and	d guide	lines	of p	atient	safet	y.	
Unit- No.		Conte	nt	Contact Hour		I	Leari	ning (	Outco	ome	KL
I	Imp Nor	cepts of Quality rovement Approac	of Care, Quality hes, Standards and	10	Learn manag			patie	nt safe	ety &	1,2,3
П	Bas prin care incl (BV	Basics of emergency care and life support skills – Basic life support (BLS), Vital signs and primary assessment, Basic emergency care – first aid and triage, Ventilations including use of bag- valve masks (BVMs), Choking, rescue breathing methods, One and Two-rescuer CPR.			Learn		out ills us		basic	life	1,2,3
Bio medical waste menvironment safety — Definition of Biomedical minimization, BMW collection, transportation disposal (including Liquid BMW, Radioactive waste, Menual Drug waste, BMW methods of disinfertechnology for handling Personal protective examples of Monitoring & control infection (Protective decrease)			ical Waste, Waste  — Segregation, ion, treatment and colour coding),  etals/ Chemicals / Management & fection, Modern g BMW, Use of equipment (PPE), rolling of cross	13	To acc the manag	bio	n	enowl nedica	_	about waste	1,2,3,4

IV	Infection prevention and control -	12	Learn about the infection and	1231
1 1 1	Evidence based infection control	14	it's control.	1,2,3,4
			it s control.	
	principles and practices [such as			
	sterilization, disinfection, effective hand			
	hygiene and use of Personal protective			
	equipment (PPE)], Prevention & control			
	of common healthcare associated			
	infections, Components of an effective			
	infection control program, Guidelines			
	(NABH and JCI) for Hospital Infection			
	control.			
V	Antibiotic Resistance-	13	To acquire the knowledge about	1.2.3.4
	History of Antibiotics, How Resistance		the history of antibiotics, types	, ,- ,
	Happens and Spreads, Types of		of resistance and bacteria	
	resistance Intrinsic, Acquired, Passive,		control	
	Trends in Drug Resistance, Actions to			
	Fight Resistance, Bacterial persistence,			
	Antibiotic sensitivity, Consequences of			
	antibiotic resistance			
	Disaster preparedness and			
	management-			
	Fundamentals of emergency			
	management, psychological impact			
	management, Resource management,			
	Preparedness and risk reduction,			
	information management, incident			
	command and institutional mechanisms.			
	management, Resource management, Preparedness and risk reduction, information management, incident			

- T1: Understanding Patient Safety, Second Edition by Robert Wachter.
- T2: Handbook of Healthcare Quality & Patient Safety Author: Girdhar J Gyani, Alexander.

# **REFERENCE BOOKS:**

- R1: Washington Manual of Patient Safety and Quality Improvement Paperback by Fondahn, 2016.
- R2: Researching Patient Safety and Quality in Healthcare: A Nordic Perspective Karina Aase, Lene Schibevaag.
- R3: Old Handbook of Healthcare Quality & Patient Safety by Gyani Girdhar J

	CO PO Mapping							
S.N.	S.N. Course Outcome (CO)							
1	Acquire knowledge on healthcare quality improvement and patient safety principles, concepts, and methods at the micro-, meso, and macro-system levels.	1,2						
2	Understanding the concept of infection control	1						
3	Understanding the concept of control and prevention of bio medical waste	1,8						
4	Understanding the knowledge of life saving drugs.	1,2						
5	Understanding the concept of different norms and guidelines of patient safety.	2,5						

		S	EMESTER	R- IV							
Cour	se Title		Fin	nancial Li	teracy						
Cour	se Code	24UUFL2201R	Total Cre		L 0	T 0	P 2	S	R 0	O/F 0	C 1
Pro_R	Requisite	Nil	Total Hou		U	U	4	0 Ni	•	U	1
	Requisite	1411	1								
	ramme	Nil  Rechalor of Medical Laboratory Technology									
	nester		Bachelor of Medical Laboratory Technology  Spring / IV Semester of Second Year of the Programme								
Co	ourse ectives:	1. To create awareness among students about the need for possessing financial literacy education.  2. Identification of money as a working asset.  3. Impart the ability to make better financial decisions									
C	CO1	The students would be ablurepare financial plans and			•					vledge	and
C	CO2	The students would be a institutions' instrument ar			e need	and v	/ario	ıs ki	ind o	f banl	king
C	CO3	The student would be able to describe the importance of insurance services as social ecurity measures.									
(	CO4	The student would be able	to manage	the money	and debt	mor	e effe	ective	ely.		
	CO5	The Student will gain know	wledge onTı	ansformati	ons in Dig	gital N	Ioney	mar	ket		
Unit		Course Contents Contact Hours Learning Outcome							I	KL	
Ī	No Course Contents			6	To lear literacy		ut th	e fin	ancia	1 1	,2
П	Meaning, planning, economic Three piliquidity; iv. Budge planning; Steps inv Preparation surplus ar from surp	l Planning: need and importance for Economic needs, balancing need and resources; illars of investments-risk eting and its importance in colved in Financial Planning on of personal budgets and budget deficit, avenues follus, sources for meeting de Society funds and crowd fur	g between  c, return, financial g Process; b, budget or savings eficit.	8	To lear plannin and budgeti	g, ed inve		nic		s	2,3

TTT	D 1 0 D 4 O CC 4 C 1 1 1		T11 11	102
III	Banks & Post Office - As financial service	6	To understand the	1,2,3
	provider:		knowledge about different	
	Meaning and evolution of money,		types of banks.	
	Banks – meaning, types & functions; types of			
	accounts; Formalities to open various			
	accounts.			
	Different types of Post Office saving schemes:			
	Recurring deposit, savings, term deposit;			
	NSC; Kisan Vikas Patra; Monthly Income			
	scheme (MIS) Account,			
	Public Provident Funds (PPF), Senior citizen			
	savings scheme (SCSS), Sukanya Samriddhi			
	Accounts,			
	Indian Postal Order; International			
	Money transfer service; Forex Services;			
	Money remittance services; Jan Suraksha			
	Scheme			
***	Insurance - As financial service provider:	_	m : .1 1 1 1	1,2,3,4
IV	Different types of Risks and their	5	To acquire the knowledge	1,2,5,4
	Management, Diversification of risk;		about different types of	
	Meaning, need and importance of Insurance;		insurance company.	
	Types of Insurance – Life Insurance, Health			
	Insurance, General Insurance, Term			
	Insurance, General Insurance, Term			
	Pension and retirement policies;			
	Post office life insurance schemes,			
	Postal life insurance and rural postal life			
	insurance			
V	Transformations in Digital Money market:	4	To acquire the knowledge	1,2,3,4,5
	Various functions & innovative services of		about the Various functions	
	Banks; Mobile Banking, NEFT, IMPS,		& innovative services of	
	RTGS, Money transfer, Different types of		Banks.	
	cards- Debit & Credit, E-Banking, Unified			
	payment interface (UPI), Credit Scoring -			
	CIBIL, Digital Banking, crypto currency and			
	related transactions, Fintech, Block chain;			
	Understanding Digital Payments.			

- T1: The Young Adult's Guide to Financial Success- How to Manage Your Money& Live Better on Less by Edward M. Wolpert
- T2: Financial Freedom with Financial Control by Jagmohan Singh Pen down Press
- T3: The Richest Man in Babylon (Deluxe Hardbound Edition) by George S. Clasonixia Press Garden City, New York, Ships from and sold by MG BOOKS.

#### **REFERENCE BOOKS:**

- R1: Financial literacy to financial planning by Dr. Purvi Kothari and Mr. Keyur Mehta Nexus Publications Surat Gujarat
- R2: Ernst & Young's Personal Financial Planning Guide: Take Control of Your Future and Unlock the Door to Financial Security by Ernst & Young, Robert J. Garner, Robert B. Coplan, Barbara J. Raasch, Charles L. Ratner.

#### **OTHER LEARNING RESOURCES:**

https://in.search.yahoo.com/search?fr=mcafee&type=E210IN714G0&p=financial+literacy

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	The students would be able to understand the importance of financial Knowledge and prepare financial plans and budgets and plan and manage personal finances.	6.7					
2	The students would be able to understand the need and various kind of banking institutions' instrument and their utilities	7					
3	The student would be able to describe the importance of insurance services as social security measures.	5					
4	The student would be able to manage the money and debt more effectively.	8					
5	The Student will gain knowledge on Transformations in Digital Money market	7,8					

			SEMES	STER IV							
Cou	rse Title		Basic l	Life Savin	g Skills (BI	LSS)					
Cour	rse Code	24UULS2201R	Total Cr Total Ho	redits: 2		L 0			S R 0 0	_	1
Pre-F	Requisite	Nil	(	Co-Requis	site				Nil	•	
Anti-l	Requisite			Nil	[						
Prog	rammes	Bach	elor of M	Iedical La	boratory T	echno	logy				
Ser	mester	Spring / IV	V Semest	ter of Seco	nd Year of	the P	rogra	amn	ne		
	ourse ectives:	<ol> <li>To provide the learner emergency fire situatio</li> <li>To provide appropriate</li> <li>Develop the ability to a</li> </ol> The students will be able	n basic ma assess and	anagement d prioritize	and treatme	ent for	r inju	ries			
(	C <b>O1</b>	oxygen to the patients to so	ustain tis	sue viabili	ty.						
(	CO2	The students will be able infants' victims.	to perfor	rm the imp	portance of	early	CPR	on A	Adult	, child	and
(	CO3	The students will be able t unresponsive victims	o perforr	n the basic	steps to rel	ive ch	oking	for	resp	onsive	and
(	C <b>O4</b>	The students will be able to pain and protecting the vic	_			orse, a	iding	rec	overy	, reliev	/ing
(	C <b>O5</b>	The students will be able operation and getting out a		about the	fire equipm	nent r	equire	eme	nts, 1	nethod	s of
Unit No		Content		Contact Hours	Lear	rning	Outco	ome	!	K	L
I	• Introd ABC • CPR	ife Support (BLS) duction of BLS Chain of sur s Assessment and Ventilation Technique king for adult and children		5	To learn to basic surv			lge	abou	: 1	,2
II	<ul><li>Com</li><li>Situa</li><li>Tean</li></ul>	duction duction munication Skills tional Skills work r soft skills		6	6 Illustrate different communication skills, situational awareness including teamwork				1,	2,3	
Ш	<ul> <li>Intro</li> <li>Prior</li> <li>hosp</li> <li>Scen</li> <li>Bleed</li> <li>Extri</li> <li>Cerv</li> <li>appli</li> </ul>	Introduction Priorities of Initial approach in prehospital care Scene safety Primary assessment, Bleeding control Extrication of victims and safe transfer Cervical spine stabilization and C-collar application Splinting of broken Limbs  To learn the knowledge about the handling of trauma patient and patient safety.					2,3				
IV	Single a			5	To learn the knowledge about the Triage system					1,2	,3,4

V	Medical emergencies	6	To acquire the knowledge on	1,2,3,4,5
	Introduction		the approach to medical	
	Victim centered approach and Management		emergencies.	
	of: -			
	Seizures Heart attack asthma			
	diabetic emergencies emergency			
	child birth Respiratory distress and failure			

- 1 Nancy Caroline's Emergency Care in the streets eight edition by Jones and Bartlett
- 2 First Aid book by L C Gupta; Publisher Jaypee Brothers, 7th Edition.
- 3 Advance Cardiovascular life support and Basic life support provider manual American Heart Association (AHA).

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Demonstrate knowledge and skill to perform CPR use an AED, and respond to choking in adults and children.	2,3,4					
2	Understand the significance of communication and teamwork in various situations.	2,5,7					
3	Apply knowledge and skill about pre-hospital care and management of trauma emergencies.	2					
4	Understand the principles and purpose of the Triage system in healthcare settings.	2,3,4,7					
5	Identify and manage common medical emergency conditions.	2					

			SEME	STER – V	7							
Course	e Title		Viro	ology and	Immuno	ology						
Course	e Code	24BMLT3101R	Total Credits Total Hours:		•	L 2	T 0	P 4	S 0	R	O/F 0	C 4
Pre-re	quisite	Nil	Co-requi					1	N	il		
Progra	mme		Bachelor of	Medical I	Laborato	ry To	echn	olog	<b>y</b>			
Semest	ter		Fall/ V Semeste	er of Thire	d Year o	f the l	Prog	ran	ıme			
Cou Objec	ırse ctives	pathogenesis, a 2 Understanding	pathogenesis, and laboratory diagnosis of various medically important viruses.  2 Understanding the process of sample collection, transport and processing.									
C	01	Understand the bas	sics of virology	and its cla	ssificatio	n.						
C	02	Recognize some of	f the common vi	ruses that	caused v	ariou	s vira	al in	fecti	on.		
C	03	Execute the knowl	edge of handling	g and proc	essing of	infec	eted s	samp	oles.			
C	04	Differentiate the ty	pes of immunity	7.								
C	05	Describe the antige	en-antibody reac	tions and	types of l	hyper	sensi	itivi	ty.			
Unit No.		Content Contact Hour Learning Outcome					KL					
I				6	Explain the basic principles of virology, including viral structure replication cycles and classification				ture, ition.	1,2		
п	Parain Chiku	diseases: Influenza afluenza virus ngunya virus virus Toga/ Flavi viru		6	Differed disease parainfly virus, underst health.	s caus luenza anc	sed b a vi	y in rus, poli	flue chil oviri	nza v kungi is	virus, unya and	1,2,4
III	Sample	ostic Virology: e collection and sing Identification es	transport and	and Demonstrate proficiency collection, transport, processing of clinical samp virological diagnosis.					and	2,3		
IV	IV Introduction to Immunology: Introduction to immunology Immunity and its types and classification. Structure and function of Immune system.			6	Describe the fundament principles of immunolog differentiate between innate an adaptive immunity.					logy,	1,3,4	
V	autoim Antiger Hypers	n-Antibody and nmunity n and Antibodies Agensitivity, Basic of munodeficiency.		6	Explain and an antibod types an	tibod ly rea	ies, ictioi	deso ns in	cribe nclud	anti	gen-	2,4

Practical	<ul> <li>i. Blood grouping Serological diagnostic tests - ELISA, WIDAL, VDRL, RPR, ASO, CRP, TPHA, HCG, HIV tridot, HbsAg.</li> <li>I. Bacteriological examination of water, air and milk.</li> </ul>	30	Demonstrate proficiency in laboratory techniques and understand their clinical significance, interpret blood grouping tests and serological diagnostic tests.	1,2,3,4
	- Culture and Sensitivity Urine culture, Pus culture			

T1: Textbook of Microbiology Immunology by Subash Chandra Parija 2nd edition.

# **REFERENCE BOOKS:**

- R1: Textbook of Medical Lab Technology– Praful B. Godkar, Darshan P. Godkar 3rd edition
- R2: Ananthanarayan and Paniker, "Textbook of Microbiology 8th edition.
- R3: Textbook of Essentials Microbiology Apurba Sankar Sastry, Sandhya Bhat 4th edition.

# **OTHER LEARNING RESOURCES:**

https://www.ncbi.nlm.nih.gov/books/NBK7627/

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Understand the basics of virology and its classification.	1,2,4					
2	Recognize some of the common viruses that caused various viral infection.	1,2,4					
3	Execute the knowledge of handling and processing of infected samples.	1,2,4,5					
4	Differentiate the types of immunity.	1,2,4					
5	Describe the antigen-antibody reactions and types of hypersensitivity.	1,2,4					

			SEMEST	ER – V							
Cour	se Title		Н	istopatholo	ogy						
Cour	se Code	24BMLT3102R	Total Credits: 4 Total Hours: 30	Г±30Р	L 2	T 0	P 4	S	R	O/F 0	C 4
Pre-r	equisite	Nil	Co-requisite	1+301	<u> </u>	U	4	Ni	_	U	4
	ramme	1411	Bachelor of Med	lical Labor	ratory	Tech	nolog				
	nester		Fall/ V Semester o								
	ourse jectives	<ol> <li>To make the s biology.</li> <li>Students learn</li> </ol>	biology.  2. Students learn about the stain, which is used in the histocytology.								
(	CO1	Understanding ba	asics on cells, tissue	s and a brie	f outlin	e on	tissue	proc	essin	g.	
CO2 Describe the concept of Microtome knife, its types and functions.											
CO3 Analyze the basic structure of a dye, and concept of special					ecial s	taini	ng te	chniq	ues.		
(	CO4	Explain the conc	ept of pigment staini	ing.							
(	CO5	Illustrate the Imn	nunohistochemistry	(IHC) and i	its relat	ion w	ith ca	ancer	biolo	gy.	
Unit No.		Content		Contact Hour		Lea	arnin	ıg Oı	ıtcom	ie	KL
П	methode Fixatio Definiti of each Tissue Definiti Impregrand its p Frozen Descrip Microte Definiti types ar	ology on, Classification of fixative Processing- on, Grossing, Dehmation, Embedding properties section studies of totion of instruments omy:	ydration, Clearing, g. Paraffin waxes tissues – g. Utility knife, Microtome ning and stropping,	5	preparing thin tissue sections				ypes, in	1,2	
III	Mechan Progres Accentu Prepara Routine Haemat ∁ Special a) Conn Van stain and elast b) Carb	ructure of a dye, Praism of staining sive and regressive lators, Classification of Solvent, estaining oxylin & Eosin ositions, Technique stains nective tissue stains. Gieson's stain, Mallory trichron sweets methods, Cic fibres, PTAH obydrates staining-icarmine stain	Metachromasia, staining, Mordant, ation of dyes, stains Preparation asson's trichrome stains, Gordon's Orcein method for PAS,	10	Descriction described by the section of the section	ficati cation stopat to inte	s of thologerpre	and varion gy. T	practous straight	tical tains	1,2,3,4

	preparation,			
IV	Pigments and its stains: Endogenous pigments. eg: Haem pigments, Perl's Prussian blue, Hemozoin pigments, Haematoidin pigments, Bile pigments, Tyrosine pigments, Lipid pigments	4	Explain different pigments and their origins, staining methods, and its clinical significance.	1,2,3
V	Immunohistochemistry (IHC) Cancer Biology	3	Describe the concept of cancer; learn Immunohistochemistry and its principles, clinical applications, and the significance of tumor markers.	2,4
Practical	<ol> <li>Labelling of specimen, Filling of forms</li> <li>Receiving, entering and labelling and register</li> <li>Slide demonstration of different types of cells</li> <li>Common instruments for histopathology</li> <li>Fixative preparation, Preparations of graded alcohols</li> <li>Grossing, role of technicians</li> <li>Tissue Processing, Decalcification</li> <li>Preparation of blocking and section cutting, staining, mounting and labelling.</li> <li>Staining-         Hematoxylin &amp; Eosin stain, PAS stain Oil Red O'         Sudan Black stain Special stains – Van Gieson,         Masson Fontana trichrome, Verhoeff's,         Field's staining etc.</li> <li>Preservation and museum technique.</li> </ol>	30	Develop proficiency in all stages of histopathological specimen processing, including specimen labeling, form filling, reception, registration, slide preparation, and demonstration of different cell types.	1,2,3

- T1: Text book of pathology by Harsh Mohan
- T2: Medical Laboratory Technology Methods & interpretation Ramnik Sood
- T3: Text book of Medical Laboratory Technology Praful B. Godkar, Darshan P Godkar.

# **REFERENCE BOOKS:**

- R1: Bancroft's theory and practice of Histological techniques by S. Kim Suvarna, Christopher Layton, John D. Bancroft.
- R2: Histopathology, A self-instructional text by Freida L. Carson.

# **OTHER REFERENCES:**

https://doi.org/10.5539%2Fgjhs.v8n3p72

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Understanding basics on cells, tissues and a brief outline on tissue processing.	1,2,4					
2	Describe the concept of Microtome knife, its types and functions.	1,2,4					
3	Analyze the basic structure of a dye, and concept of special staining techniques.	1,2,4					
4	Explain the concept of pigment staining.	1,2,4					
5	Illustrate the Immunohistochemistry (IHC) and its relation with cancer biology.	1,2,4					

			SEMEST	ΓER – V								
Cou	ırse Title		Cli	nical Biocl	hemistry							
Cou	ırse Code	24BMLT3103R	Total Credit Total Hours		$\frac{L}{2}$	T 0	P 4	S		_	O/F 0	C 4
Pre	-requisite	Nil	Co-requ					N	Jil			
Pro	gramme		Bachelor of M	edical Lab	oratory T	Гесhі	nolo	gy				
Se	emester	Fa	ll/ V Semester	of Third Y	ear of th	e Pro	gra	mm	e			
Course Objectives		markers used for 2. The students will 3. The students will	<ol> <li>This subject shall give information about all the major clinical enzymology and bio markers used for diagnosis.</li> <li>The students will learn the details about radioactivity and various organ function test.</li> <li>The students will also learn the methods/principles and procedures used to determine the various organ function tests.</li> </ol>									
	CO1	Define the relation biomarkers.					nzym	ne a	ind t	hei	ir rol	e as
	CO2	Recognize the radio			•							
	CO3	Execute the comprel Evaluate the assessn					ntio-					
	CO4 CO5	Appraise about the (				ııuIIC	uon	•				
Unit	- O-3		Justile and Thy	Contact							Τ.	
No.		Content AL ENZYMOLOG	Y AND	Hour 8	Lea	arniı an		expl		the		KL 1,2
	kinase, transamin (AST), p Troponin, Amylase therapeuti	es, Lactate dehydroge Alkaline phosphata ase (ALT), Aspartate prostate specific an Acid phosphata and Lipase, E	transaminase tigen (PSA), ases (ACP), Enzymes as		biochem clinical various biomark	si e	pro gnif enzy	ican	ce	and O and	of	
П	RADIOA Introducti gamma measurem in medici safety and uses of rad	nent of radioactivity, ne, radiation hazar I precaution, diagnost dioisotopes.	radioisotopes, Radioisotopes ds, radiation	5	Describe principle differen beta, ar based or interacti	es of tiate nd ga n the ons v	of r bet amm ir pr with	radio ween a ra ropen mat	n alpadiati ndiati rties ter.	oha on and	d, as d	2,4
III	ORGAN FUNCTION TEST: Liver function tests: Functions of Liver, Classification of LFT Serum bilirubin, Classification of jaundice, Bil acids and bile salts, Tests based on metaboli capacity of liver, Tests based on syntheti function				Explain the physiologic functions of the liver, classif liver function tests (LF) based on their diagnost purposes.					sify FT	y ')	4,5
IV	Renal fun Functions Endogeno	FUNCTION TEST netion tests:  of kidney, Urea cous creatinine clearance blood flow, Test ba	e tests, Tests		Analyze the clin significance of renal function test results in diagnor renal disorders monitoring renal health.					tio	n g	4, 5

V	ORGAN FUNCTION TEST	6	Identify and perform gastric	1,3
	Gastric function tests:		function tests and thyroid	
	Test for determining gastric function,		function tests.	
	Examination of resting contents, Fractional			
	gastric analysis, Histamine stimulation tests.			
	Thyroid function tests:			
	Tests based on primary function –RIU,			
	PBI ¹³¹ .			
	Test based on blood levels of thyroid			
	hormones-T3, T4, TSH. Test based on			
	metabolic effects of thyroid hormone,			
	Scanning			
	of thyroid gland			
	1. Glucose tolerance test (GTT)	30	Determine and estimate the	1,2,3,4,5
	2. Liver function tests		various parameters used to	
	Bilirubin (total, direct, indirect)-SGOT, SGPT		assess the liver and kidney's health and its function. Also,	
Practical	3. Renal function tests-Urea, Creatinine, Uric acid		the tests used to assess the function of Thyroid gland.	
Pra	4. Thyroid function tests (Demonstration)			
	TSH, T3, T4			
	5. Clinical enzymology-LDH, Serum amylase, ALP, ACP			

- T1: Biochemistry–U. Satyanarayana, U. Chakrapani.
- T2: Textbook of Medical Biochemistry–MN Chatterjee, Kano Shinde.
- T3: Principle and Technique of Biochemistry-S Ramakrishnan, K.G. Prasannan, R. Rajan.
- T4: Principle & Techniques of Biochemistry & Molecular Biology Keith Coilson.
- T5: Textbook of Medical Lab Technology- Praful B. Godkar, Darshan P. Godkar

#### **REFERENCE BOOKS:**

- R1: Clinical Biochemistry and Metabolic Medicine (2012) by Martin Andrew Crook. CRC Press
- R2: Clinical Chemistry: Principles, Techniques, and Correlations (2022). by Carleen Van Siclen, Edward P. Fody, James March Mistler, Jones and Bartlett Publishers

#### OTHER LEARNING RESOURCES:

Fundamentals Biochemistry 4th edition: Free Download, Borrow, and Streaming: Internet Archive

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Program Outcome							
1	Define the relationship of various clinical important enzyme and their role as biomarkers.	1,2,4							
2	Recognize the radioactivity and its diagnostic importance.	1,2,4							
3	Execute the comprehensive knowledge on liver functions.	1,2, 4							
4	Evaluate the assessment method used to determine renal function.	1,2, 4							
5	Appraise about the Gastric and Thyroid function tests.	1,2,4							

			SEME	ESTER V								
Course	e Title	La	boratory	Infrastru	cture and I	Desig	gn					
Course	Code	24BMLT3104R		redits: 4 ours: 60T	•	1 4	T 0	P 0	S 0	R 0	O/F 0	<b>C</b>
Pre-rec	quisite	Nil		Co-requi		-	Ū	Ū	Nil		•	
Anti-re	quisite			N	lil e							
Progra	amme	Ba	chelor of	Medical 1	Laboratory	Tecl	nnol	ogy				
Seme	ester				rd Year of tl							
	urse ctives:	Laboratory  2. The goal of this collaboratory layout after	<ul><li>2. The goal of this course is to enable the students to comprehend the concept of laboratory layout after lectures and demonstrations.</li><li>3. Students will learn about the fundamental design, maintenance, and cleaning of a</li></ul>									
C	01	Understanding the ration	nale behin	d laborato	ory architect	ure a	nd ir	nfrasi	tructi	ure.		
C	02	Describe a comprehense entire laboratory	Describe a comprehensive knowledge on how a laboratory operates, generalize to the									
C	03	Briefly outline on Labor	atory's ge	neral man	agement and	d pul	blic s	suppo	ort			
C	04	Evaluate the sample flocategory.	oor plan	for differe	ent clinical	labo	rator	y an	d pri	imar	y serv	vice
C	05	Demonstrate the fundamental	nental des	ign, maint	enance, and	clea	ning	of a	labo	rator	y.	
Unit No		Content		Contact Hours	Lea	arni	ng O	utco	me			KL
1	-to j	se of engineering controls brovide a safe, ac nment for laboratory per et a work ts/users, staff & envi	ecessible sonal to	12	Understan engineerir safe and for laborar and staff.	ng co acce	ntro ssibl	ls in e en	ensu viror	ring nmen	a ıt	2, 3
2	Layou -sampl -labora	t of Laboratory areas: e collection area atory working area ral laboratory area		12	Demonstra organizing equipment standard o	g wo t safe	rksp ely, a	and a	, han dher	dling ing t	g	., 2
3	*				Develop smooth as and staff workflow.	nd o mov	comf	ortab	ole p	atien	ıt 1,	,3,4
4	labora -Recep			12	Identify appropriat reception, storage are	e san		struc		fo	r	2,3
5		atory renovation ring, Cleaning		12	Demonstr for repa laboratory	airin	g a	tive and		tegie anin		2,3,4

**T1:** Laboratory Design guide by Brian Griffin

T2: Design and planning of research in clinical laboratory facilities by Leonard Mayer

# **REFERENCE BOOKS:**

R1: Textbook of Medical Laboratory Technology by Praful B. Godkar, Darshan P. Godkar

	CO PO Mapping									
S.N.	Course Outcome (CO)	Mapped Program Outcome								
1	Understanding the rationale behind laboratory architecture and infrastructure.	1,3,5								
2	Describe a comprehensive knowledge on how a laboratory operates, generalize to the entire laboratory	1,3,5								
3	Briefly outline on Laboratory's general management and public support	1,3,8								
4	Evaluate the sample floor plan for different clinical laboratory and primary service category.	1,3,8								
5	Demonstrate the fundamental design, maintenance, and cleaning of a laboratory	1,3,8								

SEMESTER – V											
Course	Title	Quality	Control	and Labo	ratory I	Mana	gement	(TPS	-IV)		
Course	Code	24BMLT3105R		Credits: 2 ours: 30P	$\begin{array}{c c} L \\ \hline 0 \end{array}$	T 0	P 4	S	R	O/F 0	C 2
Pre-rec	quisite	Nil		equisite	U	U	, <del>,</del>	Nil	U	U	
Progra	amme	В	achelor o	f Medical	Labora	tory '	Гесhno	logy			
Seme	ester			ster of Thi							
Course Objectives		<ol> <li>Understand the basic concepts of Quality Control (QC) and Quality Assurance (QA) in clinical laboratories.</li> <li>Learn how to manage laboratory resources such as staff, equipment, and supplies for maximum efficiency.</li> <li>Understand the principles of continuous improvement and how to apply them to laboratory operations to maintain high-quality standards.</li> </ol>									
CC	)1	Explain the important	ce of quali	ty control	and assu	ırance	in clin	ical lal	orato	ry settii	ngs.
CC	)2	Demonstrate basic knowledge of laboratory management, including resource and personnel management.									
CC	)3	Identify and impleme	nt quality	improvem	ent strat	egies	in labo	ratory	operat	tions.	
CC	04	Apply regulatory standards and compliance requirements (e.g., ISO 15189, CLIA) in laboratory practices.									
CC	<b>)</b> 5	Develop and maintain a Laboratory Quality Management System (LQMS) to ensure efficient and reliable test results.									
Unit- No.		Content		Contact Hour		Lear	ning O	utcom	ıe		KL
I	<ul><li> Qu</li><li> As</li><li> Th</li><li> QC</li><li> Th</li><li> ens</li></ul>	uction to Quality Conatory Management ality Control (QC) and surance (QA) e difference between the control of QC and suring accuracy and retest results.	Quality QA and QA in	5	Define QC and QA. Understand how QC and QA help ir maintaining high standards of testing in the laboratory. Explain how quality standards ensure patient safety and diagnostic accuracy.						1,2
П	Precis The lab Ser Un app	Concepts in Quality ion vs Accuracy: e difference and impo oratory tests. estivity and Sp derstanding how these bly to diagnostic tests. e role of internal contibration in quality continuous estimation.	rtance in ecificity: concepts trols and	10	Understand the difference between precision and accuracy in laboratory results.  Learn how sensitivity and specificity influence test outcomes. Identify key tools used in quality control, such as control samples and calibration standards.						,2,3
III	• Mala	ging Laboratory Resou anaging staff: Roboratory personnel apportance of traini ammunication.	oles of and the	5	Unders laborat includi assign Learn and en accurat Unders	quipn	ely, role	2,3			

	• Equipment management: Calibration, maintenance, and troubleshooting.		inventory control and managing laboratory supplies efficiently.	
IV	Regulatory Standards and Laboratory Accreditation  ISO 15189: Requirements for laboratory quality and competence.  CLIA (Clinical Laboratory Improvement Amendments): U.S. regulatory standards.	5	Understand the importance of regulatory standards for laboratory operations and learn the requirements for ISO 15189 and CLIA certification.	1,2,3
V	Continuous Improvement and Laboratory Quality Management Systems (LQMS)  Introduction to the Laboratory Quality Management System (LQMS) framework.  Continuous quality improvement techniques (e.g., PDCA Cycle).	5	Learn the key components of a Laboratory Quality Management System (LQMS), understand the concept of continuous improvement and how it applies to lab operations.	2,3,4

- T1: Practical Laboratory Management by Craig A. D. Johnson
- T2: Introduction to Laboratory Quality Management by Traci L. L. Simpson
- T3: ISO 15189: Medical Laboratories Requirements for Quality and Competence

#### **REFERENCE BOOKS:**

- R1: World Health Organization (WHO). Laboratory Quality Management System: Handbook. Link: WHO Laboratory Quality Management Handbook
- R2: U.S. Centres for Medicare & Medicaid Services (CMS): Clinical Laboratory Improvement Amendments (CLIA).
- R3: Westgard, S., & Westgard, J.O. (2018). "The Evolution of Quality Control in the Clinical Laboratory." American Journal of Clinical Pathology.

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Program Outcome							
1	Explain the importance of quality control and assurance in clinical laboratory settings.	1,2							
2	Demonstrate basic knowledge of laboratory management, including resource and personnel management.	1,9							
3	Identify and implement quality improvement strategies in laboratory operations.	1,3							
4	Apply regulatory standards and compliance requirements (e.g., ISO 15189, CLIA) in laboratory practices.	1,3,9							
5	Develop and maintain a Laboratory Quality Management System (LQMS) to ensure efficient and reliable test results.	1,3,9							

			SE	MESTER	- V								
Cours	se Title			Bi	o-Hazard								
Cours	se Code	24BMLT3106R	Total C			L	T	P	S	R	O/F	C	
	equisite	Nil		ours: 30P Co-requisi	ite	0	0	4	0 Nil	0	0	2	
	equisite	1411		co-requisi	Nil				1111				
	ammes		Bachelor	of Medica	al Laborat	tory T	Гесhі	nolog	y				
	ester	Fa	ıll/V Sem	ester of Tl	nird Year	of th	e Pro	gran	nme				
	urse ectives	2. The students will accidental records	<ol> <li>Students are taught about the various biomedical wastes, types and its management.</li> <li>The students will also learn about safety measures in the lab and documentation accidental records and information in the laboratory.</li> <li>Students are taught about disposal of waste generated in the clinical laboratory.</li> </ol>										
C	01	Understanding the importance of safety awareness for clinical laboratory personnel and listing the responsibilities of employer.											
C	O2	radiologic materials	To identify the hazards related to handling chemicals, biologic specimens, and radiologic materials and learn about PPE kits.										
CO3 Students will learn the precautionary measures when working wit equipment, cryogenic materials, and compressed gases and avoiding hazards associated with laboratory equipment.							ng n	nechanical					
Students will learn how to select the correct means for disposal of waste gen the clinical laboratory.  Students will be able to outline the steps required in documentation of an acceptable.													
C	<b>O</b> 5	the workplace.	e to outili	ie the step	s required	ın ac	cume	entati	on oi	an a	icciaei	nt in	
Unit- No		Content		Contact Hour	]	Lear	ning	Outc	ome			KL	
I	REGUI Occupa awarene	RATORY SAFETY LATIONS tional safety and hea ess for clinical el, Signage and labelli	alth safety laboratory		Students can learn about the safet measures in laboratory.						ety	1,2	
II	Chemic cabinets	YE QUIPMENT al fume hood sand bic s al storage PPE and hy	·	6	Students equipment.		earn	how	to use	e saf	ety	2,3	
III	• Ch	Y cal safety emical safety diation safety Fire safe	ety	6	Students types of s					liffer	ent 2	2,3,4	
IV DISPOSAL OF HAZARDOUSMATERIALS  • Biomedical waste Management, classification, types  • Chemical Waste  • Radioactive waste Bio-hazardous waste				6	Students can understand differen waste generated and it's treatment in Health Care Sector.							1,3	
V		ENT MENTATION AND TIGATION		6	Student v records.	vill le	earn h	iow to	o mair	ntain	the 1	.,3, 4	

- 1. Text book on biohazard By Jesse Craignou.
- 2. Text book of Microbiology by Ananthanarayan and Paniker.
- 3. Text book on Biohazard–By Ken Alibek with Stephen Handelman.

# **REFERENCE BOOKS:**

- 1. Text book on biohazard By Jesse Craignou.
- 2. Text book of Microbiology by Ananthanarayan and Paniker.
- 3. Text book on Biohazard–By Ken Alibek with Stephen Handelman.

	CO PO Mapping									
S.N.	Course Outcome (CO)	Mapped Program Outcome								
1	Understanding the importance of safety awareness for clinical laboratory personnel and listing the responsibilities of employer.	1,3,9								
2	To identify the hazards related to handling chemicals, biologic specimens, and radiologic materials and learn about PPE kits.	1,3,4,9								
3	Students will learn the precautionary measures when working with electrical equipment, cryogenic materials, and compressed gases and avoiding mechanical hazards associated with laboratory equipment.	1,2,3								
4	Students will learn how to select the correct means for disposal of waste generated in the clinical laboratory.	1,8								
5	Students will be able to outline the steps required in documentation of an accident in the workplace.	1,2								

<b>C</b>	(E)*41		SEMEST	TER – VI	1						
Course		- 4D3 57 5700 4D	Total Credits	Cytopath s: 4	lology L	Т	P	S	R	O/F	C
Course	Code	24BMLT3201R	Total Hours:		2	0	4	0	0	0	4
Pre- re	quisite	Nil	Co-requ	isite				Ni	l		
Progra	mme		Bachelor of N	Medical La	borator	y Tech	nolo	gy			
Semest	er	•	ring /VI Semes								
Course Objectives		<ol> <li>Students can learn about cytology Exfoliative and interventional cytology and role of Cytology.</li> <li>To make the students learn and understand different cytological techniques.</li> <li>To understand the general background regarding how cytopathology aids in the diagnosis of cancer.</li> </ol>									
CO1	-	Describe the basics	s of cytology an	nd its classif	fication v	with th	eir ro	ole.			
CO2		Summarize the pro	cess of collecti	on of specia	mens fro	m diff	erent	part	s of t	he bod	y.
CO3		Execute the technic	ques of Fine Ne	eedle Aspira	ation Cy	ology					
CO4		Illustrate the collec	•				_				
CO5		Analyze the signiunderstanding of la			ining pa	attern	and	deve	elop	a pra	ctical
Unit No.		Content	Contact Hour		Learn	ing (	Outco	me		KL	
I	Definiti Normal Classifi interver Cytolog inflamn Progres Change	cation of cytology Entional cytology,	xfoliative and Role of criteria of	6	Develop a foundationa understanding of cytology the structure and function of cells and tissues, and the characteristics of normal tissues and recognized progressive changes in cell morphology.					y, of he al ze	1,2,3
П	Collection of specimens from female genital tract specimen for routine screening.  Cervical smear Vaginal pool smear Lateral vaginal smear Combined (fast) smear Triple smear Endo cervical and endometrial smear.			5	Demonstrate proficiency in collecting various types of specimens from the female genital tract also understand the specific techniques required for each type of specimen collection.					of ile nd es	2, 3
Ш	Collecting Diagnost Fine Not Applicate Advantation of FNA Wet and Imprint	y cytology on of urinary tracestic utility of urinary eedle Aspiration Cy tion of FNAC ages of FNAC Gene C Limitation of FNA l Dry fixed smear, its Cytology, Crush sm sediment cytology	ary cytology rtology eral procedure AC s difference	5	Understand the principles of urinary cytology and its role in diagnosing urinary system cancers. Describe the advantages and limitations of FNAC. Recognize the applications of imprint, crush smear, and biopsy sediment cytology.						1,2

IV	Body cavity Fluids Effusions Collection and processing of body cavity fluid specimens, Cyto-preparation and staining Processing of clotted and Blood specimen. Cellular Components in effusions Principal Cellular Components Cellular components in benign Effusions Cellular components in malignant Effusions	6	Understand the importance of proper handling in effusion cytology. Describe different collection and processing techniques. Recognize cellular components in benign and malignant effusions.	3,4
V	STAINING: R/E stain types-Methods, Maintenance, Preparation of stain, Pap's stain Special stains- MGG, PAS, ZN, Mucicarmine etc. Mounting and Labelling Cell Block preparation Cytological fixative- Definition, types/classification Mailing of smears Establishments of lab- Manpower, Space, Ventilation, Light, Water, working benches, Room arrangements, Reception of specimens, Instruments required.	8	Explain staining principles and methods. Recognize the importance of special stains. Describe cell block preparation and cytological fixatives.	2,4
Practical	<ol> <li>Sample receiving labelling and entering</li> <li>Preparation of Exfoliative cytological smears</li> <li>Fixation – types and methods</li> <li>Preparation of different solution</li> <li>Preparation of smears in interventional cytology, Fixation and stains</li> <li>Staining R/E         <ul> <li>Preparations of stains</li> <li>Methods – MGG &amp;PAPs</li> <li>Mounting</li> <li>Labelling</li> </ul> </li> <li>Special Stains         <ul> <li>PAS</li> <li>AFB</li> <li>Mucicarmine etc</li> <li>Record keeping of reports and blocks etc.</li> <li>Lab safety</li> <li>Quality controls</li> </ul> </li> </ol>	30	Understand and apply various fixation types and methods, ensuring optimal preservation of cellular morphology. Describe application of stains such as MGG and PAPs, mounting, labelling, and performing special stains like PAS, AFB, and Mucicarmine stains.	1,2,3

- **T1**: Bancroft's theory and practice of Histological techniques by S. Kim Suvarna, Christopher Layton, John D. Bancroft.
- T2: Textbook of Medical Laboratory Technology–Praful B Godkar, Darshan P Godkar
- T3: Manual of Medical Laboratory Techniques by S. Ramakrishna

#### **REFERENCE BOOKS:**

R1: Textbook of Histological Techniques for Medical Laboratory Technology by Sudha R.

**R2:** Histopathology, A self-instructional text by Freida L. Carson

**R3:** https://doi.org/10.1016/S0002-9440 (10)64472-0

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Describe the basics of cytology and its classification with their role.	1,2,4					
2	Summarize the process of collection of specimens from different parts of the body.	1,2,3,4					
3	Execute the techniques of Fine Needle Aspiration Cytology	1,2,3,4					
4	Illustrate the collection and processing of body cavity fluid specimens.	1,2,3,4					
5	Analyze the significance of different staining pattern and develop a practical understanding of laboratory layout.	1,2,4					

			SEMES	STER – VI	[						
Cours	se Title	Metabo	lic Errors and	Quality C	ontrol	n Clin	ical F	Bioche	mistr	y	
Course Code		24BMLT3202R	Total Credits		I	_	P	S	R	O/F	C
Pre- re	quisite	Nil	Total Hours: Co-requi		2	0	4	0 Ni	0 1	0	4
	ramme	1111	Bachelor of		aborat	ry To	chnol		•		
		- C									
Sem	ester	-	ring /VI Semes				`				
	urse ctives	<ol> <li>They are taught the technique of collection of clinical samples and their processing along with recording of data.</li> <li>The students will also be given the basic knowledge of inborn error of carbohydrate, proteins and lipids metabolism of various metabolites which are routinely estimated in different diseases so that a clear understanding of the different tests is obtained.</li> <li>Students will learn about the properties of cancer cells and correlate the biochemical changes.</li> </ol>									
СО	)1	Explain the funda laboratory practic			n guidel	ines, fo	ocusii	ng on	their r	elevan	ce to
CO	2	Demonstrate the s	kills necessary	to diagnos	e and m	anage i	nborr	error	s of ca	rbohy	drate
CO	3	Recognize and control enzymatic deficie	•			_		metab	olism,	inclu	ding
CO	4	Describe the clinical significance of inborn errors of lipid metabolism									
CO	5	Illustrate the prop	erties of cancer	cells and o	correlate	the bi	ocher	nical o	change	s.	
Unit No.		Content		Contact Hour	Learning Outcome					]	KL
I	Concey reliabily ranges collect storage	lity, reproducibility, Quality controllity, on distribution, e of specimen for a action to NABL, NA	8	and a concertiability diagno	nstrate nalysis ots of a lity, an ostic v contro	ence accuraction destination	ompas acy, p oroduc ng.	ssing to recision ribility Analy	the on, in	1,2	
II Inborn error of carbol metabolism Disorders of carbohy			mellitus, rage diseases, , fructosuria,	6	Illustr related metab		variou o n bioo	carb	disordo ohydra cal bas	ate	1,2,3
III Inborn error of Protein Disorders of protein metabolism, inherit associated with urea cy sickle cell anaemia multiple myeloma, profile in vario		ers of protein and olism, inherited atted with urea cycle cell anaemia, le myeloma, pla in various aciduria, Alkaptor urine disease, phoria, homocystinuria	d amino acid disorders e, proteinuria, thalassemia, asma protein diseases, nuria, maple enylketonuria, a, Fanconi	8	related metab	op a tandin I to pro olism, anagen	g o tein a diagi	of and an nostic	criter	ers cid	2,3,4

IV	Inborn error of lipid metabolism4Analyze the disorders related toHyperlipidemia, Carnitine deficiency, hypolipoproteinemia, hyperpolipoproteinemia, atherosclerosis, fatty liver.4Analyze the disorders related to lipid metabolism, including hyperlipidemia, Carnitine deficiency, Hypolipoproteinemia.					
V	Cancer biochemistry: Properties of cancer cells, morphological and biochemical changes in cancer cells, Carcinogenesis, carcinogens, diagnosis of cancer Oncogenic markers.	4	Develop a comprehensive Understanding of cancer Biochemistry, encompassing the properties of cancer cells, Including morphological and biochemical changes.	2,3,4		
Practical	<ol> <li>Laboratory test for In Born error of Carbohydrate metabolism</li> <li>Laboratory test for In Born error of Protein metabolism</li> <li>Laboratory test for In Born error of Lipid metabolism</li> <li>Biochemical test for body fluids</li> </ol>	30	Describe and interpret certain laboratory tests performed for assessing inborn errors of carbohydrate, protein and lipids.	1,2,3,4		

- **T1:** Textbook of Medical Biochemistry– MN Chatterjee, Kano Shinde.
- T3: Principle & Technique of Biochemistry—S Ramakrishnan, K.G. Prasannan, R. Rajan.
- T4: Principle & Techniques of Biochemistry & Molecular Biology–Keith Coilson
- T5: Textbook of Medical Lab Technology- Praful B. Godkar, Darshan P.Godkar

#### **REFERENCE BOOKS:**

- **R1:** Mayatepek, Ertan, Björn Hoffmann, and Thomas Meissner. "Inborn errors of carbohydrate metabolism." Best Practice & Research Clinical Gastroenterology 24, no. 5 (2010): 607-618.
- **R2:** Jakubowski, H. I. E. R. O. N. I. M., and E. M. A. N. U. E. L. Goldman. "Editing of errors in selection of amino acids for protein synthesis." Microbiological reviews 56, no. 3 (1992): 412-429.
- **R3:** Di Mauro, Salvatore, Carlo Trevisan, and Arthur Hays. "Disorders of lipid metabolism in muscle." Muscle & Nerve: Official Journal of the American Association of Electrodiagnostic Medicine 3, no. 5 (1980): 369-388.

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Program Outcome						
1	Explain the fundamentals of standardization guidelines, focusing on their relevance to laboratory practices and specimen analysis.	1,2,3,4						
2	Demonstrate the skills necessary to diagnose and manage inborn errors of carbohydrate metabolism.	1,2,4						
3	Recognize and categorize various inborn errors of protein metabolism, including enzymatic deficiencies and metabolic pathway disruptions.	1,2,4						
4	Describe the clinical significance of inborn errors of lipid metabolism	1,2,4						
5	Illustrate the properties of cancer cells and correlate the biochemical changes	1,2,4						

			SE	MESTER -	- VI							
Cours	se Title			Medica	al Mycolo	gy						
Cours	se Code	24BMLT3203		redits: 4 ours: 30T+	-30P	L 2	T 0	P 4	S 0	R	O/F 0	<b>C 4</b>
Pre-re	equisite	Nil		equisite	201		U		Ni		U	1 7
	rogramme Bachelor of Medical Laboratory Technology											
Semes	ster	Sp	ring /VI Se	emester of T	Third Yea	r of t	the I	rogr	amm	e		
	urse ectives	<ol> <li>To have broad knowledge of how to collect, transport and process various mycological clinical specimen.</li> <li>Serological tests used in the isolation of fungal pathogens in clinical specimens.</li> <li>Understand the clinical significance and diagnosis of various fungal infections.</li> </ol>										
C	CO1	Determine the basic	es of Mycol	ogy and its	classificat	ion.						
C	CO2	Summarize the med	chanism of f	ungal diseas	se, pre disp	posin	g fac	tor an	d the	funga	l imm	unity.
C	203	Execute the knowled Demonstrate the laboratory tests of Explain the import actions.	sample co	ollection, t	ransporta	tion	and	pro	cessir	ng o	f dif	ferent
Unit No.		Content		Contact Hour		Lear	ning	Out	come			KL
I	- Gener	uction to Medical National characteristics hology of fungi ification of fungi	<b>Iycology</b>	6	Classify fungi and understand their general characteristics.					neir	1,2	
П	- Over	e mechanism of fun view of fungal diseas sposing factors al Immunity		6	Evaluate the common fungal infections, predisposing factors that contribute to fungal disease development and involved immunoresponses.				hat ase	1,2,3		
III	- Superficial mycoses - Subcutaneous mycoses - Systemic mycoses - Opportunistic mycoses			8	Develop understa subcutar opportur	anding neous	,	of syst	emic,	erfici		1,4,5
IV	V Laboratory Diagnosis of fungal Infection.  - Collection transportation and processing of mycological specimen  - Examination methods			5	Interpret contribu diagnosi infection	ite is and	effe l mai	ctivel nager	y t	o of fun	the	1,3,4
V		ıngal Susceptibility ungal agents	testing	5	Explain testing, t testing r	the pr		_		eptibil eptibil	•	1, 3
Practical	proce Urine, and d Direct KOH - LPCE	Mycology Sample collection and processing in mycology. Urine, blood, hair, nail, skin scraping and discharge or pus from lesion.  Direct microscopy Gram, Giemsa, KOH and calcofluor stains) - LPCB - Germ Tube test  1. Slide culture technique  30 Demonstrate proficie collection and processing mycological specimen direct microscopy usidentifying fungal accurately.				ing of s, per ing s	dive formi	rse ing in	1,2,3, 4,5			

T1: Textbook of Microbiology by Dr. R C Dubey, Dr D K Maheshwari

T2: Essentials of Microbiology by S Rajan, R. Selvi Christy

T3: Essentials of Medical Microbiology by Apurba S Sastry, Sandhya Bhat

#### **REFERENCE BOOKS:**

R1: Review of Medical Microbiology and Immunology by Warren Levinson

R2: Textbook of Microbiology by Dr C P Baveja

#### **OTHER LEARNING RESOURCES:**

https://www.ncbi.nlm.nih.gov/books/NBK21054/?term=Biochemistry

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Determine the basics of Mycology and its classification.	1,2,4					
2	Summarize the mechanism of fungal disease, pre disposing factor and the fungal immunity.	1,2,4					
3	Execute the knowledge on superficial, subcutaneous, systemic and opportunistic mycoses.	1,2,4					
4	Demonstrate the sample collection, transportation and processing of different laboratory tests of fungus.	1,2,4					
5	Explain the importance of antifungal susceptibility test, antifungal agents and state their actions.	1,2,4					

	SEMESTER – VI											
Cours	se Title		P	rinciple (	of Laborat	ory M	Ianaş	gemen	ıt			
Cours	se Code	24BMLT3204R		Total Credits: 4			T	P	S	R	O/F	C
				d Hours:		4	0	0	0	0	0	4
Pre-re	equisite	Nil		Co-requi	site				Nil			
Progr	amme		Back	nelor of N	Aedical La	borat	ory T	Гесhn	ology			
Seme	ster	Sp	ring /\	VI Semest	ter of Thir	d Yea	r of t	he Pr	ogran	nme		
	urse ctives	<ol> <li>Understanding</li> <li>Ability to puts p</li> <li>Demonstrate the</li> </ol>	olans fo	r the estal	olished labo	ratory	<b>.</b>			ts.		
C	CO1	Define the Code a	and con	duct of la	boratory.							
C	CO2	Identify the safety	symbo	ols of labo	ratory.							
C	<b>CO3</b>	Demonstrate the r	role of a	a lab perso	onnel in ma	nagen	nent	of the	patien	ts.		
C	CO4	Evaluate the signi	ficance	e of Biome	edical wast	e man	agem	ent.				
C	CO5	Contrast the basic	conce	pts of MS	word, Exce	el shee	ets an	d Ema	uil.			
Unit No.		Content		Contact Hour	Learning Outcome H						KL	
I	Code and	d conduct of Labora	tory	12	Explain Laborator to safety pregulatory	protoc	ols, e	y incl thical	uding		nce	1, 2,3
II	Safety sy	mbols of Laborator	У	10	Identify sa	safety symbols of Laboratory					2,3	
III	Management, soft skill in patient handling. Vaccination of technician and post exposure			Management, soft skill in patient handling. Vaccination of play in patient management, focusing or effective patient handling also the					on the	1,3		
IV	Biomedical waste management			12		dentify, segregate, and dispose of biomedical waste according to regulatory guidelines and safety protocols.						2, 4
V	Computer basics, word processing, spreadsheets, Data-Base, Email, Lis (Laboratory information system)			12	Develop foundational computer skills, including proficiency in word processing, spread sheet management, and database handling.						ng,	, 3, 4

- 1. Textbook of first aid by Dr A Helen Perdita
- 2. Textbook on first aid and emergency by Jaypee

#### **REFERENCE BOOKS:**

- 1. First aid and emergency care by Dr. Swapna Naskar Williamson, Mala Goswami
- 2. First aid and emergency care by N.C. Jain

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Define the Code and conduct of laboratory.	1,3,5					
2	Identify the safety symbols of laboratory.	1,3,5					
3	Demonstrate the role of a lab personnel in management of the patients.	1,3,5,6					
4	Evaluate the significance of Biomedical waste management.	1,5,8					
5	Contrast the basic concepts of MS word, Excel sheets and Email.	1,6,9					



# Assam down town University

# Curriculum and Syllabus

## **Bachelor of Optometry**

# OUTCOME BASED EDUCATION FRAMEWORK CHOICE BASED CREDIT SYSTEM

Version: 2.2

# FACULTY OF PARAMEDICAL SCIENCES

July, 2024

**PREAMBLE** 

Assam down town University is a premier higher educational institution which offers Bachelor,

Master, and Ph.D. degree programmes across various faculties. These programmes, collectively

embodies the vision and mission of the university. In keeping with the vision of evolutionary

changes taking place in the educational landscape of the country, the university has restructured

the course curriculum as per the guidelines of National Education Policy 2020. This document

contains outline of teaching and learning framework and complete detailing of the courses. This

document is a guidebook for the students to choose desired courses for completing the

programme and to be eligible for the degree. This volume also includes the prescribed literature,

study materials, texts, and reference books under different courses as guidance for the students to

follow.

Recommended by the Board of Studies (BOS) meeting of the Faculty of Paramedical Science

held on dated 20/06/2024 and approved by the 51st Academic Council (AC) meeting held on dated

26/07/2024.

Chairperson, Board of Studies

Member Secretary, Academic Council

#### Vision

To become a Globally Recognized University from North Eastern Region of India, dedicated to the Holistic Development of Students and Making Society Better

#### Missions

- 1. Creation of curricula that address the local, regional, national, and international needs of graduates, providing them with diverse and well-rounded education.
- 2. Build a diverse student body from various socio-economic backgrounds, provide exceptional value-based education, and foster holistic personal development, strong academic careers, and confidence.
- 3. Achieve high placement success by offering students skill-based, innovative education and strong industry connections.
- 4. Become the premier destination of young people, desirous of becoming future professional leaders through multidisciplinary learning and serving societybetter.
- 5. Create a highly inspiring intellectual environment for exceptional learners, empowering them to aspire to join internationally acclaimed institutions and contribute to global efforts in addressing critical issues, such as sustainable development, Climate mitigation and fostering a conflict-free global society.
- 6. To be renowned for creating new knowledge through high quality interdisciplinary research for betterment of society.
- 7. Become a key hub for the growth and excellence of AdtU's stakeholders including educators, researchers and innovators
- 8. Adapt to the evolving needs and changing realities of our students and community by incorporating national and global perspectives, while ensuring our actions are in harmony with our foundational values and objectives of serving the community.

#### **Programme Details**

#### **Programme Overview**

The Bachelor of Optometry is a healthcare profession focused on the eye and related structures, vision, visual systems, and vision information processing in humans. Optometrists serve as primary care providers, diagnosing, managing, and treating eye diseases and refractive disorders.

#### I. Specific Features of the Curriculum

The curriculum integrates evidence-based strategies for managing diverse eye diseases, emphasizing orthoptic management and effective vision rehabilitation grounded in the latest research and clinical evidence. It promotes global competency through international optometric and interdisciplinary certification courses, ensuring graduates excel in the profession. Additionally, the curriculum fosters techno-professional efficiency by applying multidisciplinary concepts related to optometry, aiming to enhance the quality of life for patients.

#### II. Eligibility Criteria:

Minimum 45% in 10+2 with Physics, Biology & Chemistry.

#### **III. Program Educational Objectives (PEOs):**

**PEO-1:** Optometry graduates will have a successful career as Optometric Health Leaders and Entrepreneurs: Vision Therapist, Contact Lens practitioner, Low Vision Specialist, Occupational Optometrist, Academics, and Research.

**PEO-2:** Optometry graduates will be academically prepared to analyze the findings of routine ophthalmic procedures, create conclusive and differential diagnoses, and manage a variety of eye disorders with skilful use of Vision Care Instruments and materials.

**PEO-3:** The graduates will be well prepared to identify the health care needs of the community and will possess the initiative and critical acumen required to continuously improve their knowledge through perusing higher degree and through lifelong learning.

#### **IV. Program Specific Outcomes (PSOs):**

**PSO1: Research-In-Practice:** Develop, convey and implement evidence-based strategies for the management of diverse eye diseases ensuring orthoptic management, effective vision rehabilitation and delivery of care grounded in the latest research and clinical evidence.

**PSO2:** Global Competency: Demonstrate global competency to excel in the profession through international optometric and interdisciplinary certification courses.

**PSO3: Techno-Professional Efficiency:** Apply the comprehensive understanding of multidisciplinary concepts related to optometry for improving quality of life.

#### V. Program Outcome:

**PO1: Optometry Knowledge:** Apply the knowledge of physics, general and ocular anatomy, general and ocular physiology, biochemistry, microbiology, pathology, ocular pharmacology, and optometric principles to solve visual defects, and create awareness about eye health.

**PO2: Problem Analysis:** Investigate, diagnose and analyse complex ocular problems reaching substantiated conclusions using principles of optics and optometry fundamentals.

**PO3: Problem-Solving:** Conduct eye examinations, assess visual needs, prescribe corrective measures, and manage therapeutic practices to enrich the overall quality of life.

**PO4:** Modern Equipment Proficiency: Operate modern optometric instruments efficiently, adhering to patient safety and protocols.

**PO5:** Communication: Demonstrate effective communication both with the patients, ophthalmologists and in multidisciplinary healthcare teams.

**PO6: Professional and Ethical Practices:** Adhering to moral principles, professional ethics, and responsibilities in the profession.

**PO7: Teamwork:** Perform efficiently as a member or leader in diverse teams/multidisciplinary settings.

**PO8: Lifelong learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of optometric and technological change.

#### VI. Total Credits to be Earned: 174

#### VII. Career Prospects:

Optometry graduates will have a successful career as Optometric Health Leaders and Entrepreneurs such as Vision Therapist, Contact Lens practitioner, Low Vision Specialist, Occupational Optometrist. Can build a career in Academics, and work on Research.

#### **EVALUATION METHODS**

The student performance shall be evaluated through In-semester (Sessional) and semester-end examinations. A weightage of 40% or as prescribed by the programme shall be added to the score of the end-semester examination.

#### A. INTERNAL ASSESSMENT:

The teacher who offers the course shall be responsible for internal assessment by conducting insemester (sessional) examination and evaluating the performance of the students pursuing that course. The components for internal assessment are illustrated in the table given below.

SN	Components/ Examinations	Marks
		Allotted
1.	In-Sem Exam – I (ISE-I) (Written Examination)*	30
2.	In-Sem Exam – II (ISE-II) (Written Examination)*	30
3.	Assignment	10
4.	Presentation (SP)	10
5.	Quiz	5
6.	Class Performance based score*	5

^{*}are compulsory

**Note:** Total Internal assessment should be out of 40

#### **INSTRUCTION**

- 1. If a student fails to appear in the any of the component without any valid reason he/she shall be marked zero in that component. However, the course teacher at his discretion may arrange for the missed test on an alternate date for the absentee students after determining ground with genuine/valid reasons for the absent.
- 2. The report of evaluation of an activity towards the in-semester (sessional) component of a course shall be duly notified by the concerned course teacher within a week of completion.
- 3. The program coordinators should upload the in-semester marks to the ERP and forward acknowledgement of all the courses of the program to the Controller of Examinations before the start of the End-semester examination.

#### **B. SEMESTER END EXAMINATION:**

Time table for end semester examination is published at least 25 days prior to the start of Examination.

#### I. Pre-Examination:

#### Eligibility Criteria for a student to appear in University Examinations:

The student shall only be allowed to appear in a University Examination, if:

- i) He/ She is a registered student of the University;
- ii) He/ She is of good conduct and character;
- iii) He/ She has completed the prescribed Programme of study with minimum percentage of attendance as laid down in the Regulations of the Programme concerned.

Under special cases, a student may be allowed to appear for an examination without being registered in the University but the result of the said student will be kept on hold till the registration of the concerned student is completed.

#### II. Admit Card:

Admit card for the examination may be downloaded through ERP where the system will generate a Unique ID Cards through online.

The University shall have the right to cancel admission for examination of any candidate on valid grounds.

#### **III. Pattern of Question Papers**:

The question paper shall follow the principles of Bloom's Taxonomy.

**Table** 

S. N.	Level	Questions /verbs for test
1	Remember	List, Define, tell, describe, recite, recall, identify, show who, when, where, etc.
2	Understand	Describe, explain, contrast, summarize, differentiate, discuss etc.
3	Apply	Predict, apply, solve, illustrate, determine, examine, modify
4	Analyze	Classify, outline, categorize, analyze, diagrams, illustrate, infer, etc.
5	Evaluate	Assess, summarize, choose, evaluate, recommend, justify, compare etc.
6	Create	Design, Formulate, Modify, Develop, integrate, etc.

Note: No course is to be evaluated on basis of all 6 knowledge levels.

The format of the question paper across all the program follow a unique pattern and the total marks is 60

**Table 1: Question paper pattern for End semester examination** 

Sl no	Question pattern	Total marks
1	MCQs (10 Questions)	10
2	2 Marks questions (10 Questions)	20
3	4 Marks questions (5 Questions)	20
4	10 Marks questions (1 Question)	10

#### **IV. Examination Duration:**

Each paper of 60 marks shall ordinarily be of two hours duration.

#### V. Practical Examinations, Viva-Voce etc.:

- i) Practical examination shall be conducted in the presence of one external expert and one or more internal examiners.
- ii) Viva-Voce, Oral examinations of the Project report, Dissertation etc. shall be undertaken by a Board of Examiners constituted by the respective Dean of Program with the advice of Supervisor(s).

#### VI. Procedure of Expulsion:

If any candidate is found to be using any unfair-means during the examination, the invigilator may cease his/her answer sheet and report it directly to the Officer-in-Charge. The Office-in-Charge of the center may take appropriate decisions as per the rules and procedure of the examination. The Officer-in-Charge may allow the students to write the exam with new answer sheet or may expel the student from appearing the paper depending on the nature of unfair-means. In case of Computer based test, the students may be directed to write an apology letter and sign in the prescribe expulsion form. The student may not be allowed to write that examination.

#### VII. Instruction to the Students:

- (i) The students shall not bring to the Examination Hall, any electronic gadget used as a means of communication or record except electronic calculator, if required.
- (ii) The students shall not receive any book or printed or hand written or photo copy (Xerox) or blank-paper from any other person while he/she is in the examination-room or in laboratory or in any other place to which he/she is allowed to have access during course of examination.
- (iii) The students shall not communicate with any other candidate in the examination room or with any other person in and outside the examination- room.
- (iv) The students shall not see, read or copy anything written by any other candidate, nor shall he/she knowingly or negligently permit any other candidate to see, read or copy anything written by him/her or conveyed by him/her.

- (v) The students shall not write anything on the Question Paper or in other paper or materials during the examination, or pass any kind of paper to any other candidate in the examination-room, or to any person outside the room.
- (vi) The students shall not disclose his/her identity to the examiner by writing his/her name or putting any sign / symbol in any part of his answer-script.
- (vii) The students shall not use any abusive language or write any objectionable remark or make any appeal to examiner by writing in any part of his answer- script.
- (viii) The students shall not detach any page from the answer-script or insert any authorized or unauthorized loose sheet into it. He /she shall also not insert any other answer-script / loose sheet by removing the pins of the origin answer-scripts and re-fixing it.
- (ix) The students shall not resort to any disorderly conduct inside the examination-room or misbehave with the invigilator or any other examination official.

#### **VIII. Provision for an Amanuensis (writer):**

- (i) A candidate may be provided with an Amanuensis (writer) to write down on dictation on his / her behalf on ground of his / her physical disability to write down by himself / herself due to accident or any other reason. The amanuensis may be provided till he / she recovers from the physical disability. The physical disability to write down by himself / herself must be supported by Medical Certificate from a competent Medical Officer.
- (ii) The qualifications of the amanuensis so provided must not be equal or higher than that of the candidate. This is also to be supported by Certificate from the Faculty of Study where the Amanuensis is provided.
- (iii) Such candidates are to be accommodated in a separate room under the supervision of an invigilator so that the fellow candidates are not disturbed in the process.

#### C. Credit Point:

It is the product of grade point and number of credits for a course, thus, CP = GP x CR

#### i. Credit:

A unit by which the course work is measured. It determines the number of hours of instructions required per week. 'Credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. Credits assigned for a single course always pay attention to how many hours it would take for an average learner to complete a single course successfully.

#### ii. Grade Point:

Grade Point is a numerical weight allotted to each Grade Letter on a 10-point scale.

#### iii. Letter Grade:

Letter Grade is an index of the performance of students in a said paper of a particular course. Grades are denoted by letters O, A+, A, B+, B, C, P, F and Abs. Student obtaining Grade F / Grade Abs shall be considered failed/ absent and, will be required to appear in the subsequent ESE. The UGC recommends a 10-point grading system with the following (Table: 1) Letter Grades:

- (i) A Letter Grade shall signify the level of qualitative/quantitative academic achievement of a student in a Course, while the Grade Point shall indicate the numerical weight of the Letter Grade on a 10-point scale.
- (ii) There shall be 08 (eight) Letter Grades bearing specific Grade Points as listed in Table 1, where the Letter Grades 'O' to 'P' shall indicate successful completion of a course.
- (iii) Apart from the 08 (eight) regular Letter Grades listed in Table 1, there shall be 03 (three) additional Letter Grades, which shall be awarded if a Course is withdrawn or spanned over the next Semester or remains incomplete as stated in Table 2.

**Table 2: Letter Grades and Grade Points** 

Letter Grade	Grade Points	Description
O	10	Outstanding
A+	9	Excellent
A	8	Very Good
B+	7	Good
В	6	Above Average
С	5	Average
P	4	Pass
F	0	Fail
Abs	0	Absent
UFM	0	Unfair Means

#### iv. Grade Point Average:

#### a. SGPA (Semester Grade Point Average)

The SGPA of a student in a Semester shall be the weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered in that Semester, irrespective of whether he/she could or could not complete the Courses. More specifically, the calculation of SGPA shall take into account the Courses graded with Letter Grades 'O' to 'F' as given in Table 1.

$$SGPA = \frac{\sum_{i=1}^{n} C_i G_i}{\sum_{i=1}^{n} C_i}$$
 (1.1)

The SGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.1) up to two decimal places, where n is the total number of Credit Courses registered by the student in that Semester, Gi is the Grade Point secured in the ith registered Course and Ci is the Credit (weight) of that Course.

#### b. CGPA (Cumulative Grade Point Average)

- (i) The CGPA of a student in a Semester of a Programme shall be the accumulated weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered and successfully completed so far starting from the enrollment in the Programme. In other words, taking into account all the Courses graded with 'O' to 'P' as given in Table 1.1, generally the CGPA of a student shall be calculated starting from the first Semester of his/her enrolled Programme, while the CGPA of a lateral-entry student shall be calculated starting from the Semester of his/her enrollment.
- (ii) The CGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.2) up to two decimal places, where N is the total number of Credit Courses registered and successfully completed so far by the student, Gi is the Grade Point secured in the ith completed Course and Ci is the Credit (weight)of that Course.

CGPA = 
$$\frac{\sum_{i=1}^{N} C_{i}G_{i}}{\sum_{i=1}^{N} C_{i}}$$
 (1.2)

(iii) The CGPA shall be convertible into equivalent percentage of marks using Equation Conversion of CGPA to percentage marks: = CGPA*10

#### **D. Post-Examination**

#### i. Transcript or Grade Card or Certificate:

A marking certificate shall be issued to all the registered students after every Semester. The Semester mark sheet will display the course details (code, title, number of credits, grade secured) along with total credit earned in that Semester.

#### ii. Grievance Readdress Mechanism:

Students with any dissatisfaction or grievance regarding the marks awarded in any of the Papers / Courses may appeal to the Controller of Examinations for remedial action such as Re-evaluation within 10 days of the declaration of result.

- (i) A student has options to appeal for re-evaluation of his /her answer script to the Controller of Examination.
- (ii) Application for re-evaluation / re-scrutiny of answer scripts shall be made in the definite proforma available with the Examination Office through the head of the respective departments within 10 days of declaration of the results of the respective examinations.
- (iii) The Controller of Examination may appoint an examiner for re-evaluation and will consider and recognize the evaluation done by a University appointed examiner.
- (iv) There shall be no provision for re-evaluation of the Practical Papers, Project Work, and Dissertation etc. However, the students fail in practical examination or viva voce and wish to appear again may apply to be evaluated can do so with the next schedule.
- (v) After screening the application for re-evaluation, the CoE may send the answer scripts of the student to the examiners appointed by the CoE with the approval of Vice Chancellor.
- (vi) The marks/grades achieved by the students after the re-evaluation shall be final and binding.
- (vii) Fresh Marks sheets / Grade Card shall be issued only if the candidate secures pass marks / passing grade in the re-evaluated paper.
- (viii) Revaluation of answer scripts shall be deemed to be an additional facility provided to the students with a view to improving upon their results at the preceding examination result for any reason whatsoever shall not confer any right upon them for admission to next higher class which matters always be regulated in accordance with the relevant rules or regulations framed by the University.
- (ix) If as a result of revaluation of the candidate attracts the provision of condonation of deficiency, the same may be applied to his/her only for fresh attempt.

#### INSTRUCTION TO TEACHERS AND STUDENTS

#### (Teaching and Learning Methods)

In all the courses the teacher has to select topics for teacher-method which should not be less than 20 percent. The approach will be direct classroom teaching through a series of lectures delivering concepts using ITC facilities, white or blackboard. Notes may also be circulated to the students; however, the students are to be involved in the preparation of the notes. The teacher will be responsible for selecting the best note for circulation. The teacher-centric methodology has recently fallen out of favour because this strategy for teaching is seen to favour passive students.

#### 1. Student- centric / Constructivist Approach:

The topics of the courses may be selected at the start of the class and assigned one topic to each of the students for studying by themselves, prepare presentations, notes, etc., and present at respective class time after consultation and discussion with the course teachers. The teacher facilitates the learning of the students by guiding and providing input and explaining concepts. 60 percent of the course contents may be selected for this purpose. To avoid behaviour problems, teachers must lay a lot of groundwork in student-centric classrooms. Typically, it involves instilling a sense of responsibility in students. In addition, students must learn internal motivation.

- **a. Project-Based Learning:** The teacher may select 5 percent of topics for the purpose and may conduct visits to the laboratory for experiments or field surveys. The selection of the topic may be done considering the available facility for the purpose. However, in the final semester of each of the programme the student has to undergo project-based learning at least 4 months duration. This approach will help the student to think critically, evaluate, analyze, make decisions, collaborate, and more.
- **b. Inquiry-Based Learning:** The teacher/ students are supposed to list at least five questions in each contact hour and student solve these question or search for answer which becomes the home work for the students "question-driven" learning approach. The teacher may look for the correctness of the solution or the best possible answer and discuss in the successive class. This will help in the preparation for various competitive examination and develop a habit for search for solutions.

- **c. Flipped Classroom:** About 10 percent of the course content has to be completed by this method. In this approach the students are asked to watch video or lecture prepared by the teacher or any video available (relevant to the course). A set of questions may be given to the students for searching answers by the students. The idea is that students should have more time in-classroom focusing on achieving these higher levels of thinking and learning. The Flipped classroom is also an acronym. The letters FLIP represent the four pillars included in this type of learning: Flexible environment, Learning culture shift, Intentional content, and Professional educator. As you can see, the second pillar refers to a culture shift from the traditional approach where students are more passive to an approach where students are active participants. As a result, this approach is also a student- centric teaching method.
- **d. Cooperative Learning:** The remaining five percent has to be completed by cooperative learning approach. In this approach, the students are allotted problems. During library hours the students along with the teacher visit the library and search for probable solutions for the assigned problem. The same has to be done in groups so that the students discuss among themselves for the appropriate answers. Essentially, cooperative learning believes that social interactions can improve learning. In addition, the approach recreates real-world work situations in which collaboration and cooperation are required.

#### The percentage categorization for the completion of a theory course

Teacher- centric or Direct Classroom Teaching: Delivery by series of lectures	20%
Student- centric Approach, Student present and deliver lectures in presence of	
teacher and supervised by teacher	60%
Student visit fields or perform experiments or teacher perform demonstration	05%
Flipped Classroom approach	10%
Cooperative learning approach	05%

#### Inquiry based approach has to be followed in all of the classes

Teacher has to distribute the topics to be considered for teaching by the above-mentioned approaches and prepare lesson plan for execution and maintain a file.

### **Breakdown of Credits**

Sl.	Category		<b>Total number of</b>
No			Credits
		Skill Enhancement Course (SEC)	9
		Ability Enhancement Course (AEC)	6
1	University Core (UC)	Field Training	
		Discipline Specific Elective (DSE)	
		Value Added Course (VAC)	2
2	University Elective (UE)	Multidisciplinary Course (MDC)	9
2	Oniversity Elective (OE)	Value Added Course (VAC)	8
		Discipline Specific Core (DSC)	82
	Programme Core (PC)	Field Training	2
3	Trogramme core (1 C)	Research /Industry Internship	24
		Summer Internship	4
4	Programme Elective (PE)	Discipline Specific Elective (DSE)	28
4	Frogramme Elective (FE)	Value Added Course (VAC)	
_	Faculty Core (FC)	Skill Enhancement Course (SEC)	
5	racuity Core (PC)	Ability Enhancement Course (AEC)	
		Total	174

## **Breakdown by categories of courses**

Sl. No.	Category	Credits	%
1	Paramedical Science	150	86.2%
2	FOCT	7	4.0%
3	Commerce and Management	5	2.9%
4	PDP	12	6.9%
	Total	174	100%

#### SEMESTER WISE COURSE DISTRIBUTION

	S.	Cammaa Cada	Corres Title	Course		Engagemen						I	Maxim	um M	arks f	or
	N.	Course Code	Course Title	Category	L	T	P	S	R	О	C	IA*	SEE*	PI*	PE*	Total
	1.	24BOPT1101R	Basics of Human Anatomy and Physiology	DSC (Minor)	4	0	0	0	0	0	4	40	60	0	0	100
	2	24BOPT1102R	Basics of Optics	DSC (Major)	3	0	2	0	0	0	4	40	60	0	100	200
	3	24BOPT1103R	General and Ocular Biochemistry	DSC (Minor)	4	0	0	0	0	0	4	40	60	0	0	100
Semester I	4	24BOPT1104R	Ocular Pharmacology	MDC	3	0	0	0	0	0	3	40	60	0	0	100
Semo	5	24BOPT1105R	Vision Assessment (TPS)	SEC	0	0	2	0	0	0	1	0	0	0	100	100
	6	24UBPD1101R	Basic Communicative English (CLPDP)	AEC	0	0	2	0	0	0	1	0	100	0	0	100
	7	24BOPT1101M	Financial market (MOOCs)	VAC	2	0	0	0	0	0	2	0	100	0	0	100
	8	24UBEC1101	Extra-Curricular	Extra- Curricular	0	0	0	4	0	0	1	0	0	100	0	100
	Total				16	0	6	4	0	0	20	160	440	100	200	900
	S.			Course	Engagement					I	Maxim	um M	arks f	or		
	N.	Course Code	Course Title	Category	L	T	P	S	R	O	С	IA*	SEE*	PI*	PE*	Total
	1.	24BOPT1201R	Ocular Anatomy and Physiology	DSC (Major)	4	0	0	0	0	0	4	40	60	0	0	100
	2	24BOPT1202R	Ophthalmic Optics	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	0	100
П	3	24BOPT1203R	Visual Optics	DSC (Minor)	3	0	0	0	0	0	3	40	60	0	0	100
Semester	4	24BOPT1204R	Instrumentation And investigation I	DSC (Minor)	2	0	2	0	0	0	3	40	60	0	100	200
Sen	5	24UICT1202R	Infection control and sterile Technique Procedure	MDC	1	0	0	0	0	0	1	40	60	0	0	100
	6	24UBES1201R	Environmental Science	VAC	2	0	0	0	0	0	2	0	100	0	0	100
	7	24BOPT1206R	Field Visit	Field Training	0	0	0	0	0	8	1	0	0	0	100	100
	8	24UBPD1201R	Functional English	AEC	0	0	2	0	0	0	1	0	0	100	0	100
	9	24UBCC1201	Co- Curricular	Co- Curricular	0	0	0	4	0	0	1	0	0	100	0	100
	Total				14	0	4	4	0	8	18	200	400	200	200	1000

	S.	C C- 1-	C T'41-	Course			En	gage	ment			Ma	aximu	m Ma	arks f	or
	N.	Course Code	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PI*	PE*	Total
	1	24BOPT2101R	Dispensing Optics I	DSC (Minor)	3	0	0	0	0	0	3	40	60	0	0	100
	2	24BOPT2102R	Ocular Disease I	DSC (Minor)	3	0	0	0	0	0	3	40	60	0	0	100
	3	24BOPT2103R	Pathology and Microbiology	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	0	100
Ш	4	24BOPT2104R	Clinical Optics and Refraction I	DSC (Major)	3	0	2	0	0	0	4	40	60	0	100	200
Semester	5	24BOPT2105R	Instrumentation and Investigation II	DSC (Major)	3	0	2	0	0	0	4	40	60	0	100	200
Ser	6	Yet to receive	DISA	SEC	0	0	2	0	0	0	1	0	0	0	100	100
	7	24UDLS2101R	Digital Literacy	VAC	1	0	0	0	0	0	1	0	100	0	0	100
	8	24BOPT2107R	Medical Psychology	MDC	3	0	0	0	0	0	3	40	60	0	0	100
	9	24UBPD2101R	Executive English (CLPDP)	AEC	0	0	2	0	0	0	1	0	0	0	100	100
	10	24BOPT2108R	Field Visit  Total	Field Training	0	0	0	0	0	8	1	0	0	0	100	100
	ı			18	0	8	0	0	8	23	240	460	0		1200	
	SN.	<b>Course Code</b>	Course Title	Course Category	L	Т	En P	gage S	ment R	0	C		aximu SEE*	m Ma PI*	PE*	or Total
	1	24DODT2201D	Contact Lond I	DSC												
	2	24BOPT2201R 24BOPT2202R	Contact Lens I Ocular Disease II	(Major) DSC	4	0	0	0	0	0	4	40	60	0	100	100
	3	24BOPT2203R	Dispensing Optics II	(Major) DSC (Major)	3	0	2	0	0	0	4	40	60	0	100	200
	4	24BOPT2204R	Clinical Optics and Refraction II	DSC (Major)	3	0	2	0	0	0	4	40	60	0	100	200
	5	24BOPT2205R	Biostatistics	DSC (Minor)	4	0	0	0	0	0	4	40	60	0	0	100
r IV	6	24BOPT2206R	Identification of Ocular Disease (TPS)	SEC	0	0	4	0	0	0	2	0	0	0	100	100
Semester	7	Code Yet to received	Enhanced Professional Skills (CLPDP)	AEC	0	0	2	0	0	0	1	0	0	0	100	100
Se	8	24UUFL2201R	Introduction To Financial Budgeting and Planning (FL)	MDC	0	0	2	0	0	0	1	0	0	0	100	100
	9	Code yet to receive	Self-Study Seminar/ presentation	AEC	1	0	0	0	0	0	1	0	0	0	100	100
	10	24BCIC2209R	Fundamentals of Patient Care and Safety	MDC	1	1	0	0	0	0	0	40	60	0	0	100
	11	24UULS2202R	Basic life Saving Skills	VAC	0	0	2	0	0	0	1	0	0	0	100	100
			Total		19	1	16	0	0	0	26	240	360	0	800	1400

	S.	G G 1	G FELL	Course	Engagement							Maximum Marks for							
	N.	Course Code	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PI*	PE*	Total			
	1.	24BOPT3101R	Binocular Vision and Ocular Motility	DSC (Major)	4	0	2	0	0	0	5	40	60	0	100	200			
	2	24BOPT3102R	Low Vision Aid and Visual Rehabilitation	DSC (Major)	4	0	2	0	0	0	5	40	60	0	100	200			
Λ	3	24BOPT3103R	Clinical Examination of Eye I	DSC (Major)	4	0	2	0	0	0	5	40	60	0	100	200			
	4	24BOPT3104R	Contact Lens II	DSC (Major)	4	0	2	0	0	0	5	40	60	0	100	200			
Semester	5		Advanced Employability (CLPDP)	AEC	0	0	2	0	0	0	1	0	0	0	100	100			
	6	24BOPT3101M	Understanding Indian Knowledge and Heritage	VAC	2	0	0	0	0	0	2	0	0	0	100	100			
	7	24BOPT3105R	Summer Internship	Summer Internship	0	0	0	0	0	24	4	0	0	100	0	100			
	8	24BOPT3105R	Ocular Diagnostics (TPS)	SEC	0	0	6	0	0	0	3	0	0	0	100	100			
			Total		18	0	16	0	0	24	30	160	240	100	700	1200			
	CNI	Course Code	Course Title	Course			Eng	Engagement				Maximum M			arks f	or			
	SN.	Course Code	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PI*	PE*	Total			
	1.	24BOPT3201R	Applied Optometry and Orthoptics	DSC (Major)	3	0	4	0	0	0	5	40	60	0	100	200			
	2	24BOPT3202R	Systemic Conditions and The Eye	DSC (Major)	4	0	0	0	0	0	4	40	60	0	0	100			
er VI	3	24BOPT3203R	Clinical Examination of Eye II	DSC (Major)	3	0	4	0	0	0	5	40	60	0	100	200			
Semester V	4	24BOPT3204R	Public Health and Community Optometry	DSC (Major)	3	0	0	0	0	0	3	40	60	0	0	100			
	5	24BOPT3205R	Professional Practice Management	DSC (Major)	3	0	0	0	0	0	3	40	60	0	0	100			
	6		Finishing School	AEC	0	0	4	0	0	0	2	0	0	0	100	100			
			16	0	12	0	0	0	22	200	300	0	300	800					
			Total		16	0	12	0	0	0	22	200	300	0	300				

	S.	Course Code	Course Title	Course			Eng	ager	nen	t		Maximum Marks for				
	N.	Course Code	Course Title	Category	L	T	P	S	R	O	С	IA*	SEE*	PI*	PE*	Total
·VII	1	24BOPT4101R	Clinical Observation-I (Hospital Posting)	Industry Internship	0	0	0	12	0	0	12	0	0	0	100	100
Semester	2	24BOPT4102R	Case Report – I	DSC (Major)	0	0	8	0	0	0	4	0	0	0	100	100
Se	3	24BOPT4103R	Optometry Ethics	DSE (Minor)	0	0	4	0	0	0	2	0	0	0	100	100
	Total					0	12	12	0	0	18	0	0	0	300	300
	S. Course Code Course Title			Course			Eng	ager	nen	t			Maxim	um M	larks fo	or
	N.	Course Coue		Category	L	T	P	S	R	O	C	IA*	SEE*	PI*	PE*	Total
III/	1	24BOPT4201R	Clinical Observation II (Hospital Posting)	Industry Internship	0	0	0	12	0	0	12	0	0	0	100	100
Semester VIII	2	24BOPT4202R	Case Report - II	DSC (Major)	0	0	8	0	0	0	4	0	0	0	100	100
Ser	3	24BOPT4203R	Occupational Behaviour of Optometry	DSE (Minor)	0	0	4	0	0	0	2	0	0	0	100	100
		Total			0	0	12	12	0	0	18	0	0	0	300	300

^{*}IA: Internal Assessment, SEE: Semester End Examination, PE: Practical Examination

			SEMESTER	<u>-I</u>									
	e Title	BASI	C OF HUMAN ANA		YAN	ND PH		LOGY	7				
Cours	se code	24BOPT1101R	Total credits: 4	L	T	P	S	R	O/F	C			
			Total hours: 60T	4	0	0	0	0	0	4			
	equisite	Nil	Co-requisite				N	il					
	amme		Bachelor										
Semes			I semester of first y										
Cours		1. To provide a c	•	•					•				
Objec	tives	_	scopic structure and			-							
		2. To assist studen			_	_		natomi	cal struct	ure			
		· ·	ological function of v							_			
		3. To understand the								ody.			
CO	01	Understand anatomica		structur	re and	l functi	on of	cells ar	nd various				
		organs of the human b				_							
CO	)2	Comprehend anatomy	and physiology of tiss	sue, sk	eleta	l syster	n, and	the co	mplexities	of			
		· ·	the nervous system.										
CO	)3	Discuss the knowledg					_						
		•	blood composition, heart structure and function, blood vessels, pulmonary and systemic										
	~ .	circulation, respirator											
CC	)4	Discuss knowledge an	*	ınalyze	and	interpre	et the	process	ses of dige	stion,			
	\	absorption, and urine formation.  Analyze and interpret the complexities of glandular development, hormone actions, and the											
CO	)5				ır dev	elopme	ent, ho	ormone	actions, a	nd the			
<b>T</b> T •4	ı	physiological process			4		_			TZT			
Unit- No.		Content Contact Learning Outcome Hour							KL				
1100	Introd	luction To Anatomica	l Terms, Basic	11001		Descri	be, illı	ıstrate a	and				
		ure and Function of (	*			explain anatomical terms &							
		of Organization – Body				basic s							
I		and Sections.	,	10		cell				1,2			
	Structu	re of Cell – Structure	and Function of										
	Cell M	Tembrane and Sub or	ganelles. Cellular										
	Transp	ort Mechanism											
	_	s, Skeletal System an	d Nervous			Descri	be, illı	ustrate	and				
		, Bone and its classif			I	explair							
	of the	Skeleton system -	- Skull, Vertebral			and fu	nction	s of bo	nes and				
II	Colum	n. Joint and its types -	Articulation.	10		tissues							
111	Types	and Structure of Neur	on – Mechanism of	10						1,2			
	Nerve	Impulse - Structure	and Parts of Brain										
	and sp	inal cord. Special sens	e: Eye, Skin, nose										
	and Ea	r, tongue											
		atory and Cardiovas				Descri							
		vascular: Composition				explair	the c	conduct	tion				
		ons – Structure of Hear				system	of he	art and					
	-	tem of Heart – Types of Blood vessel –			I			and reg	ulation of				
III		lood Pressure, pulse rate. Systemic and ulmonary circulation, Cardiac cycle, cardiac				respira	tion			1,2			
	output.	•								,_			
	-	Mechanism and regu	lation of respiration,										
	_	volume and capacity,	Hypoxia, cyanosis,										
	dyspno	ea, Asphyxia											

IV	Digestive and Urinary Systems Digestive: Organs of Digestive system – Digestion and Absorption. Structure of Kidney and Nephron – Mechanisms of Urine formation – Regulation of Blood pressure	15	Describe, illustrate and explain the organs present in digestive system and procedure of urine formation	1,2
V	Reproductive and Endocrine System Glands- Embryology, different types of glands, Hormone mechanisms- actions, regulations Male and female reproductive organs and changes during puberty. Menstrual cycle, ovulation. Physiological changes during pregnancy.	15	Describe, illustrate and explain glands, hormones and reproductive organs	1,2

- T1. Fundamentals of Anatomy by Pamela K Levangie, Cynthia C Norkin, JP Bros Medical Publishers, New Delhi.
- T2. A book of Physiology, Dr Khurana
- T3. Ross and Wilson Anatomy and Physiology

#### **REFERENCE BOOKS:**

- R1: Clinical Anatomy, JP Bros Medical Publishers, Bangalore, 5th Ed 1996, 1st Indian Ed1998
- R2. Review of Medical Physiology- Ganong William F.
- R3: Physiological basis of Medical practice Best & Taylor

#### OTHER LEARNING RESOURCES:

https://oli.cmu.edu/courses/anatomy-physiology-i-ii-v2-academic/

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Understand anatomical terminology, basic structure and function of cells and various organs of the human body.	1,6,8							
2	Comprehend anatomy and physiology of tissue, skeletal system, and the complexities of the nervous system.	1,8							
3	Discuss the knowledge and skills necessary to analyze and interpret the intricacies of blood composition, heart structure and function, blood vessels, pulmonary and systemic circulation, respiratory mechanisms, and associated physiological parameters.	6,8							
4	Discuss knowledge and skills necessary to analyze and interpret the processes of digestion, absorption, and urine formation.	6,8							
5	Analyze and interpret the complexities of glandular development, hormone actions, and the physiological processes related to reproduction.	1,6,8							

		SEMESTER	. – I							
Course T	itle	BASICS	OF OF	TIC	S					
Course co	ode 24BOPT1102R	Total credits: 4	L	T	P	S	R	O/F	C	
		Total hours: 45T+30P	3	0	2	0	0	0	4	
Pre-requi	site Nil	Co-requisite				N	il			
Programi	me	Bachelor	of Opto	met	ry					
Semester		I semester of first				mme				
Course		cians know about basic co	_		ght					
Objective		out the various optical pa								
		oth knowledge of differen	nt spheri	cal l	enses	and the	eir uses	s in defects	S	
~~1	corrections.									
CO1		pt of light and its behavior								
CO2		enomena of reflection and						<u> </u>		
CO3	-	ion and refraction at sphe				-		-		
CO4		nciple of refraction and r				tion to	its use	es in numa	n eye.	
CO5	1	various instruments rela	Contac			7	• 0		TZT	
	Unit- Content			τ	]	Learn	ing Ot	itcome	KL	
No.	Ray Optics-		Hour		Docor	iba ;11	ustrate	and		
	• Introduction,							s of light		
	<ul><li>Definition and conce</li></ul>	ent of light			ropag		Dusic	s or right		
I	<ul><li>propagation of light,</li></ul>	pt of fight,		r	ropus	ation				
	<ul><li>propagation of right,</li><li>regular and diffused</li></ul>	raflactions	9						1,2	
	<ul> <li>regular and diffused</li> <li>reflection on plane st</li> </ul>								,	
	Reflection and Refra			Г	Accrib	نا11ء م	ıstrate	and		
	• Reflection and refrac						of light			
		nd refraction, refractive			хрішіі	about	Laws	or light	1,2	
II	index,	id Terraction, Terractive	9						-,-	
	• total internal reflection	on								
	• formation of mirage									
	Reflection and Refra			Г	escrib	e. illu	strate	the Basics	,	
	spherical surfaces –	cuon un ough					l lenses		1,2,	
	• Spherical mirrors, im	nage							3	
	formation in spherica	-								
	• concept of real and v									
III	conventions, mirror	equation.	9							
	Different types of cor	nvex and concave								
	lenses, image format	ion in lenses, sign								
	conventions,									
	• lens equation, magni	fication of lenses, and								
	power of lens, lens-	maker's formula.								
	Refraction and dispe	rsion of light					strate &			
	through prism-							es of light		
	• Angular dispersion, d			propagation through prism						
IV	<ul> <li>dispersion without deviation and deviation without dispersion,</li> </ul>								1.0	
			9						1,2,	
	_	d lenses, prism dioptric,	9						3,4	
	• concept of aberration	as and its correction								

	Optical instruments and Photometry-		Describe, illustrate optical	
	<ul> <li>Human eye, defects of vision         (Myopia, Hypermetropia and Presbyopia) and corrections.     </li> <li>Spectrometer, microscopes, magnifying</li> </ul>		instruments	
V	<ul> <li>power of simple and compound</li> <li>microscopes, telescopes, resolving power</li> <li>of optical instruments.</li> <li>Basic concepts and definitions in</li> </ul>	9		1,2,4
	photometry, inverse square law, Bunsen's grease spot photometer			
Practical	<ul> <li>To determine the focal length of a focal mirror by UV method using optical bench</li> <li>To determine the focal length of a convex lens by displacement method and hence determine the power of a lens</li> <li>To determine the focal length and power of a concave lens by auxiliary lens method</li> <li>To determine the refractive index (RI) of a glass slab using travelling microscope</li> <li>Determination of refractive index (RI) of a liquid by using a plane mirror and a convex lens.</li> </ul>	30	Describe, illustrate & determine focal lengths and refractive index using various methods	

T1. New simplified Physics, S. L. Arora

#### **REFERENCE BOOKS:**

R1: Text book on light, B. Ghosh & K. G. Mazumdar

#### OTHER LEARNING RESOURCES:

 $\underline{https://youtu.be/-DEYZw7H9As?si=BvZ4-Xq2lpP4ZTj7}$ 

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Describe the concept of light and its behavior in different media.	1,6,8					
2	Understand the phenomena of reflection and refraction of light	1,8					
3	Identify the reflection and refraction at spherical surfaces and	6,8					
3	subsequent image formation.	0,0					
4	Understand the principle of refraction and reflection in	6.9					
4	connection to its uses in human eye.	6,8					
5	Describe the use of various instruments related to optometry.	1,6,8					

SEMESTER – I												
Course	Title											
Course	code	24BOPT1103R	Total credits: 2	L	T	P	S	R	O/F	C		
			Total hours: 30T	2	0	0	0	0	0	2		
Pre-req		Nil	Co-requisite				ľ	Vil				
Progra	mme		Bachelor of Optometry									
Semest			I semester of firs									
Course		•	wledge in the technic	•				l studie	es specially	y		
Objecti	ives	•	linical findings in var		•					_		
		•	nation and understand	_								
			uman body and cells	and also	to fo	ocus or	the h	ieredit	ary concep	ots of		
		life.	assential magne and r			ta thair		and in	mulication	in		
		-	essential macro and r to understand insigh						-			
			bsorption of light by									
		signals in the brai		FIIOTOIC	· · ·			p1000	551115 01 11			
CO	1	Understand carbohy	drates, including the	ir source	s, sti	ructure	s, and	biolog	gical signif	icance.		
CO	2	Discuss proteins, in	cluding amino acid cl	lassifica	tion,	proteir	struc	ture, e	enzyme fur	ctions,		
		and protein metabol	and protein metabolism.									
CO			uding fatty acids, thei									
CO	4	Analyze and interpret the roles of these micronutrients in maintaining health and										
	_	supporting vital cellular processes										
CO	5	Explore the concept of ocular biochemistry, including the composition of ocular structures, the visual cycle, pigmentation, and acid-base balance										
TT \$4	1		· · · · · · · · · · · · · · · · · · ·						4	TZT		
Unit- No.		Conten	Į.	Contac Hour		L	earni	ng Ou	tcome	KL		
NO.	CADI	BOHYDRATES:		Hour		scriba	illuct	rata ar	nd explain			
		ition and classification	on of their			out cla			•			
		es and structures.	on or then							1,2,		
I		gical significance of	Carbohydrate	6	significance of carbohydrate					3,4		
	`	hydrate metabolism	*							- ,		
		Gluconeogenesis and	• •									
	PRO	TEINS:			De	escribe	, illu	strate	and			
		ino acid classification	n: Essential and		ex	plain a	bout o	classifi	cations of			
		- Essential,			proteins					1.0		
II	• Basi	ics of proteins		6						1,2, 3,4		
		e of Enzymes in hum	•							2,4		
		ein Metabolism: Trai	•									
	Deamination and Urea cycle.											
		TY ACIDS AND LII				escribe,						
	• Gen acid	eral Introduction on	iipias and fatty		Sig	gnifica	nce of	lipids		1.2		
III		s. logical Significance (	of Linids	6						1,2,		
		ds Metabolism: Beta	•							3,4		
		one bodies	-									
L	<u> </u>									1		

	VITAMINS, MINERALS AND NUCLEIC		Describe, illustrate about types	
IV	ACID:		and functions of vitamins,	
	General introduction on		minerals and nucleic acids	
	Vitamins, classification and its functions.	6		1,2, 3,4
	<ul> <li>Minerals and its types, sources and its functions.</li> </ul>			-,.
	Structure and functions of DNA and RNA			
	OCULAR BIOCHEMISTRY:		Describe, illustrate about	
	• Cornea, lens, aqueous vitreous and retina.		ocular biochemistry	
V	Rhodopsin and Wald's Visual Cycle	6		1,2,
	Coloured Pigments			3,4
	Acid, Base, pH and Buffers.			

T1: "Biochemistry" by U Satyanaryana and U Chakrapani 6th Ed.

T2: "Text book of Biochemistry for medical students" by DM Vasudevan (Author), Sree Kumari S (Author), Kannan Vaidyanathan (Author), 7th Edition

#### **REFERENCE BOOKS:**

R1: Lehninger Principles of Biochemistry" by David L Nelson and Michael M Cox, Eighth Edition ©2021 David L.

R2: "Biochemistry" by Lubert Stryer, Jeremy M Berg, WH Freeman, 9th ed. 2019

R3: "An Introduction to Practical Biochemistry" by David E Metzler. McGraw Hill Education, 3rd Ed

#### **OTHER LEARNING RESOURCES:**

https://drive.google.com/file/d/1cx5xt_WvkmEany- KxtoBUtPX_zODncs1/view?usp=drive_link https://drive.google.com/file/d/1YuMlq01moQQXzfIF00YfT-gXjLMAm04r/view?usp=sharing

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Understand carbohydrates, including their sources, structures, and biological significance.	1,6,8					
2	Discuss proteins, including amino acid classification, protein structure, enzyme functions, and protein metabolism.	1,8					
3	Classify lipids, including fatty acids, their structures, functions, and metabolism.	6,8					
4	Analyze and interpret the roles of these micronutrients in maintaining health and supporting vital cellular processes	6,8					
5	Explore the concept of ocular biochemistry, including the composition of ocular structures, the visual cycle, pigmentation, and acid-base balance	1,6,8					

Course Course co		SIC COMMU Total credit		VE EN	GLIS	H				
	ode 24UBPD1101R	Total credit	Course Title BASIC COMMUNICATIVE ENGLISH							
Pre- requi				ГР	S	R	O/F	C		
Pre- requi		Total hours: 60P		0 (	4	0	0	0	2	
	isite Nil	Co-req	uisite				Nil			
Programm			r of Opton							
Semester		mester of firs								
Course	1. To introduce the student		•	•						
Objective			•	•	•	_	ercise	es.		
	3. To learn and understand									
CO1	The application of gramma	tical rules will	enable the	studen	ts to i	mpro	ve the	speakin	ng and	
	writing skills.									
CO2	It enables the learners to us		•	/.						
CO3	It will strength both listening									
CO4	It will strengthen their voca	<u>*</u>								
CO5	It will give an introduction	on the concept		ınicatio						
Unit-	Content		Contact		Lea	rnin	g Outo	come	KL	
No.			Hour							
	rammar			Describe, illustrate about how					1,2,	
	Parts of Speech		12	to write speech, articles etc.					3,4,	
•	Articles								5	
	Affirmative and Negative Senter	nces		Describe, illustrate about						
	rammar				-				1.2	
	Determiners  Section of Constant in the Consta	1.1.11	10	how to write the sentence					1,2,	
	Sentence Construction from jum		12						3,4,	
•	Types of Sentences (Assertive, I	imperative							3	
D	etc.) uilding Vocabulary		Describe, illustrate ab					about	1,2,	
	Synonyms		12							
	Antonyms		12	now t	o cha	ange the word.			3,4,	
9	peaking Skills			Descr	ihe i	Huetr	ate ah	Mut	,	
	Introduction and greetings			Describe, illustrate about how to speaking.						
IV •	Pronunciation		12						1.0	
•	Asking and offering in formation	on	12						1,2,	
	Video Recording for self-analy								3,4,	
	communication Skills			Descr	ihe i	Hustr	ate ah	out	<i>J</i>	
	Introduction to Communication	1,		how				Jui		
	Importance of Communication	*		110 W	.5 001	iniull	raic			
V .	D CC ' ''		12						1,2,	
	Types of Communication,								3,4,	
	Barriers to Communication,									
									5	

- T1. Wren& Martin (2017) High School English Grammar and Composition S. Chand Publishing.
- T2. Pal, Rajendra. Suri, Premlata (2022) English Grammar & Composition. Sultan.
- T3. Debnath Adhir (2018) A Textbook of English Grammar and Composition. Bina Library

#### **REFERENCE BOOKS:**

R1:Mitra Barun (2016) Personality Development and Soft Skills2/E,Oxford University Press
R2:Murphy Raymond, (2012) English Grammar in Use Book with Answers A Self-Study and Practice
Book for Intermediate Learners of English, Cambridge University Press

#### **OTHER LEARNING RESOURCES:**

https://youtu.be/53SIKuCuHv0

https://youtu.be/Ljjiw9mC_Cg

https://youtu.be/xQfYiHbAjJo

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	The application of grammatical rules will enable the students to	5,7,8					
1	improve the speaking and writing skills.	3,7,0					
2	It enables the learners to use the language effectively.	5,7,8					
3	It will strength both listening and speaking skills.	5,7,8					
4	It will strengthen their vocabulary and use of words.	5,7,8					
_	It will give an introduction on the concept of communication, its	579					
3	importance and barriers.	5,7,8					

			SEMESTER	R – II							
Course	Title		OCULAR ANATO	MY AN	ND P	HYSIC	DLOG	Y			
Course	code	24BOPT1201R	Total credits: 4	L	T	P	S	R	O/F	C	
			Total hours: 45T	3	0	0	0	0	0	4	
Pre-rec	quisite	COMPULSORY	Co-requisite	<b>!</b>			N	L			
Progra	mme	Bachelor of Optometry									
Semest			II semester of firs	st year o	of the	e progr	amme	!			
Course		I	uctures and describe								
Objectives		structure 3. Discuss the visual	2. Discuss the physiology, conditions and evaluation that are associated with each ocular								
CO	01	· ·	s of embryogenesis le	-				of var	ious ocular	•	
CO	2	Understand the wall	s of the orbit, orbital	fascia, a	nd th	ne comp	ositio	n of th	e orbit.		
CO	3	Demonstrate the stru	acture, blood supply,	nerve su	ıpply	and fu	nction	of eye	).		
CO	4	Understand the impo	ortance of extra ocula	ar muscle	es an	d lacrir	nal ap	paratus	•		
CO	5	Describe the ocular	physiology in contex	t of visio	on.						
Unit-		Content	t	Conta	ct	I	earni	ng Out	tcome	KL	
No.				Hour	•						
I	<ul><li>Emboded</li><li>The</li><li>The</li><li>Dim</li></ul>	Embryology and development of Eye- Embryogenesis- development of various ocular structures The coats of the eyeball The chambers of the eye Dimensions of the eyeball			th an th	nd explain of ocular apment of	1,2				
II	<ul><li>Bon</li><li>Wal</li><li>Orb</li></ul>	FHE ORBIT- Bony Orbit- Dimensions and bones Walls of the orbit Orbital Fascia Content of orbit			th	Describe, illustrate and explain the orbit and the associated anatomical structures					
III	<ul> <li>OCULAR STRUCTURES-</li> <li>Eyelid- Structure, glands, blood supply, nerve supply, lid margin, canthi, palpebral aperture, function</li> <li>Conjunctiva- Structure, glands, blood supply and nerve supply</li> <li>Cornea- Structure, dimensions, blood supply, nerve supply, corneal transparency, metabolism, function</li> <li>Sclera- Structure, nerve supply, Episclera, tenon capsule</li> <li>Uveal Tissue- Parts of uveal tissue, Structure, blood supply, Function</li> <li>Lens- Dimensions, Refractive index, structure, Lens transparency, metabolism, Accommodation</li> </ul>			9	th fu	ne vai	rious al con	struct nponer	nd explain ural and nts of the nexa	1,2	

IV	Extraocular Muscles:  • Muscles  • Origin and insertion  • Field of action  • Nerve supply  LACRIMAL APPARATUS:  • Glands  • Lacrimal passages  Tearfilm – structure, function, secretion, tear	9	Describe, illustrate and explain the muscles responsible for various eye movements, the anatomical structures responsible for tear production and drainage	1,2
V	elimination  PHYSIOLOGY OF VISION:  • Maintenance of clear ocular medias Physiology of vision- Visual perception (light sense, form sense, sense of contrast, colour sense)	9	Describe, illustrate and explain the physiological aspects of various ocular structures including physiology of vision	1,2

T1: Comprehensive Ophthalmology, A. K Khurana

T2: Anatomy and Physiology of Eye, A.K Khurana & Indu Khurana

### **REFERENCE BOOKS:**

R1: Clinical Anatomy and Physiology of the Visual System, Lee Ann Remington

R2: Clinical Ocular Anatomy and Physiology , Jan P.G. Bergmanson

### OTHER LEARNING RESOURCES:

https://thecrashcourse.com/courses/anatomy/?page=2

	CO PO Mapping							
SN	Course Outcome (CO)	<b>Mapped Program Outcome</b>						
1	Recognize the stages of embryogenesis leading to the development of various ocular structures.	1,6,8						
2	Understand the walls of the orbit, orbital fascia, and the composition of the orbit.	1,8						
3	Demonstrate the structure, blood supply, nerve supply and function of eye.	6,8						
4	Understand the importance of extra ocular muscles and lacrimal apparatus.	6,8						
5	Describe the ocular physiology in context of vision.	1,6,8						

			SEMESTE	R – II							
Cours	e Title		ALMIC	OPT	ICS						
Cours	se code	24BOPT1202R	Total credits: 3	L	T	P	S	R	O/F	C	
			Total hours: 45T	3	0	0	0	0	0	3	
Pre- re	equisite	Nil	Co-requisite			BA	SICS	OF O	PTICS		
Progra			Bachelo	or of Op	tome	try					
Semes	Semester II sen			st year o	of the	progr	amme	<b>)</b>			
Cours	e	1. To provide knowledge on various theories of light.									
Objec	tives	2. To learn about properties of light									
			learn about light waves								
	01	Understand the theo									
CO		Define interference, diffraction, and polarization in the context of optical phenomena.									
CO			cepts of light and its								
CO			of laser optics and it							•	
CO			phy and concept of s								
Unit-		Content		Contac	t	L	earnin	g Outo	come	KL	
No.				Hour							
		F LIGHT						l explain			
		n's corpuscular theor			the	vario	us the	ories of	light		
I	-	plane's quantum the		9						1,2,4	
		magnetic wave theory	y etc., dual nature								
	of light				1_						
		RFERENCE, DIFFR	RACTION and					trate a			
		RISATION:			ex	plain d	ifferer	nt light	waves		
		ion and interpretation								1,2,	
II	_	periment, coherent son		9							
		offer's types of diffrac	-							1,2, 3,4	
		erse waves from polar	ization brewster's								
	law.	TERING AND SPE	OTDIM		Da	a a mi h a	211,10	trate a	nd		
		ion and interpretation					•	iraie a ienome			
		non and interpretation nenon, example like b			ex	рганг	igiit pii	enome	11011		
	_	yleigh's scattering, Ra									
		and anti-strokes line	•							1,2,	
III		ion of spectrum, pure	-	9						3,4	
		, emission and absorp	-								
	-	cations, visible, ult	•								
		d (IR) spectrum, electr	· · ·								
	spectru	_	C								
	_	R OPTICS			De	scribe	, illusti	ate and	lexplain		
	Laser (	Characteristics, Einste	ein's co-efficient,		the	conce	ept of I	Laser ar	nd its		
	Popula	tion inversion and pu	mping; types of		gei	neratio	n and	propag	ation		
IV	Lasers	(Ruby laser, He-Ne,	dye laser, semi-	9						1,2	
		etor lasers), Application	•								
	fibers,	Propagation of light	through								
	optical	fiber, losses, applicat	ions.								
	Hologr	aphy: Introduction,	construction, and		De	scribe	, illustı	ate and	lexplain		
V	reconst	truction of images,	Uses. Concept of	9	the	const	ruction	n and		1,2	
	spatial	distribution of optica	l information.		rec	constru	ction	of imag	es		
<u> </u>		-		<u> </u>						1	

- T1: Theory and Practice of Optics and Refraction by AK Khurana.
- T2: Optics for Optometry students by PC Mukherjee.
- T3: Optics (fifth edition) by Eugene Hecht & A.R. Ganesan

### **REFERENCE BOOKS:**

- R1: Review of Medical Physiology Ganong WilliamF.
- R2: Physiological basis of Medical practice Best & Taylor

### **OTHER LEARNING RESOURCES:**

 $\frac{https://openstax.org/books/anatomy-and-physiology-2e/pages/1-1-overview-of-anatomy-and-physiology}{and-physiology}$ 

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Understand the theories of light.	1,6,8						
2	Define interference, diffraction, and polarization in the context of optical phenomena.	1,8						
3	Understand the concepts of light and its scattering phenomena.	6,8						
4	Explain the concept of laser optics and its implementation in various laser operation.	6,8						
5	Understand holography and concept of spatial distribution of optical information.	1,6,8						

			SEMESTER	- II									
Course T	itle		VISUA	L OP	TICS								
Course co	ode	24BOPT1203R	Total credits: 3	L	T	P	S	R	O/F	С			
			Total hours: 45T	3	0	0	0	0	0	3			
Pre-requi	isite	Compulsory	Co-requisite			Į.	NIL	1	1				
Programi	me		Bachelor	of Op	tometr	y							
Semester			II semester of first				nme						
Course				lls gair									
Objective	es		acteristics of the huma										
			eals with errors of refraction and measurement and corrections using fundamental										
		principles of light	and optics. des studying the behavi	or of 1	ight ro	fraction	n and t	ha was	ontica	ı			
			es and prisms) can be u						ориса	L			
CO1			perties eyes and metho										
CO2		Identify the various of	optical defects and para	meters	-								
CO3			rent types of refractive			manag	ements						
CO4		Discuss the principle	and mechanism of eye	accon	nmodati	ion.							
CO5		Review the principle	s of retinoscopy and its	instru	mentati	on.							
Unit-		Cor	ntent		ontact Hour		Lear	ning		KL			
No.								come					
		EASUREMENT OF					ribe, ill						
		chemotic and reduced	eyes and their			_	in the						
I	_	properties. Corneal curvature, ref	ractive index and		9	_	e using			1,2,			
		hickness.	ractive macx and			and r	educed	mode	l.	3			
	• I	Purkinjee Sanson											
		TICAL DEFECTS				Desc	ribe, i	llustra	te and				
			is (angle alpha, fixation	1		_			fects of				
		axis, angle gamma).	1t of			optical system of an eye							
II		Abertation of the opti Depth of focus.	n of the optical system of eye.										
		Diffraction & resolving	ng nower										
			n uncorrected reduced							1,2			
	6	eye											
			OF REFRACTIVE				ribe, ill						
		RROR-				_	in the		f				
Ш		nimetropia, myopia, i nd Presbyopia.	nyperopia, astigmatism		9	refra	ctive er	ror					
		phakia								1,2			
		niseikonia											
		nisometropia & Asth											
		CCOMMODATION Possible mechanism of					ribe, ill						
		Schiener disc experin				_	in the						
		Theories of accommo					lifferen		ies of				
			ges in the lens during			acco	mmoda	tion					
IV	8	accommodation.	-							1,2			
"		The amplitude of acco			9					1,4			
		The measurement of t	he amplitude of										
		accommodation.											
		Depth of field. Amplitude of accomm	nodation versus age										
		implicate of accornil	iodution versus age.										
L						1							

	RETINOSCOPY –		Describe, illustrate and	
	Principle and use.		explain the function and	
	• Clinical recording of standard of vision by visual acuity and the charts.		use of retinoscopy.	
	Review of subjective refractive methods.			
V	Problem of review of objective refractive methods.	9		1,3, 4
	Contrast sensivity of the eye.			
	Keratometry and Pachymetry-			
	Principle			
	• Types			
	• Uses			

T1: Borish's clinical refraction—I. M. Borish, W.J. Benjamin—W.B. Saundersco.

T2: The ocular examination: measurement and findings – karlazadmik

#### **REFERENCE BOOKS:**

R1: Primary care optometry – theodore–butterworth-heinemann.

R2: Clinical procedures in optometry – eskridge, amos, bartlett.-j. B. Lippincottco.

#### OTHER LEARNING RESOURCES:

https://www.studocu.com/en-za/document/university-of-limpopo/visual-optics/visual-optics/visual-optics/studocu.com/en-za/document/university-of-limpopo/visual-optics/visu

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Describe various properties eyes and methods of eye measurements.	1,6,8						
2	Identify the various optical defects and parameters	1,8						
3	Understand the different types of refractive errors and its managements	6,8						
4	Discuss the principle and mechanism of eye accommodation.	6,8						
5	Review the principles of retinoscopy and its instrumentation.	1,6,8						

			SEMESTER – II										
Course T	itle	Ι	NSTRUMENTATION AN	ND IN	VEST	ΓIGAT	ION	[					
Course co	ode	24BOPT1204R	Total credits: 3	L	T	P	S	R	O/F	C			
			Total hours: 30T+30P	2	0	2	0	0	0	3			
Pre- requ		COMPULSORY	Co-requisite	)4 o	.4		Nil						
Programi Semester	me		Bachelor of C										
Course		1 Th:	II semester of first yea						1				
Objectives			rs commonly used optometruses in clinical practice	ic insu	rume	nts, the	ar dasi	e princ	cipie,				
Objectives		description, and uses in clinical practice.  2. In-depth knowledge of various investigation procedures in eye care services with basic											
		instrumentations											
		3. This course includes gain knowledge of the scientific principles and technology behind											
CO1		different instruments used in eye care.											
COI		Determine the abnormal head posture based on assessment of the patients' ocular alignment and identify methods to address concerns.											
CO2			nct features and application		agnos	stic inst	trumen	ts and	their u	se			
		in optometry											
CO3		Understand the concept of tonometry techniques and applying it to measure intraocular											
		pressure in a clinica	· ·										
CO4			charts standards and use re	efractiv	e ins	trumer	it to ac	ldress	near vi	ision			
~~=		difficulties with rele											
CO5	1		ncept of retinoscopes, autor						copes.	T7T			
Unit-	Content				ntact			rning		KL			
No.	00	NIII AD EXAMINI	ATION AND	H	our	D		come	1				
		CULAR EXAMINA AGNOSTIC TEST	S HEAD POSITION—				ribe, il in all t						
I		ce turn, chin position		,	6		ination		41U1	1,2			
		inseling			J					1,2			
	DIA	GNOSTIC INSTR	UMENTS IN			Desc	ribe, il	lustrat	te and				
		TOMETYRY-		explain function and									
П		Keratometer,				use	of		arious	1,2,			
1		-lamp biomicroscop	(	6	diagn	ostic i	nstrun	nents	3				
		nioscope,											
		rneal topography Bri NOMETRY –	gntness acuity test	-	Describe, illustrate and								
		NOMETRY — entation and applana	tion		6		,			1,2,			
III		T FOR COLOUR			U	explain the function and use of tonometry,				1,2, 4			
		NSOMETER	VISIOIN.			lenso	metry	•	our	_			
			LIN ADDITOC			visio		11	,				
		FRACTIVE INSTR			<i>c</i>		ribe, i explaii						
***			choice of test charts, trial se	τ.  (	6		expian			1 2			
IV		Refractor(phoropter),				10114				1,2,			
		rial frame design,	1.1 1. 1.1.1.0							3			
			s with units and trial frame			D.			1				
		TAILED STUDY INCIPLES OF O	OF THE PERATION, TYPES,				-		strate and inciple,				
		TICAL PROPER					proced						
	CC	ONSTRUCTION, A	ADJUSMENT AND		6		ments			1,2,3			
V			THE FOLLOWING		J					-,=,5			
		STRUMENTS AN	D DEVICES-										
		Retinoscopes Autorefractometer- O	nhthalmoscopes										
		adoren actometer- O	ришанновсорсь										
	1					l							

	To study the operations of the following				
	instruments: -		Describe, illustrate and		
	Focimeter or lensometer.		apply the procedure of	1.0	
Practical	Keratometer		all the optometric	1,2, 3,4	
	Retinoscope	30	instruments	۶,¬	
	Autorefractometer				
	<ul> <li>Ophthalmoscope</li> </ul>				

T1: Optics & refraction-L .P. Agarwal.

T2: Comprehensive Ophthalmology-A. K. Khurana

### **REFERENCE BOOKS:**

R1: Introduction to visual optics, Alan H. Tumadiffe(1987)

R2: Clinical optics- 2nd ed (1991)- A. R. Elington & H. J. Frank.

R3: Clinical optics-Borrish.

R4: Brien Holden Vision Institute-Luigi Bilotto, Pirindhavelle Govender

#### OTHER LEARNING RESOURCES:

https://www.youtube.com/watch?v=8MFvQE2BfBI

https://www.youtube.com/watch?v=sXsl0HOX79s

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Determine the abnormal head posture based on assessment of the patients' ocular alignment and identify methods to address concerns.	1,4,8						
2	Recognize the distinct features and applications of diagnostic instruments and their use in optometry	1,8						
3	Understand the concept of tonometry techniques and applying it to measure intraocular pressure in a clinical setting.	4,8						
4	Understand the test charts standards and use refractive instrument to address near vision difficulties with relevant units.	1,8						
5	Demonstrate the concept of retinoscopes, autorefractometers, and ophthalmoscopes.	4,8						

Course Title   Environmental science   Course code   24UBES1201R   Total credits: 2   L   T   P   S   R   O/F   C   Total hours: 30T   2   0   0   0   0   0   0   0   2   2					MESTER -							
Pre-requisite   Nil							l m		l a	-	0/5	
Pre-requisite   Nil   Co-requisite   Nil   Programme   Bachelor of Critical and Intensive Care Technology	Course	code	24UBES1201R									1
Programme   Bachelor of Crifical and Intensive Care Technology	Dro roo	visito				<u> </u>	U	U			U	<u> </u>
To understand and address complex environmental issues from a problem-oriented inter- disciplinary perspective 2) To develop a world population that is aware of and concerned about the environment and its associated problems and which has the knowledge, Skills attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and prevention of new ones.  3) To explore strategies for sustainable development and living, including conservation renewable energy, waste reduction, and responsible consumption renewable energy waste reduction, and responsible consumption renewable energy waste reduction, and responsible consumption renewable energy is importance, and its impacts on the environment Studies and the need for public awareness.    CO2						Intensiv	e Car	e Tec				
To understand and address complex environmental issues from a problem-oriented inter- disciplinary perspective			2401							<u> </u>		
2) To develop a world population that is aware of and concerned about the environment and its associated problems and which has the knowledge, Skills attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and prevention of new ones.  3) To explore strategies for sustainable development and living, including conservation renewable energy, waste reduction, and responsible consumption  CO1 Discuss the importance of Environment Studies and the need for public awareness.  CO2 Identify natural resource, its importance, and its impacts on the environment CO3 Explore in-depth knowledge on concept of ecosystem  CO4 Discuss the value of biodiversity and the various methods of conservation Of Biodiversity.  CO5 Explain various environmental pollution and its impact on human and ecosystem  Unit No.  Multidisciplinary nature of environmental studies:  I • Definition 7  • Scope and importance of environmental studies and discuss the need for public awareness.  Natural Resources:  Renewable and non-renewable resources:  Pooser resources  • Forest resources  • Forest resources  • Food resources  • Food resources  • Land re	Course	;	1) To understand and							a pr	oblem-oi	riented,
environment and its associated problems and which has the knowledge, Skills attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and prevention of new ones.  3) To explore strategies for sustainable development and living, including conservation renewable energy, waste reduction, and responsible consumption  CO1 Discuss the importance of Environment Studies and the need for public awareness.  CO2 Identify natural resource, its importance, and its impacts on the environment CO3 Explore in-depth knowledge on concept of ecosystem  CO4 Discuss the value of biodiversity and the various methods of conservation Of Biodiversity.  CO5 Explain various environmental pollution and its impact on human and ecosystem  Unit-No.  Multidisciplinary nature of environmental studies:  • Definition  • Scope and importance  • Need for public awareness  Natural Resources:  Renewable and non-renewable resources:  • Forest resources  • Forest resources  • Forest resources  • Fored resources  • Energy resources  • Energy resources  • Land resources, and its impacts on the environment of an ecosystem:  • Structure and function- Producers,	Objecti	ives										
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solutions of current problems and prevention of new ones.  3) To explore strategies for sustainable development and living, including conservation renewable energy, waste reduction, and responsible consumption  CO1 Discuss the importance of Environment Studies and the need for public awareness.  CO2 Identify natural resource, its importance, and its impacts on the environment  CO3 Explore in-depth knowledge on concept of ecosystem  CO4 Discuss the value of biodiversity and the various methods of conservation Of Biodiversity.  CO5 Explain various environmental pollution and its impact on human and ecosystem  CO6 Explain various environmental pollution and its impact on human and ecosystem  CO7 Explain various environmental pollution and its impact on human and ecosystem  CO8 Explain various environmental pollution and its impact on human and ecosystem  CO9 Explain various environmental pollution and its impact on human and ecosystem  CO9 Explain various environmental pollution and its impact on human and ecosystem  Explain the definition, scope, and importance of environmental studies and discuss the need for public awareness.  11 Explain the definition, scope, and importance of environmental studies and discuss the need for public awareness.  12 Describe different types of natural resources (renewable and non-renewable) and explain their uses and environmental impacts.  13 Describe the components of an ecosystem:  Ecosystems Concept of an ecosystem, explain energy flow and ecological succession, and compare												
3) To explore strategies for sustainable development and living, including conservation renewable energy, waste reduction, and responsible consumption  CO1 Discuss the importance of Environment Studies and the need for public awareness.  CO2 Identify natural resource, its importance, and its impacts on the environment  CO3 Explore in-depth knowledge on concept of ecosystem  CO4 Discuss the value of biodiversity and the various methods of conservation Of Biodiversity.  CO5 Explain various environmental pollution and its impact on human and ecosystem  CO6 Explain various environmental pollution and its impact on human and ecosystem  CO7 Explain various environmental pollution and its impact on human and ecosystem  CO8 Explain various environmental pollution and its impact on human and ecosystem  CO9 Explain various environmental pollution and its impact on human and ecosystem  CO9 Explain various environmental pollution and its impact on human and ecosystem  CO9 Explain various environmental pollution and its impact on human and ecosystem  CO9 Explain various environmental pollution and its impact on human and ecosystem  Explain the definition, scope, and importance of environmental studies and discuss the need for public awareness.  1,2,2  Describe different types of natural resources (renewable and non-renewable) and explain their uses and environmental impacts.  Explain the definition, scope, and importance of environmental studies and discuss the need for public awareness.  1,2,3  Describe different types of natural resources (renewable and non-renewable) and explain their uses and environmental impacts.  Explain the definition, scope, and importance of environmental studies and discuss the need for public awareness.  1,2,3  Describe different types of natural resources (renewable and non-renewable) and explain their uses and environmental impacts.  Explain the definition, scope, and importance of environmental studies and discuss the need for public awareness.  1,2,3												
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CO3 Explore in-depth knowledge on concept of ecosystem  CO4 Discuss the value of biodiversity and the various methods of conservation Of Biodiversity.  CO5 Explain various environmental pollution and its impact on human and ecosystem  Unit-No.  Multidisciplinary nature of environmental studies:  I • Definition • Scope and importance • Need for public awareness  Natural Resources: Renewable and non-renewable resources:  Renewable and non-renewable of Forest resources  • Mineral resources • Food resources • Energy resources • Land resources sources.  Ecosystems Concept of an ecosystem: • Structure and function- Producers,  Describe different types of natural resources (renewable and non-renewable) and explain their uses and environmental impacts.  Describe the components of an ecosystem; explain energy flow and ecological succession, and compare	CO	)1									ic aware	ness.
CO4		2	Identify natural resour	ce, its in	nportance,	and its i	mpact					
CO5   Explain various environmental pollution and its impact on human and ecosystem								_				
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Need for public awareness  Natural Resources: Renewable and non-renewable resources:      Forest resources     Mineral resources     Food resources     Energy resources     Land resources sources.  Ecosystems Concept of an ecosystem: Structure and function- Producers,  Describe different types of natural resources (renewable and non-renewable) and explain their uses and environmental impacts.  1,2,3  Describe tifferent types of natural resources (renewable and non-renewable) and explain their uses and environmental impacts.  Describe the components of an ecosystem; explain energy flow and ecosystem, explain energy flow and ecological succession, and compare	•				,	awarene	ess.					1,2
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II • Water resources • Mineral resources • Food resources • Energy resources • Land resources sources.  Ecosystems Concept of an ecosystem: • Structure and function- Producers,  Structure and function- Producers,  1,2,3  1,2,3  Describe the components of an ecosystem; explain energy flow and ecological succession, and compare					_						ases une	
Mineral resources     Food resources     Energy resources     Land resources sources.      Ecosystems Concept of an ecosystem:     Structure and function- Producers,      Structure and function- Producers,      Concept of an ecosystem, explain energy flow and ecological succession, and compare	II				5			r				123
Food resources     Energy resources     Land resources sources.      Ecosystems Concept of an ecosystem:     Structure and function- Producers,      Structure and function- Producers,      Energy resources      Describe the components of an ecosystem; explain energy flow and ecological succession, and compare	•••				3							1,2,3
Energy resources     Land resources sources.      Ecosystems Concept of an ecosystem:     Structure and function- Producers,      Energy resources      Describe the components of an ecosystem; explain energy flow and ecological succession, and compare												
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ecosystem:  • Structure and function- Producers,  ecosystem, explain energy flow and ecological succession, and compare						Describ	e th	p 00	mnor	ente	of an	
• Structure and function- Producers, ecological succession, and compare		_	·						•			
		-		ducare				•				
TOURNINELS AND DECOMPOSES TO THE FOREIGN DECOSYSTEMS.						_					_	
			•	18.		differen	it type	3 01 0	cosys	tems.		
• Energy flow												
Ecological succession  Ecological succession			_									
III • Food chains, food webs and	III			1	5							1,2,3
ecological pyramids												
• Introduction- types, characteristic			· -									
features, structure, and function of												
the following ecosystem: - Forest												
ecosystem, Grassland ecosystem,			•	ystem,								
Desert ecosystem,			•									
Aquatic ecosystems		• Aqı	latic ecosystems									

IV	Biodiversity and its conservation  Introduction —  Definition  Value of biodiversity  Threats to biodiversity  Conservation of biodiversity	8	<b>Discuss,</b> explain biodiversity's value and threats, and describe methods for its conservation.	1,2,3,
V	<ul> <li>Environmental Pollution</li> <li>Definition Cause, effects, and control measures of: - Air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution, nuclear hazards</li> <li>Solid waste management</li> <li>Disaster management</li> </ul>	5	<b>Discuss,</b> explain about the cause, effects of environmental pollution.	1,2,3, 4,5

- T1: Harucha E. B, Textbook of Environmental Studies, Orient Blackswan Publishing
- T2: Tiwari V. K A Textbook of Environmental Studies, Himalaya Publishing House
- T3: Chatwal G. R. &Sharma H. Environmental Studies, Himalaya Publishing House

#### **REFERENCE BOOKS:**

- R1: Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards, Vol I and II, Enviro Media (R)
- R2: Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
- R3: Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad 380 013, India, Email:mapin@icenet.net (R).

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Discuss the ethical, cross-cultural, and historical context of environmental issues.	6							
2	Identify natural resource, its importance and environmental impacts of Human activities.	7							
3	Discuss about environment and ecosystem.	8							
4	Understand the concept of biodiversity.	4							
5	Discuss the concepts of conservation of biodiversity, problems of environmental pollution, its impact on human and ecosystem.	8							

	SEMESTER – II										
Course	Title		FUNCTIONAL	ENG	FLIS	Н					
Course	code	24UBPD1201R	Total credits: 2	L	T	P	S	R	O/F	C	
			Total hours: 60P	0	0	4	0	0	0	2	
Pre- rec		COMPULSORY Co-requisite Nil									
Prograi			Bachelor of Op								
Semeste	er		II semester of first year								
Course			ts to learn and understar				• •				
Objecti	ves	-	abulary of the students wl	nich v	will l	nelp i	n thei	r writi	ng and		
		speaking.									
			the Time Management tec								
CO			able to analyze and use			•					
CO			be have oral skills will								
CO			he effective and efficien			ion c	of the	time.			
CO4 It will strengthen their vocabulary and use of											
CO5 It will give an introduction on the concept of				of cor	mmı	ınica	tion,	its im	portance	and	
		barriers.									
Unit-		Conte	nt		ıtact			earniı	0	KL	
No.				H	lour			utcon			
	Gramn	ammar							trate the		
		erchange of Interrogative and Assertive Sentences,				types of tenses,					
I	Excl	elamatory and Assertive Sentences				sen	1,2,				
		pes of Tenses									
	• Com	mmon Errors									
	Vocabi	ulary				Des	scribe,	illust	rate	1,2,	
II	• Hor	nonyms		1	2	abo	ut voc	abula	ry	3	
	• Hor	nophones								3	
	Readin	g Skills				De	scribe	, illus	trate		
Ш	• Tech	niques of Effective Re	ading	1	2	abo	out rea	ding s	skills	1,2,	
	• Gath	ering ideas and informa	ation from a text							3	
	Conflic	ct Management				De	scribe	, illus	trate the		
137	• Defin	nition		1	2	typ	e of o	conflic	et	1,2,	
IV	<ul> <li>Type</li> </ul>	Type of Conflict Management				management					
	• Effec	Effects of Conflict Management									
	Time-N	Γime-Management Skills			Describe, illustrate the						
₹7	• Intr	oduction To Time Man	agement,		2	importance of time					
V	• Imp	Importance of Time		1	2	management.					
	• Mai	anagement, Basic Tips to Maintain Time.				-				3	
	• Wanagement, Basic Tips to Waintain Time.										

- T1: Wren, P. Cand Martin, H. 1995. High School English Grammar and Composition, S Chand Publishing.
- T2: Barrett, Grant .2016. Perfect English Grammar: The Indispensable Guide to Excellent Writing and Speaking, Zephyrus Press.

#### **REFERENCE BOOKS:**

- R1: Swan, Michael., (2014) Practical English Usage, Cambridge University Press
- R2: Taylor J. And Wright, J., IELTS Advantage Reading Skills: A step-by- step guide to a high IELTS readings core, Delta Publishing by Klett.

# OTHER LEARNING RESOURCES:

# https://clockify.me/time-management-techniques

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	The learner will be able to analyze and use the techniques in language use.	5,7,8						
2	Communication and be have oral skills will boost their self-reliance.	5,7,8						
3	Students will learn the effective and efficient utilization of the time.	5,7,8						
4	It will strengthen their vocabulary and use of words.	5,7,8						
5	It will give an introduction on the concept of communication, its importance and barriers.	5,7,8						

			SEMESTER -	- III							
Course Ti	itle		DISPENSINO	G OP	TIC	SI					
Course co	de	24BOPT2101R	Total credits: 2	L	T	P	S	R	O/F	C	
			Total hours: 30T	2	0	0	0	0	0	2	
Pre- requi	isite	Compulsory	Co-requisite					Nil			
Programm	ne		Bachelor of (			•					
Semester			<u>-</u>	year of the programme							
Course				ply principles of lens characteristics,							
Objective	S		cription writing, prismatic e	effect	s, and	d neu	traliza	ation te	echniques,	to	
		· ·	rect refractive errors.								
			Il help to differentiate between			•	•				
			tifying their unique propert	ies ai	nd su	itable	e appl	lication	is in		
		optometric prac				1	· c 1		1		
			Il help to explain the distinc	etions	s amo	ong b	itocai	design	is and		
CO1	progressive lenses.				000 **	<b>#</b> 00000	intia		· ~ mia	tio	
Understand the fundamental characteristic effects, and neutralization				i iens	ses, p	ı escr	ipuor	ı willir	ig, prisina	uc	
CO2			ent properties of lenses, and	1 tha	charc	cteri	etice (	of leng	materials		
CO ₂											
000		Understand the basic differences between bifocal designs, progressive lenses, and apply the concept in progressive lens marking.									
CO4			in various types of lens coating and identify the concept of absorptive lenses								
CO5			the impact-resistant lense								
	]		or specific patient needs.								
Unit-		Cor	ntent		ntact			.earnii Outcon		KL	
No.	CII	ADACTEDISTIC	C OF LENGES	Н	our	Do		e, and e			
		CHARACTERISTICS OF LENSES- Introduction,						ristics	-		
		ŕ	o - cylindrical lenses,					t lenses			
	_	nero-cylindrical lens	*			GIII	iciciii	i iciiscs	·•		
	_	•	wer and power of lenses,								
I		rite the prescription,	•		6					1,2,	
		se curve,								3	
		erration of lens,									
		sm effects in a lens.									
		utralization.	,								
		OPERTIES OF LI	FNSFS.			De	scribe	e, and e	vnlain		
		tical Properties	ENGES-					es of le	_		
	_	chanical Properties		١.,	6	pro	регис	05 01 10	nses.	1,2,	
		ectrical Properties			Ū					3	
		emical Properties									
		ermal Properties									
II		RRENT MATERI	ALS-								
		own glass,									
	• Cr-	39, otochromatic materi	010								
		lulose acetate.	.415								
		ycarbonate lens									
		vex lens									

· · · · · · · · · · · · · · · · · · ·	INTRODUCTION OF LENSES-		Describe, and explain	
	History of bi-focal design and its types		basics of spectacle	
III	• Progressive lens and its types.	6	lenses.	1,2,
111	Compression between bifocal, trifocal and	U		3,4,
	progressive lens.			5
	Marking of progressive lens.			
	OPHTHALMIC LENS COATING AND		Describe, and explain	
	ABSORPTIVE LENSES-		lens coating	
	Anti-reflecting coating & protective coating			
IV	ABSORPTIVE LENSES-	6		
	• Classification of lens tints.			
	• Effects in prescription on lens color.			1,2,
	Availability of tinted lenses			3
	IMPACT RESISTANT LENSES		Describe, and explain	
	• Types of impact resistances lenses. Impact	Types of impact resistances lenses. Impact		
V	resistant dress- eyewear lenses.	6	lenses.	
	• Types of impact resistant lenses most beneficial of specific patients.			1,2,

T1: Brooks & Borish. Systems for Ophthalmic Dispensing. 2nd ed. The Professional Press, 1996.

### **REFERENCE BOOKS:**

R1: Clinical optics and refraction by Andrew Keirl.

### **OTHER LEARNING RESOURCES:**

https://www.youtube.com/watch?v=NqR0j-ZGCXg

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Understand the fundamental characteristics of lenses,	5,8
1	prescription writing, prismatic effects, and neutralization	3,0
2	Distinguish different properties of lenses, and the	1,3
	characteristics of lens materials.	1,5
	Understand the basic differences between bifocal designs,	
3	progressive lenses, and apply the concept in progressive lens	1,3
	marking.	
4	Explain various types of lens coating and identify the concept of	5 0
<b>-</b>	absorptive lenses	5,8
5	Understand about the impact-resistant lenses, and the most	5 8
3	beneficial impact-resistant lenses for specific patient needs.	5,8

SEMESTER – III									
Course Ti			optics	& refraction	n I				
Course co	de   24BOPT2104R	Total credits: 3	L	T	P	S	R	O/F	C
		Total hours:30T+30P	2	0	2	0	0	0	2+1=3
Pre- requi		Co-requisite	1 6	0 4 4		Nil			
Programn	ne			Optometry					
Semester	1 11. 1 1.	III semester of se					. 1	_1.1.	_
Course		ng the eye as a dioptric d							
Objectives		covers various clinical or ent and posterior segment	_			-			
		and posterior segment amination, and clinical eva			)-opnur	анис е	ханш	auon,	pediadic
		ng the concept of visual			e mone	uromo	nt and	com	nonanta
		ts clinical significance in	-	_	is ilicas	surcinc	iit aiiu	COM	ponents,
CO1			wy tolai	na					
CO2		needs and importance on the needs and importance of cept of visual acuity an	_		-	-			
CO ₂	_	tive and subjective refra		_	пропел	us.			
CO4		accommodation and ide			9				
CO5		roficiency in prescribing	<u> </u>			dd and	near	nowe	r
Unit-	Demonstrate p	Content	s add po	Contact		ning O			KL
No.	Content			Hour	Lear	ining O	utton		KL
110.	OPHTHALMIC (	CASE HISTORY		Hour	Desc	ribe o	nhtha	lmic	
	TAKING-			history	•				
		Demographic data, chief complaints, ocular							
I		history, systemic history, history of past or							1,2
	· ·	current medications, family history, social							,
		history, birth history, allergy history, few							
	· ·	xample of history writing.							
		VISUAL ACTIVITY-			Describe steps of				
	• Step by step prod	edure of recording dista	ance		Visual acuity.				
II	and near visual a	cuity, Snellen's chart, lo	ogMar						1,2,
11	chart, near visual	acuity chart, pediatric v	visual	6					3,4,
	acuity chart and	acuity chart and tests according to different							5
	age groups, comp	ponents of visual acuity							
	OBJECTIVE RE				1	ribe,			
	_	etinoscopy: types, defin	itions,			in dif			
	principles, procedu				refrac	ods of	object	ive	
	•	mic retinoscopy: mem, l	Nott's,		Terrac	etion.			
	sheard's, bells a								
		of retinoscopy- radical	l, near						1,2,
III		retinoscopy.							3,4,
	Autorefractometer.								5
	SUBJECTIVE REFRACTION:  • Subjective adjustment,								
	· ·								
	• Refinement, bind	arant							
		action, cycloplegia, diffe	zi CIII						
	applications.	gic drops and their							
	аррисацоня.				<u> </u>				

	ACCOMMODATION-		Describe, and	
	Far point of accommodation, near point of accommodation, range of accommodation, amplitude of accommodation      Different methods of measuring applicates of		Explain accommodation its classification and anomalies.	
IV	Different methods of measuring amplitude of accommodation.	6	anomanes.	
	• Correction of presbyopia:			1,2,
	different methods of calculating			3,4, 5
	tentative presbyopic addition, amplitude of accommodation.			3
	SOME IMPORTANT WORKUP-		Describe, and explain	
	<ul> <li>Occupational consideration during prescribing add power,</li> </ul>		clinical workup.	
	Calculation of add and near power,	_		1,2,
V	Occupational consideration during prescribing	6		3,4, 5
	add power,			5
	Calculation of add and near power,  Massyroment of IDD and its significance.			
Practical	Measurement of IPD and its significance.			
Tractical	Trade manager in a			
I	<ul><li>History writing</li><li>Recording</li></ul>	10		1,2
				3,4
II	Practice of streak retinoscopy	10		1,2,3,4,5
III	To prescribe add power.	10		1,2,
111	To write a prescription.	10		3,4

T1: Clinical optics and refraction by Andrew Keirl.

#### **REFERENCE BOOKS:**

R1: Borish's clinical refraction—I.M. Borish, W.J. Benjamin—W.B. Saundersco.

R2: Primary care optometry – theodore–Butterworth-Heinemann.

R3: Clinical procedures in optometry – Eskridge, Amos, Bartlett.-J. B. Lippincottco.

R4: The ocular examination: measurement and findings – Karlazadmik

### OTHER LEARNING RESOURCES:

https://www.youtube.com/watch?v=FYT-vpQpniY https://www.youtube.com/watch?v=ObKHkYYgPrs

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Understand the needs and importance of ophthalmic history taking.	2,3							
2	Explain the concept of visual acuity and its important components.	4,6,8							
3	Evaluate objective and subjective refraction techniques.	6,8							
4	Assessment of accommodation and identify the anomalies.	6,8							
5	Demonstrate proficiency in prescribing add power, calculating add and near power.	4,6,8							

				STER – III								
<b>Course T</b>				CULAR DISE								
Course co	ode	24BOPT2102R	Total credits:		L	T	P	S	R	O/I	F	C
			Total hours:		2	0	0	0	0	0		2
Pre-requ		COMPULSORY Co-requisite Nil										
Program			Bachelor of Optometry									
Semester Course	•	1. To impart an u	ndorstanding o	Third	rciolor	ricol	progr	20000	undo	rlyin	α	
Objective	29	ocular disease.	ilderstallding o	i tile patilophy	SIOIO	gicai	proce	esses	unae	119111	g	
o o jecu v		<ol> <li>By better understanding these processes, participants can better recognise diseas</li> </ol>									se s	tates
		3. Identify progression of disease.										
CO1		Describe the classif	ication and etio	ologies of vario	us dis	eases	s of th	e lids	and	lacrir	nal	
	_	apparatus	reactor and erro	riogres or vario	as an	Case	, 01 11	io mas	una	140111	1141	
CO2	,	Identify clinical fea	tures and treatn	nents for diseas	ses of	the c	onjur	ctiva	and s	sclera		
CO3	,	Understanding the	clinical features	and plan of tre	eatme	nt for	corn	eal di	sease	s.		
CO4		Demonstrate the eti									ateg	gies.
CO5		Describe the clinica				of cata	aract a	and G	lauco	ma.		
Unit-No.		Content		Contact Hour				Outco			K	KL _
		EASE OF THE LID	-					e dise	ase o	f		
		RIMAL APPARA		-		nd lac	rimal					
		finition		appa	ıratus							
I		ology		6							1,2	2,3,5
		assification										
		nical features										
		restigation &treatment			<b>*</b>	- 1			.•			
		EASE OF THE CO					njunc		and			
		SCLERA- finition			-		differ		a			
II	_	ology	6	types of disease associated with it.					u	1 2	2,3,5	
11		ology assification		U	With it.						1,4	,5,5
		nical features										
		estigation &treatment	nt .									
		EASE OF THE CO			Lear	n ab	out co	rnea	and th	ne		
		finition						ated v				
		ology		_								
III		assification		6							1,2	2,3,5
	• Cli	nical features,										
	• Inv	estigation &treatmen	nt									
	DISI	EASE OF THE IRIS	S-		Lear	n abo	out iri	is and	its			
	• De	finition			disea	ase.						
IV		ology		6							1 2	2,3,5
1 4	• Cla	assification		U							1,4	,5,5
	• Cli	nical features										
		estigation &treatment										
		ARACT AND GLA	UCOMA-					tarac	t and			
		finition			glau	coma	ι.					
V		ology		6							1,2	2,3,5
		assification									,-	, ,=
		nical features										
	• Inv	estigation &treatme	nt									

T1: Comprehensive ophthalmology by A K Khurana

# **REFERENCE BOOKS:**

R1: Clinical Ophthalmology-A. K. Khurana., Hand Book Of Ophthalmology-B. C. Chattterjee. And Clinical Ophthalmology-J. Kanski.

### **OTHER LEARNING RESOURCES:**

https://www.youtube.com/watch?v=RtpjJg20FwQ

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Describe the classification and etiologies of various diseases of the lids and lacrimal apparatus	2,5						
2	Identify clinical features and treatments for diseases of the conjunctiva and sclera.	6,8						
3	Understanding the clinical features and plan of treatment for corneal diseases.	2,5						
4	Demonstrate the etiology and classification of iris diseases and their treatment strategies.	6,8						
5	Describe the clinical features and treatment measures of cataract and Glaucoma.	5,8						

			SEMESTER	– III							
Course T	itle	IN	STRUMENTATIO		INVI	ESTIC	GATI	ON I	Ī.		
Course co	ode	24BOPT2105R	<b>Total credits: 3</b>		L	T	P	S	R	O/F	C
			Total hours: 30T+3	30P	2	0	2	0	0	0	2+1=3
Pre-requi	isite	COMPULSORY	COMPULSORY Co-requisite Nil						•		
Program	me		Bachelor of Optometry								
Semester				Third							
Course		1. Learn various met	hods and techniques	to asses	s the	degre	e of s	quint	and u	nderst	tand
Objective	es	and implement subjective and objective refraction procedures for correcting									
		refractive errors.									
		2. Gain knowledge of the concepts, working principles, and applications of different optometric instruments									
			ciency in using adva	nced ont	omet	ric ins	strum	ents to	conc	luct	
		comprehensive ey		need op			, , , , , , , , , , , , , , , , , , , ,	ones e	Come		
CO1		Describe various me		to access	s the	degree	e of sc	uint			
CO2	1	Understand and imp	lement subjective an						res fo	r refra	ctive
		errors correction		1 -			0 11 2	,			
CO3			ept, working princip	le and ap	pplica	ation c	of diff	erent	opton	netric	
CO4		instruments. Explain various met	hode and instrument	s for the	meas	llrem	ent of	IOP 4	and wi	\$1191 f	ield
		abnormalities.	nous and modument	, ioi tile	meas	, a1 C1110	ont OI	101 6	ana vi	ouul I	1010
CO5		Demonstrate the app	olication of advanced	optome	tric i	nstrun	nents	for co	mpre	hensiv	ve eye
		examinations.		•					1		,
Unit-No.		Conten	t	Conta	ct	Lea	rning	g Out	come		KL
				Hour	•						
	MO		1	Learn	abou	t squ	iint a	ınd			
	• Co	• Cover and uncover test.			i	its asse	essme	nts.			
	• ma	ddox wing to assess h	eterophoria								1.0
I	ASS	ASSESSMENT OF DEGREE OF									1,2,
1	SQU	SQUINT-									3,4, 5
	• Pri	Prism bar test.									J
	• Kr	imsky test.									
	_	noptophore tests.									
II		FRACTIVE ERRO				Learn		RE	and	its	2,3,
	_	ective and objective r		6		correct		1			4,5
		TAILED STUDY OF THE INCIPLES OF OPERATION, TYPES,				Know			·		
		ICAL PROPERTIE	·		1 -	princip		_	_	es	
		STRUCTION, ADJ				of diff		• •			2.2
III	APP	LICATION OF TH	E FOLLOWING		(	ophtha	mmc 1	mstful	ments	•	2,3, 4,5
		TRUMENTS AND D	DEVICES-								4,3
		chymeter		6							
		L master ecular microscopy									
		OMETER-			1	Learn	ahor	t diff	arent		
						ypes I				eld	
		<ul><li>Principles,</li><li>Types</li></ul>				assessi		,10	110		
	• .	NICAL IMPORTAN	ICES AS			200000					
		ROUTINE PROCEDURE PERIMETER-									2 2
IV	• Ba	sics of perimetry		6							2,3, 4,5
	• Ty	-									1,5
		erpretation of normal	glaucoma field of								
		inition.									
		nsler grid test									
	• Co	nfrontation test									

		OVANCED INSTRUMENTS OF		Know about the	
	OF	PTOMETRY-		principles of instruments.	
v	• F	Ultrasonography (a-scan-b-scan) - principles and application.  F.F.A- principles and demonstration of film	6		2,3, 4,5
		Optical coherence tomography			
		Slit lamp examination		Learn about the	
	2.	Keratometer, Ophthalmoscope		procedure of different	
Practical	3.	Tonometer, Devices for color vision testing, Auto perimeter- normal HFA,	30	types of ophthalmic instruments.	1,2,
		printout, A-scan: - normal print out		mstruments.	3,4,5
		&analysis, B-scan: - normal print out			
		&analysis			

T1: Optics & refraction-L. P. Agarwal

### **REFERENCE BOOKS:**

R1: Introduction to visual optics, Alan H. Tumadiffe(1987)

R2: Clinical optics- 2nd ed (1991)- A. R. Elington &H. J. Frank

R3: Optics & refraction-L. P. Agarwal.

R4: Clinical optics-Borrish

### OTHER LEARNING RESOURCES:

https://www.youtube.com/watch?v=8MFvQE2BfBI https://www.youtube.com/watch?v=sXsl0HOX79s

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Describe various methods & techniques to access the degree of squint	2,4,6,8
2	Understand and implement subjective and objective refraction procedures for refractive errors correction	4,6,8
3	Understand the concept, working principle and application of different optometric instruments.	4,6,8
4	Explain various methods and instruments for the measurement of IOP and visual field abnormalities.	2,4
5	Demonstrate the application of advanced optometric instruments for comprehensive eye examinations.	2,4

			SEMESTER -	· III							
Course	Title		PATHOLOGY AN	ID M	ICRO	BIOL	OGY				
Course	code	24BOPT2103R	Total credits: 2	L	T	P	S	R	O/F	C	
			Total hours: 30 T	2	0	0	0	0	0	2	
Pre- req	uisite	Compulsory	Co-requisite				N	il			
Progran	nme		Bachelor of Optometry								
Semeste	er		III semester of second	d year	r of th	e Pro	gramn	1e			
Course		1. To prepare the st	udents to gain essentia	l kno	wledg	e abou	it the b	oacteria	a, viruses,	fungi	
Objectiv	ves	and parasites.									
		_	nowledge of the princ	iple o	of ster	ilizatio	on and	disinf	ection in		
		hospital and oph	•								
			sic principle of diagno	stic o	cular ı	microb	oiology	d. Pat	hology of		
		various eye parts									
CO	L		cell structure, classific	ation,	stain	ing re	actions	and i	method of		
		sterilization of bacte									
CO2			l morphology and its in	_			anifest	ations.			
CO3			e and function of the im								
CO4			cute inflammation chan								
CO5	•		ce of infection, immun	•	nogen	esis, ai	nd disc	order of	f growth to	)	
T7 *4			analyze infectious dise		4 4	1 ,	г (			TZT	
Unit- No.		Conte	at .		ntact our	]	Learm	ng Ou	tcome	KL	
INU.				<u> </u>							
			PART- A: MICROB	IOLC	)GY						
		TERIA:							ate and		
		STRUCTURE-				_		cterial			
		nentary idea about cla	assification and			stru	cture a	nd gro	wth.		
		phological basis.	1								
		NING REACTIONS	<b>):</b>								
		n staining,									
	•	re staining, I fast staining.									
I I		TERIAL GROWTH	•								
	_	ritional requirements,	•								
		sical factor affecting	culture media and		6					1,2,	
	-	vth curve.			Ü					3,4	
_	_	MENTARY IDEA A	BOUT							- ,	
		TERICIDAL AGEN									
		nol, alcohol.									
	• Steri	ilization (principles, t	ypes &methods).								
	PAST	EURIZATION. AN	TIBIOTICS:								
	• Bact	teriostatic and bacteri	cidal effects.								
	VIRU	S:									
	• Elen	nentary knowledge of	f viral- morphology,								
		l genome and classifi	cation,								
		l replication.									
	_	besviruses,									
	_	atitis viruses,									
		cellaneous viruses,									
1	• Hun	nan immunodeficienc	y viruses.								

	MICROBIAL GROWTH & DEATH-		Describe, and explain	
	• Laboratory culture, host pathogen interactions,		microbial growth	
	antimicrobial chemotherapy,		iniciobiai giowni	
	Pathogenic mechanisms common to external			
-	ocular infections process –clinical pathology.	(		1,2,
П	Treatment & epidemiology of infectious	6		3,4
	diseases caused by bacteria, virus, fungi &			
	parasitic organisms with emphasis to disease			
	with ocular manifestations & infectious eye			
	diseases in hot climate as in India.			
	• Aids & eye	LOCV		
III	PART B PATHOD STRUCTURE & FUNCTION OF	LOGY	Describe and explain	I
111			Describe, and explain	
	IMMUNE SYSTEM –		immune system.	
	• Structure and function of thymus,			
	SPLEEN & RED BONE NARROW-			
	• Immunity& its types,			
	Plasma proteins & immune reaction,			
	• Cells involved in immune system.			
	Humoral immunity theories of antibodies			
	formation.	6		
	• Structure & function of lymph nodes.			1,2
	Structure & function of thymus, spleen & red			
	bone marrow. Nonspecific immunity,			
	Antibody mediated immunity,			
	Specific immunity,			
	Cell modified immunity,			
	Active immunity,			
	Passive immunity.			
	THE ACUTE INFLAMMATORY		Describe, and explain	
	REACTION –		inflammatory reaction.	
	Changes in acute inflammation,			
	• Changes in the calibre of the blood vessels,			
	<ul> <li>Changes in blood flow,</li> </ul>			
***	Changes associated with exudation.			1.0
IV	• Local sequel of acute inflammation.	6		1,2
	• The chemical mediators of acute inflammation.			
	• Role of the mast cell in inflammation.			
	• Role of the platelets in inflammation.			
	• Chronic inflammation—cause, classification,			
	general features			
	SOURCE OF INFECTION-		Describe, and explain	
	• Transmission of organisms to the body.		source of infection and	
	Wound infections.		immune pathogenesis.	
	Wound infections.     Wound healing.		minume patriogenesis.	
V	IMMUNE-PATHOGENESIS –	6		1,2
•		U		1,4
	Type I, II, III & IV hypersensitivity.  Machanism of autoimmunity.			
	Mechanism of autoimmunity.  Occupants and if it is a superconduction of the control of the			
	Organ specific & non-organ specific auto			
	immune disease.			

The Hla system histocompatibility complex.		
Pyogenic & bacterial infection. gralt		
rejection- basic outline.		
DISORDER OF GROWTH -		
Metaplasia,		
• Dysplasia,		
Neoplasia.		
• Circulatory disturbances – thrombosis,		
infarction, ischemia,		
• Embolism.		
• Degeneration(calcification).		

T1: Ocular microbiology by PK Mukherjee.

### **REFERENCE BOOKS:**

R1: Textbook for microbiology by PC Trivedi.

# OTHER LEARNING RESOURCES:

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Discuss about the cell structure, classification, staining reactions	1.0						
1	and method of sterilization of bacteria and viruses	1,8						
2	Understand the viral morphology and its impact on ocular	6,8						
_	manifestations.	0,0						
3	Discuss the structure and function of the immune system.	1,8						
4	Explain about the acute inflammation changes along with their	6,8						
4	causes and features.	0,0						
	Understand the source of infection, immune- pathogenesis, and							
5	disorder of growth to diagnose, treat, and analyze infectious	1,8						
	diseases.							

	SEMESTER – III										
Cours	e Title		BASIC ACC	CLIMAT	IZIN	NG SI	KILL	S			
Cours	se code	24UULS2101R	Total credits: 1		L	T	P	S	R	O/F	С
			Total hours: 30	)P	0	0	2	0	0	0	1
Pre-re	equisite	Nil	Co-requisite	9				N	Vil		
Progr	amme	Bacl	helor of Critical	and Inte	ensiv	e Car	e Tec	chnol	ogy		
Semes	ster		II semester of se								
Cours	se	1. To impart knowle	dge of the fund	amentals	of I	Hospi	tality	indu	stry a	nd its	
Objec	tives	applications.									
		2. Students will be ab				_			& Ut	ensils.	
		3. Students will be ab					vatio	ns.			
	<b>O</b> 1	Students will have bas									
	02	Students will gain the					_	Room	S.		
	03	Students will be able t	~				_				
C	04	Students will be able to	to acquire the kno	owledge	of ba	sic ho	ouseh	old's	amen	ities for	day-
	~=	to- day use.				1 0					
C	<b>O5</b>	Students will develop	an understandi	ng of pe	rsona	al fina	ancıa	l mar	agem	ent and	
T 1 *4	I	budgeting skills.		C4	4		T		0-4-		TZT
Unit- No.		Content		Contac Hour	ı		Leai	rning	Outc	ome	KL
	Introd	uction to Accommoda	tion			Expla	ains	the to	echnic	ques of	
	Manag	gement			accor	nmod	lation	mana	gement.		
	• Telep	ohone handling techniqu	ie								
I	• Orga	nizing of Rooms.		7							1,2
1	• Clear	ning agents.	,							1,2	
		ning equipment's and us									
		0 1 1									
		making Process.  mentals of Cooking				Intro	ducas	the f	ından	nentals	
		nition of cookery–Aim	& Objectives of							efficient	
	cook	•	x Objectives of			and s					
II		nig. of basic Cooking equipr	nant's	5							1,2,3
		onal Hygiene and Safety									
		of Fire & Fuels	<b>/</b>								
		ds of Cooking				Illust	rates	diffe	rent i	nethods	
		erent Cuts.				of co					
Ш		of Herbs and Spices.		5							1,2,3
		Food and Beverage Pr	eparation.								-,=,=
	Regional food Habits										
		& Format's				Expla	ains a	nd ill	ustrate	es	
	• C –fo	orm				vario	us foi	mats	of wr	iting	
	• Rese	rvation form		_		forms	s like	reser	vation	١,	1,2,3,
IV	• Regi	stration form		8		passp	ort, e	tc.			4
	• Passp	oort Application form L	egal Rent								
	Agre	ement									

	Introduction to Accommodation		Explains the techniques of	
	Management		accommodation management.	
	Telephone handling technique			1 2 2
V	Organizing of Rooms.	5		1,2,3, 4,5
	Cleaning agents.			4,5
	Cleaning equipment's and uses.			
	Bed making Process.			

T1: Arora K (2011). Theory of cookery, Frank brothers & company (pub) pvt ltd-New Delhi.

T2: Bruce H. Axler, Carol A. Litrides (2010) Food and Beverage Service Volume 1 of Wiley Professional Restauranteur, Guides.

#### **REFERENCE BOOKS:**

R1: Mohammed Zulfikar (2010) - Introductions to Tourism and Hotel Industry Introduction to Tourism and Hotel Industry. Vikas Publishing.

R2: Sudhir Andrews (2013) Food and Beverage Service: A Training Manual, Tata McGraw Hill, 2013

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Students will have basic knowledge of cooking methods.	PO1
2	Students will gain the knowledge of organizing & Cleaning of	PO6
	Rooms.	100
3	Students will be able to gain the travel management concept.	PO7
4	Students will be able to acquire the knowledge of basic	PO5
	household's amenities for day- to- day use.	103
5	Students will develop an understanding of personal financial	PO8
	management and budgeting skills.	108

			SEMESTER – III									
Course	e Title		BASIC DIGITAL	LITER	RAC	Y						
Course	e code	24UDL2101R	Total credits: 1	L	T	P	S	R	O/F	С		
			Total hours: 30P	0	0	2	0	0	0	1		
Pre-re	quisite	COMPULSORY	Co-requisite				NIL	1	ı	1		
Progra	mme		Bachelor of Op	tometi	ry							
Semest	ter		Third									
Course	)	1. To identify and analyse	computer hardware, s	oftwar	e and	their	uses.					
Object	ives	2. To use MS-Office suite	• •									
		<b>3.</b> To use the Internet effic	iently for required inf	ormati	on as	well a	s for	digital				
		financial transactions										
CO		Understanding of Compute					ndling	Ţ.				
CC		Apply MS-Office to solve b										
CC		Operate the Internet, social				ciently	and e	thical	ly.			
CC		Analyse the cybercrimes or	0 1 1									
CC	)5	Explore the functionality an	nd use of credit cards,									
Unit-		Content		Conta			earnii	0		KL		
No.	Б 1	. 1 . 6		Hou	ır		utcon					
I		umentals of Computer System inponents of a Computer an				Learn				1 0		
		ferent Types of Computers an		6		Fundamentals of Computer Systems				1, 2		
II		luction to MS-Office	are their applications.			Learn			S			
111		omponents of the MS-Office suite. reating documents with MS-Word. reating Presentations with MS-PowerPoint.				Introduction to			S-			
						Office				2.4		
										3,4		
		eating Spreadsheets with MS										
III		luction to Internet & Cyber \				Know	ahou	t tha				
111		oduction to Computer Netwo				Intern						
		rld Wide Web, Websites and				World		Jyour				
		wsing.	web portais, web	World								
		b Searching, Search engines,	Introduction to	6								
		ogle Search Engine; How to		O					1	,2,3		
		words, topics of Interest, etc	-									
		ation and use of Email Accou										
	Crir		-									
IV	Introd	luction to social media:				Learn	about	socia	1			
	• The	Power of social media, Rele	evance of social			media	l			2.2		
		lia in present scenario.							1	,2,3		
		ating accounts and using som	* *	6								
		lia portals and Apps like Wh tter, Instagram, LinkedIn.	aisripp, Pactook,									
		ial Media Etiquettes.										
V		al Payments				Learn	abou	t Digit	al	1		
		oduction to Digital Payment				Paym	ents	-				
		ating accounts and using Dig	-	6						1,2		
		tems like Credit Cards, Debi king, UPI	t Cards, Net									
	Daill	Kilig, OI I										

T1: Sinha Pradeep K. and Priti Sinha. Computer Fundamentals: Concepts Systems & Applications. 3rd ed. New Delhi: BPB Publications.

T2: Goel, A, 2010. Computer Fundamentals, Pearson India.

#### **REFERENCE BOOKS:**

R1: Bala guru swamy, E. 2009 Fundamentals of Computers, Tata McGraw-Hill Education.

R2: Bala guru swamy, 2014. E. Fund Of Comp & Programming (Updated Ed Sem. I, Au) Tata McGraw-Hill Education.

R3: Lawson, C. 2022. Introduction to Social Media, Oklahoma State University.

#### OTHER LEARNING RESOURCES:

https://www.w3schools.com

https://edu.gcfglobal.org

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Understanding of Computer Hardware, Software and Computer handling.	PO7, PO6					
2	Apply MS-Office to solve basic information Management issues.	PO6					
3	Operate the Internet, social media and e-commerce sites efficiently and ethically.	PO8					
4	Analyse the cybercrimes on digital payments application.	PO6					
5	Explore the functionality and use of credit cards, debit cards, net banking, and UPI.	PO8					

		SEM	ESTER – III								
Course	Title	E	XECUTIVE E	NGLIS	H						
Course	code	24UBPD2101R Tota	l credits: 1	L	T	P	S	R	O/F	С	
			l hours: 30P	0	0	2	0	0	0	1	
Pre-rec	quisite	COMPULSORY	Co-requisite				NIL				
Progra		I	Bachelor of Opt	tometr	y						
Semest	er		Third								
Course Objectives		Enhance Grammar: To teach of 2. Understand Non-Verbal Cues meanings. Improve Discussion group discussions.	<ol> <li>Develop Writing Skills: To help students write clear paragraphs and applications. Enhance Grammar: To teach correct preposition use and active/passive voice.</li> <li>Understand Non-Verbal Cues: To provide knowledge on body language types and meanings. Improve Discussion Skills: To equip students to effectively engage in group discussions.</li> <li>Apply Communication Skills: To prepare students for real-world writing and</li> </ol>								
CO	71	Demonstrate proficiency in writing	na etructured pai	ragranh	e and	form	al annli	catio	ne		
CC		Learn the use of prepositions and	-								
CC		Identify and interpret various type						.551 V C	VOICC	•	
CC		Initiate, participate in, and summa									
CC		Apply writing, grammar, non-ve						sion	skills	in	
		real- world contexts.		, au 1011,		,roup	<b>G15 C G</b> 2	.51011	0111110		
Unit- No.		Content	Contact Hour	U					K	L	
I	Grami i. Use	mar of Prepositions Tag questions	5	5 Learn about Grammar					1,	2	
II	Gram i. Ac		5	Learn about Grammar					1,2	2	
Ш	i. The	ng Skills e Basics of Writing; avoid ambiguit I vagueness ragraph Writing Resume, CV and Coter	5					T .	1,2	2	
IV	Self-N ii. SV	Management Skills WOT Analysis oal Setting Personal Hygiene	5	Learn Mana					1,	2	
V	Non-Body i. Wha Comn ii. Typ iii.Imp iv.Typ Lan v. Bod	Verbal Communication-Sciences of Language at is Non-Verbal nunication & Body Language, es of Body Language, ortance and Impact of Body Language sof Communication through Body guage, y Language Do's and Don'ts, Doubaring Session.	ge, y	Learn about Non- V Communication- Scie of Body Language					1,2	2	
VI	Group i. Imp ii. Pla iii. Eff	Discussion (Theory) portance, nning, Elements, and Skills assesse fectively disagreeing, Summarizing aining the Objective.		Learn about Planr Elements, and S 5 assessed					1,2	2	

- T1: Lata, P., Kumar, S. (2015). Communication Skills, Second Edition. India: Oxford University Press.
- T2: Barrett, Grant. 2016. Perfect English Grammar: The Indispensable Guide to Excellent Writing and Speaking, Zephyros Press.
- T3: McDowell, Gayle Laakmann. 2008. Cracking the Coding Interview (Indian Edition).

#### **REFERENCE BOOKS:**

- R1: Zinsser, William. (2006) On Writing Well: The Classic Guide to Writing Nonfiction, Harper Perennial IIK
- R2: Lacinai, Antonio. (2016) Understanding Body Language: 51 gestures and what they signal, Books on Demand

#### OTHER LEARNING RESOURCES:

https://www.thoughtco.com/what-is-nonverbal-communication-1691351

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Demonstrate proficiency in writing structured paragraphs and formal applications.	5							
2	Learn the use of prepositions and convert sentences between active and passive voice.	6							
3	Identify and interpret various types of body language and their meanings.	8							
4	Initiate, participate in, and summarize group discussions effectively.	8, 7							
5	Apply writing, grammar, non-verbal communication, and group discussion skills in real- world contexts.	7							

			SEMESTER –	IV								
Course T	itle		Conta	ct lens-I								
Course co	ode	24BOPT2201R	Total credits:3	L	T	P	S	R	O/F	C		
			Total hours: 30T+30P	2	0	2	0	0	0	2+1=3		
Pre- requ		COMPULSORY	Co-requisite				Ni	il				
Program			Bachelor o		try							
Semester		fourth										
Course		1. To perform a basic contact lens (CL) history and examination, and to be aware of										
Objective	es		ests and questions that ar	e required	for C	L pat	ients	with 1	more			
		complex needs.	C.1 1	<b>C</b>	1		11	.1				
		-	f the optical properties of							C		
		contact lenses.	aterials, patient selection,	, and indic	ations	and o	contra	ınaıc	ations	OI		
			fitting and assessing soft	enhorical	and an	horio	ol DC	D cor	atoot 1	oncoc		
		•	tion and removal procedu	•	•							
			ntact lens care and mainte		icung	шро	ıtanı	WOIK	ups, ai	iu		
CO1		<u> </u>	acturing methods, designs		fits of	conta	ct len	ses o	ver sp	ectacle		
CO2			lens optics and back vert			Comu		5000	ver sp	ectacio.		
CO3			•			conta	act lei	ns an	d its			
		Describe the classification, selection of materials for the contact lens and its associated contraindications										
CO4		Discuss about contact lens fitting and assessment.										
CO5		Understand and implement of the push-up test and Taco method in the fitting and										
		assessment of soft contact lenses.										
Unit-		Cor	ntent	Contact	t Learning					KL		
No.				Hour		C	Outco	me				
			F CONTACT LENS-				out th		tory,			
		ontact lens history &	-		design, benefits of							
		enefit of cl over spec			con	tact l	ens.					
I		asic designs of conta										
		xygen Permeability	• • • • • • • • • • • • • • • • • • • •	6						1,2		
		ransmissibility (Dk/t)										
		anufacturing method										
		it-lamp examination	TISE OF CONTACT		Illu	ctroto	abou	t tha				
		NS-	TISE OF CONTACT				CL a		80	1,2		
п		ontact lens optics.		6	_		stance		30	1,2		
		ack vertex calculatio	n.			culation						
		& tear film lens sys										
		<u>.</u>	RIA OF CONTACT		Dis	cuss o	& exp	lain a	bout			
	LE	NS-					ificati					
	• C	assification of cl &	FDA classification of	6	mat	erials	, indi	cation	ns and	1,2,5		
Ш	co	ontact lens					licatio					
	• M	aterial of contact ler	ns.									
	• Pa	ntient selection ⪯	screening.									
	• In	dication and contra	indication of cl									

	CONTACT LENS FITTING AND		Explain and demonstrate	
	ASSESSMENT-		about the different	
	Soft spherical cl fitting & assessment and		types of CL and also	
IV	maintenance	6	its fitting and	
	Spherical RGP cl fitting &assessment		assessments.	1,3,4,5
	Soft and RGP contact lens insertion and			
	removal procedure.			
	SOME IMPORTANT WORKUP-		Demonstrate about the	
V	• Push up test.	6	different workup of CL.	
v	Taco method of soft contact lens	0		1,3,4,5
	Total cl care and maintenance.			
	CL designs		Demonstrate about the	
Practical	Examination of slit lamp for CL fitting			1,2,
Fractical	Soft & RGP CL fitting & removal	30		3,4,5
	• Care of CL			

T1: Textbook of contact lenses by R Sinha and V.K DADA

### **REFERENCE BOOKS:**

R1: Contact lens primer by Monica Chaudhury

### OTHER LEARNING RESOURCES:

https://youtu.be/0pPVkAcwp7Q

	CO PO Mapping								
SN	Course Outcome (CO)	<b>Mapped Program Outcome</b>							
1	Discuss the manufacturing methods, designs and benefits of contact lenses over spectacle.	3,5							
2	Understand contact lens optics and back vertex calculations.	6,8							
3	Describe the classification, selection of materials for the contact lens and its associated contraindications	5,8							
4	Discuss about contact lens fitting and assessment.	3,5							
5	Understand and implement of the push-up test and Taco method in the fitting and assessment of soft contact lenses.	6,8							

		SEMEST	TER – IV										
Course '	Title	OC	ULAR DIS	SEASE -	II								
Course	code	24BOPT2202R Tot	al credits:	2	L	T	P	S	R	O/F	C		
		Tot	al hours: 3	30T	2	0	0	0	0	0	2		
Pre- req	uisite	COMPULSORY	Co-requ	isite		ı		Nil					
Program	nme	Bac	helor of O	ptometr	y								
Semeste	r	IV semester of	second ye	ar of the	pro	grar	nme						
Course		_	e patho physiological processes underlying ocular										
Objectiv	ves	-	ter understanding these processes, participants can better recognize										
		• 1	disease states and identify progression of disease.										
		2. This course deals with ocular dise		•	•			•	_	_			
		3.It covers clinical signs and sympto			-				-				
~~		approach, differential diagnosis an								es.			
COI		Understand anomalies of vitreous ar				d im	plica	tions	of it				
CO2		Discuss congenital and developmen			ına.								
CO3		Understand anomalies and injures of				1 C							
CO4		Understanding various type of visua			sion	aere	ect.						
CO5	1	Discuss about the various types of N	_										
Unit-		Content	Contact	]	Lear	ning	g Ou	tcom	e		KL		
No.	DIGE		Hour	D		1	1	1	-4	$\rightarrow$			
		ASES OF THE VITREOUS  IOR: Congenital anomalies, vitreous	Describe and explain about various vitreous abnormalities										
		ties, hereditary vitreo–retinal			diagnosis and management								
I	_	nerations. Vitreous hemorrhage,	6	diagnos	515 a1	iu iii	anag	gemei	Ιί		1,2,		
	_	hment of vitreous humor, vitreous									5		
	surge												
		ASE OF THE RETINA:		Describ	e, il	lustr	ate a	nd ex	plair	ı	1,2,		
		enital & dev, defects, inflammation		various					_		5		
	_	retina (retinitis), retinal vasculitis.		congenital defect, diagnosis									
	oeden	na of the retina. Haemorrhage of the											
	retina	, vascular occlusion, retinal	6	procedures									
II	arterio	osclerosis, retinopathies. Retinal											
	telang	giectasia, degenerations of the retina.											
	Detac	hment of the retina, surgical											
	proce	dures for retinal detachment,											
		ars of the retina, phakomatoses,											
		es of the retina.											
		ASE OF THE OPTIC NERVE:		Describ							1,2,		
	_	enital anomalies. Papilloedema,	6	6 different Congenital anoma							5		
Ш		nmation of the optic nerve (optic-		injuries			-						
		is). Ischemic optic neuropathy, optic		inflamı	natio	on of	the	optic	nerv	e			
	_	ny, tumors of the optic nerve, injuries											
		optic nerve.		<b>D</b> ::							1.7		
		PTOMATIC DISTURBANCES OF AL FUNCTION : Visual field	6	Describ					•	i	1,2, 5		
IV		ts, amblyopia, amaurosis, night	U	about V							J		
"		ness, day blindness, defects in color		amblyo	_			ı colo	r				
		n, malingering.		vision,	man	nger	ıng.						

	<b>NEURO –EYE DISEASE:</b> Evaluation of		Explain about learn about	
	optic nerve disease clinical features of		Evaluation of optic nerve disease	
	optic nerve dysfunction, optic disc		clinical features of optic nerve	
	changes, optic atrophy. Classification and		dysfunction, optic disc changes,	
	causes of optic neuritis, optic neuritis and		optic atrophy, Classification,	
	demyelination Para infectious optic	6	causes and management	1,2,
V	neuritis. Infectious optic neuritis. Non-	6		5
	arteritic anterior ischaemic optic			
	neuropathy, ischaemic optic neuropathy,			
	hereditary optic atrophieskjer syndrome.			
	Behr syndrome, wolfram syndrome,			
	alcohol- tobacco amblyopia. Drug-			
	induced optic neuropathies			

T1: Comprehensive ophthalmology by A K Khurana

### **REFERENCE BOOKS:**

R1: Clinical Ophthalmology-A. K. Khurana., Hand Book Of Ophthalmology-B. C. Chattterjee.

R2: Clinical Ophthalmology-J. Kanski.

### OTHER LEARNING RESOURCES:

https://www.youtube.com/watch?v=RtpjJg20FwQ

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Understand anomalies of vitreous and analyze the causes and implications of it	2,5							
2	Discuss congenital and developmental defects of the retina.	2,6							
3	Understand anomalies and injures of the optic nerve.	6,8							
4	Understanding various type of visual field and colour vision defect.	5,6							
5	Discuss about the various types of Neuro eye diseases.	6,8							

			SEMESTER	– IV							
Course Ti	tle		DISPENS	ING OI	PTIC	CS II					
Course co	de	24BOPT2203R	Total credits: 5	]	1	T	P	S	R	O/F	C
			Total hours: 60T+30	P 4		0	2	0	0	0	4+1=5
Pre-requis	site	Compulsory	Co-requisite						Ni	1	
Programn	ne		Bacheloi	of Opt	omet	try					
Semester				fourth							
Course			of various spectacle fra		_				and d	emons	trate the
Objectives	S	· ·	e frames using the box	•		•					
		· ·	easurements and analyz		_	_			ocal a	ind pro	gressive
			proper alignment and c								
			nique aspects of pediat	_	ensın	ig and	d ass	sess o	ccupa	tional	needs to
001			opriate protective eyew			• 1					
CO1			spectacle frame design					m area	ore		
CO2			ne measurements using easurements and analy							and nre	araggiya
COS		lenses	easurements and anary	ze me m	unig	proce	ess .	IOI DII	ocai a	and pro	gressive
CO4			que aspects of pediatri	c dispen	sing						
CO5			onal needs and suggest				ar a	ccord	inolv		
Unit-		Cont		Contac		Lea					KL
No.		Cont	CIII	Hour		Out		_			
1100	SP	PECTACLE FRAM	IE DESIGN AND	11041	Le				erent o	designs	3
		ITS MATERIAL-						als of		_	
_	• 5	Spectacle frame materials- plastic, metals									1.2.2
I	f	frame types, combination of frames, half-									1,2,3
	e	eye frames, nylon-coi									
	• I	Bifocal lens and its ty	pes Progressive lens								
		PECTACLE FRAM						ıt mea			
		EASUREMENTS A	AND SELECTION			_		e fran		l its	
		ROCEDURE-			se	electio	on p	rocedu	ires.		
		Frame measurements	•								
***		he datum system, Co	omparison of two	10							1 2 2 4
II		system,	f f1	10							1,2,3,4
		Frame selection-fashi									
		conflicting needs, Pricalignment	se, standard								
		Lens selection-ground	drule for selection								
		selection criteria	arate for selection,								
		D & FITTING ME	ASUREMENTS-		Le	earn a	aboı	ıt IPD	and f	itting	
		Facial measurement-t				easur					
		neasuring inter pupil									
111	ι	ising PD ruler,	•	10							2.4.5
III	• N	Measuring monocular	PD,	10							3,4,5
	• N	Measuring near PD									
	• I	Bifocal lens fitting pr	ocess								
	• I	Progressive lens fitting	g process.								

IV	<ul> <li>PEDIATRIC FRAME</li> <li>AND LENS SELECTION-</li> <li>Pediatric dispensing- the changing image of spectacle, age differences.</li> <li>Frame selection-technical criteria, fashion criteria, some tips on selection.</li> <li>Lens selection- technical criteria, communicating with kids,</li> <li>Facial measurements of the kids-PDs, centers, bi-focal.</li> </ul>	10	Learn about pediatric frame selection and lens selections.	3,4,5
V	HOW WE DEALING DIFFERENT TYPES OF CLIET PROBLEMS AND EYE PROTECTION IN DEFFERENT PLACE- Dealing with common client's problems and dealing with the laboratories, hazards in the work place, occupational health safety. EYE PROTECTION IN DEFFERENT PLACE- Industrial eye protection and standards covering eye protection, lens materials & impact resistance Sports eye protection	10	Learn about different client problems and eye protections.	1,2,3,5
Practical	<ol> <li>Datum and boxing system</li> <li>IPD measurement-monocular, binocular and near PD</li> <li>Bifocal lens fitting and progressive lens fitting</li> <li>Pediatric pd and dispensing</li> </ol>	30	Learn the procedure for IPD measurements, also the fitting of lenses.	1,2,3,4,

T1: Brooks & Borish. Systems for Ophthalmic Dispensing. 2nd ed. The Professional Press, 1996.

### **REFERENCE BOOKS:**

- R1: Borish'sclinicalrefraction—I.M.Borish, W.J.Benjamin—W.B.Saundersco.
- R2: Primary care optometry Theodore–Butterworth-Heinemann.
- R3: Clinical procedures in optometry Eskridge, Amos, Bartlett.-J. B. Lippincottco.
- R4: The ocular examination: measurement and findings karlazadmik

#### OTHER LEARNING RESOURCES:

https://www.youtube.com/watch?v=NqR0j-ZGCXg

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Understand various spectacle frame designs and its materials.	1,3,5,8							
2	Demonstrate the frame measurements using the boxing and datum	5,8							
4	system.	3,0							
3	Identify the facial measurements and analyze the fitting process	1,3							
3	for bifocal and progressive lenses	1,3							
4	Comprehend the unique aspects of pediatric dispensing.	5,8							
5	Access the occupational needs and suggest protective eye ware	1,3,5,8							
3	accordingly	1,3,3,0							

			SEMESTER – I									
Course T			CLINICAL OPTICS			1		1		1		
Course c	ode	24BOPT2204R	Total credits: 5	L	T	P	S	R	O/F	C		
			Total hours: 60T+30P	4	0	2	0	0	0	5		
Pre- requ		Compulsory	Co-requisite				Nil					
Program			Bachelor of		etry	•						
Semester	•			ırth								
Course		•	valuate various convergen			•				_		
Objective	es	2. Explain and perform contrast sensitivity and color vision tests, and describe methods for										
			of ophthalmic lens power									
			use of ophthalmoscopy fo					nderst	and the			
			ectromagnetic energy and									
CO1			s of convergence by imple			ous cor	iverge	nce tes	ts			
CO2			rast sensitivity and color v									
CO3			lication of electromagnet									
CO4			ds for the neutralization of						_			
CO5	ı		almoscopy and their appli						undus.			
Unit-		Cor	ntent	Contac	t		Learni	U		KL		
No.				Hour			Outco	me				
		NVERGENCE-				Basics a						
_		omalies of converge	12		onverge		nd its		1,2,3			
I		near point of convergence: raf ruler, pencil				anomalies.				,4,5		
	_	push up test, positive fusional vergence,								, ,		
		gative fusional verge					owledge about colour					
	COLOR VISION AND ITS ASSESSMENT-				Knowledge about colour					1,2,3		
II		Contrast sensitivity and its assessment				vision and different typ						
	• N1	ght – driving glasses		of color vision								
	-	ECEDOMA CNEE				ssessme						
		ECTROMAGNET osmic rays, x-rays an			Basics about							
III			id fight, radar radio-	12	electromagnetic energy.					1,2,3		
1111		aves. aser – introduction, a	unnlications	12						,4,5		
		pes of glares and as										
			OF OPHTHALMIC		K	Cnowled	lae aha	nit				
		NS POWER-	or of minatime			eutraliz				100		
IV		anual and with help	of lensometer	10		ower.	auton	71 10115		1,2,3		
		bjective refraction		12	P	o ,, e1.				,4,5		
					+_							
		ESTIGATION-	'11 1' . '			earn ab	out in	vestiga	tion of			
			papillary distance using		ħ	undus.				1,2,3		
V	_	ruler.		12						,4,5		
			y types and assessment									
		fundus.	1.0 1			. 4		1	<u> </u>			
		Direct ophthalmoscop	•			earn th	_					
	2. Subjective refraction–fogging, clockdial,				ophthalmoscopy, subjective							
Practical	fan, jcc, prism dissociation method, duo chrome, cyclodemia, slit, Refraction.				refractions, also amplitude					1,2,3		
		•		30	of accommodation.					,4,5		
		Measurement of ampl	litude of									
	a	ccommodation.										

T1: Clinical optics and refraction by Andrew Keirl

#### **REFERENCE BOOKS:**

R1: W. B. Saundersco.

R2: Borish's clinical refraction—I.M. Borish, W. J. Benjamin—Primary care optometry – the odore—Butterworth-Heinemann.

R3: Clinical procedures in optometry – Eskridge, Amos, Bartlett.-J. B. Lippincottco.

R4: The ocular examination: measurement and findings – Karlazadmik

#### **OTHER LEARNING RESOURCES:**

https://www.youtube.com/watch?v=FYT-vpQpniY https://www.youtube.com/watch?v=ObKHkYYgPrs

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Evaluate anomalies of convergence by implementing various convergence tests	2,3					
2	Explain about contrast sensitivity and color vision tests	3,4					
3	Understand the application of electromagnetic energy and lasers.	6,8					
4	Describe the methods for the neutralization of ophthalmic lens power	4,6,8					
5	Demonstrate ophthalmoscopy and their applications in the assessment of the fundus.	4,6,8					

		SEMESTER	R – IV						
Course Title MEDICAL PSYCHOLOGY									
Course co	de 24BOPT2205F	Total credits: 1	L	T		S	R	O/F	C
		Total hours: 15 T							1
Pre- requi		Co-requisite	60	4		N	il		
Programn	ne	Bachelo							
Semester	4 7771 1 1 2 6	IV semester of seco						·	
Course		this course is to introd			s to the p	orincip	de dom	iains of	
Objectives		are most relevant to m				مل السوي	41a a 1a a	.:. <b>.</b>	::
		the key areas of psyc s biological but also a			_		ine ba	SIS TOF V	iewing
		lents to the application		_		-	ar nrac	tice of n	nadicina
CO1		eristics of health beh					_		
COI	overall well-being.	cristics of ficartif bell	avioi, ic	ıcıı	nymg pa	шсттѕ	mai co	minoute	<i>,</i> 10
CO2		heories and ways to co	ope up v	vith	the stres	s meth	ods		
CO3		health-enhancing beh		uch	as exerci	ise, nu	trition,	and stre	ess
004		moting overall well-b							
CO4 CO5		ous chronic illness and ychological models, re				hec o	nd thair	r annlias	tion in
COS	patient care and we		CHabilita	шоп	арргоас	nes, a	na men	аррпса	
Unit-	Conte		Contac	et	L	earni	ng Out	come	KL
No.			Hour						
	Behaviour and Health			]	Describe	, and	explain	about	
		Characteristics of health behavior, Barriers			theories and characteristics				
I					of health behavior			1,2	
		health behavior, Theories of health							_,_
	_	havior, Health compromising behavior,							
	Stress and Coping:	noking, Alcoholism and Substance abuse.			Describe	about	vario	18	
	Theories of stress 'Sely	e and Lazarus'.			theories		vario		
		ress and health sources of chronic stress,							
П	Stress related illness- P	ress related illness- PTSD and acute stress							1,2
	disorder, Digestive syst	sorder, Digestive system disorder; coping							
	with stress methods.								
	Health Enhancing Bel	naviour and Pain:			Describe		•		
	Exercise, nutrition, safe	•		] ]	Enhancir	ng Bel	naviour	•	
III	management, Psycholo	-	3						1,2
	pain; Individual differe								
	pain, Types of pain, As	<b>A</b> .		_					
	Chronic illness and man				Describe		_		
IV			3				es and i	its	1.2
	-			1	managen	nent			1,2
				1	Describe	and	explain	1	
							_		
	Rehabilitation: Medica				11			. ,	
			_						
V	Bio-psychosocial and S		3						1,2
	Psychodynamic Model								
	Aspects of rehabilitation	n: Cognitive,							
	Behavioural, Emotiona	l and Psychosocial							
V	Neuropsychological Me Bio-psychosocial and S Psychodynamic Model Aspects of rehabilitation	ventions and Approaches to l and odel, ocial Model m: Cognitive,	3	]	chronic omanagen  Describe  approach	and	explain	l	1,2

T1: Health Psychology

T2: Theory, Research and Practice THIRD EDITION

## **REFERENCE BOOKS:**

R1: David F. Marks - Arles, France

R2: Michael Murray - University of Keele, UK

# OTHER LEARNING RESOURCES:

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Explain the characteristics of health behavior, identifying patterns that contribute to overall well- being.	1,6,8					
2	Understand stress theories and ways to cope up with the stress methods	1,8					
3	Identify the role of health-enhancing behaviors such as exercise, nutrition, and stress management in promoting overall well-being	6,8					
4	Discuss about various chronic illness and its management	1,6,8					
5	Evaluate various psychological models, rehabilitation approaches, and their application in patient care and well-being.	1,6,8					

		SEMESTEI	R – IV						
Course T	itle	OCULAR I	PHARM	ACO	LOGY	7			
Course co	ode 24BOPT2206R	Total credits: 2	L	T	P	S	R	O/F	C
		Total hours: 30 T	2	0	0	0	0	0	2
Pre-requi	site Compulsory	Co-requisite				N	il		
Programi	ne	Bachele	or of Op	tome	try				
Semester	I	V semester of seco	ond year	r of th	ne prog	ramn	ne		
Course	1. This course will he	elp in learning abou	ıt differe	nt typ	es of di	ugs th	ey wo	rk, and ho	ow they
Objective	s are used to treat di	fferent medical cor	nditions	relate	d to ey	e.			
	2. This course will al	so help in learning	about th	e effe	cts of o	drugs	on the	body, inc	luding
	potential side effec	ets and interactions	s with oth	ner me	edicatio	ons.			
	3. This course will he	elp to understand th	he routes	of oc	ular dr	ug adı	ministr	ation and	l
	differentiate between	een various dosage	e forms u	sed ir	ophth	almic	pharm	acology.	
CO1	Discuss the general co	ncept of pharmacol	logy and	facto	rs in m	odifyi	ng dru	g dose	
CO2	Comprehend general p		pharma	colog	y, inclu	iding	various	s dosage	forms
	and routes of ocular dr								
CO3	Describe the use of var							11 '	1
CO4	Understand the mechan	nism of action of ea	ach class	of the	rapeuti	c agei	nts in a	adressing	cocular
CO5	disorders Explain sympathomim	etics symnatholyt	tics nara	symr	athom	imetic	s and		
	parasympatholytics in					micuc	o, and		
Unit-	Content								
No.			Hour				O		
	GENERAL PHARMACO	DLOGY-		D	escribe	, and e	xplain	about	
	General concept of phar	General concept of pharmacology			neral p		_		
I		Factors modifying drug dose			•		0.		1.0
	Pharmacodynamics								1,2
	Pharmacokinetics	•							
	Routes of drug administ	Routes of drug administration							
	PRINCIPLES OF OCUL	AR		D	escribe	, abou	t ocula	ır	
	PHARMACOLOGY-			pharmacology.					
II	General principles								1,2
	Dosage forms		6						
	Routes of ocular drug a	dministration							
	DRUGS USED IN MAN			D	escribe	, and	explai	n basics	
	OPHTHALMIC DISEA				drugs		_		
	Mydriatics				hthaln				
	• Miotics								
	Antibiotics								
III	Drugs for glaucoma-dru		6						1,2
	hypertension, drugs that								
	aqueous outflow, inhibi secretion	tors of aqueous							
	Anti-inflammatory agent	ite							
	Topical anesthetics	its							
	OTHER SPECIFIC AGE	ENTS-		D	escribe	, and	explair	about	
	• CNS stimulants	~			her spe		_		
	CNS depressants				P	• (	6		
	Anticoagulants								
IV	• Diuretics		6						1,2
	Cardio vascular drugs								
	<ul><li> Cardio vascurar drugs</li><li> Histamines and antihistar</li></ul>	mines							
	<ul><li>Prostaglandins</li></ul>								
L	- 110stagrandins								1

	PANTOMIMIC DRUGS-		Describe, and explain	
	<ul> <li>Sympathomimetics</li> </ul>		pantomimic drugs.	
${f V}$	<ul> <li>Sympatholytics</li> </ul>	6		1,2
	<ul> <li>Parasympathomimetics</li> </ul>			
	<ul> <li>Parasympatholytics</li> </ul>			

T1: K D TRIPATHI: Essentials of Medical Pharmacology. 4th,2003

T2: T S MAUGER & E L CRAIG - MOSBY'S - OCULAR DRUG HANDBOOK

# **REFERENCE BOOKS:**

R1: Zimmerman: Text Book of Ocular Pharmacology, 1999.

R2: Bartlett and Jaanus: Clinical Ocular Pharmacology.

R3: S P RANG, M M DALE, RITTER – Pharmacology, Ed.3 Churchill 1995.

#### **OTHER LEARNING RESOURCES:**

https://www.youtube.com/watch?v=8-Qtd6RhfVA

https://www.slideshare.net/pooranachithraflowry/introduction-to-pharmacokinetics-and-

pharmacodynamics-principles

https://www.youtube.com/watch?v=6erefsWCVxg

 $\underline{https://www.slideshare.net/UmasankarKrishnamaraju/drug-distribution-40685564}$ 

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Discuss the general concept of pharmacology and factors in modifying drug dose	1,6,8					
2	Comprehend general principles of ocular pharmacology, including various dosage forms and routes of ocular drug administration	1,8					
3	Describe the use of various drugs in the management of ocular diseases	6,8					
4	Understand the mechanism of action of each class of therapeutic agents in addressing ocular disorders	1,6,8					
5	Explain sympathomimetics, sympatholytics, para sympathomimetics, and parasympatholytics in the context of ocular pharmacology.	1,6,8					

SEMESTER – IV												
Course 7	Course Title BASIC LIFE SAVING SKILLS (BLSS)											
Course	code	24UULS2202R	Total credits: 3	L	T	P	S	R	O/F	C		
			Total hours: 45T	3	0	0	0	0	0	3		
Pre-requ	ıisite	compulsory	Co-requisite		•		Nil					
Program	ıme		Bachelor of (	Optomet	ry							
Semeste	r		four	th								
Course		1. To learn and der	nonstrate essential Basic Lit	fe Suppo	ort (BL	S) tec	hnique	s for as	ssisting	g in		
Objectiv	es	medical emerge	ncies before professional he	lp arrive	es.							
		2. To enhance com	munication, teamwork, and	conflict	resolu	ition sl	kills to	impro	ve			
		personal and pro	ofessional interactions.									
			the Triage system, recognize				_	e, and o	classify	У		
			al emergencies to prioritize p				•					
CO1	-	-	espiratory arrest/ cardiac arr	rest, and	provid	le oxy	gen to	the pat	ients to	0		
		sustain tissue viabi	•									
CO2			lity to perform the important	ce of ear	ly CPI	R on A	dult, c	hild an	d infar	nts		
·		victims.						•				
CO3			sic steps to relive choking for									
CO4			ury from getting worse, aidi	ng recov	ery, re	enevin	g paın	and pro	otectin	g		
COF			the victims from deterioration.									
CO5		Learn about the fire	e equipments requirements,	methods of operation and getting out aliv								
Unit-No.		Co	ontent	Contac				_	KI	L		
				Hour			utcom					
I		ic Life Support (BI	S)				vill Kno					
			duction of BLS				c life s	upport				
		nain of survival								2		
		BCs Assessment	n 1 '	9					1,	2		
	• Cl	PR and Ventilation T	ecnnique									
			children									
П		noking for adult and	Cilitaten		Stud	lante v	vill be	able to				
11		olden rules of First a	id	9	Students will be able learn about first aid				3,	1		
		rst aid Kits	iid		icari	ii abbu	it ilist t	ara	<i>J</i> ,	7		
III		uma emergencies			Stud	lents w	vill lear	rn				
		troduction		about the trauma								
			proach in pre- hospital care			rgenci						
		cene safety				Ü						
	b) P	rimary assessment								4		
	c) E	Bleeding control		9					3,	4		
-		Extrication of victims	s and safe transfer									
	e) (	Cervical spine stabili	zation and C- collar									
		pplication										
f) 3		plinting of broken L	imbs									
IV		age system				lents w						
		troduction					the tri	iage				
		ow chart approach o	· ·	9	syste	em			1, 2	2, 3		
			Iultiple Casualties in Pre-									
	Н	ospital setting										

V	Medical emergencies		
	• Introduction		
	• Victim centered approach and Management of: -		
	a) Seizures		
	b) heart attack	9	1, 2, 3
	c) asthma		
	d) diabetic emergencies		
	e) emergency childbirth		
	f) Respiratory distress and failure		
VI	Environmental Emergency		
	<ul> <li>Recognizing and caring for heat related illness</li> </ul>		
	such as: Heat stroke, heat cramps, heat		
	exhaustion, dehydration.	2	1, 2, 3
	<ul> <li>Recognizing and caring for cold related illness</li> </ul>		
	such as frostbite, hypothermia.		
	• Poisoning, Snake bite.		
VII	Safety of people in the event of fire		
	<ul> <li>Recognition of possible fire sources and</li> </ul>		
	emergency procedures, construction techniques		
	for eliminating fire.		
	• Types of detecting devices and extinguishing	2	1, 2, 3
	agents and systems. Devising procedures in the		
	event of fire and react to fire danger.		
	• Safety goals and objectives, Identifying hazards		
	and risks		

- T1: Nancy Caroline'S Emergency Care in the streets eight edition by Jones and Bartlett
- T2: First Aid book by LC Gupta; Publisher Jaypee Brothers, 7th Edition.
- T3: Advance Cardiovascular life support and Basic life support provider manual @ American Heart Association(AHA)
- T4: Nancy Caroline'S Emergency Care in the streets eight edition by Jones and Bartlett
- T5: First Aid book by LC Gupta; Publisher Jaypee Brothers, 7th Edition.
- T6: Advance Cardiovascular life support and Basic life support provider manual @ American Heart Association(AHA)

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Able to recognize respiratory arrest/ cardiac arrest, and provide oxygen to the patients to sustain tissue viability.	5,7,8					
2	Understand the ability to perform the importance of early CPR on Adult, child and infants victims.	5,7,8					
3	Demonstrate the basic steps to relive choking for responsive and unresponsive victims	5,7,8					
4	Able to prevent injury from getting worse, aiding recovery, relieving pain and protecting the victims from deterioration.	5,7,8					
5	Learn about the fire equipments requirements, methods of operation and getting out alive.	5,7,8					

			SEMESTER – IV							
Course	Title		PERSONAL FIN	IANC	IAL I	PLAN!	NING			
Course code		24UUFL2201R	Total credits: 1	L	T	P	S	R	O/F	C
			Total hours: 30P	0	0	2	0	0	0	1
Pre-rec	quisite	Compulsory	Co-requisite				Nil			
Progra	mme		Bachelor of O	)ptom	etry					
Semest	er		fourt	h						
Course	)	1. To create awareness	among students about t	the nee	ed for	posses	ssing fi	nancial	literacy	y
Object	ives	education.								
		2. Identification of mon	ey as a working asset.							
		3. Impart the ability to r								
CC	)1	Understand the importar		_	ınd pr	epare f	inancia	l plans	and	
CCC	22	budgets and plan and ma			·· ··	, .	4	. 1.1	•	
CC	)2	Understand the need and utilities.	i various kind of bankii	ng ins	titutic	ons' ins	trumen	t and th	eir	
CC	)3	Describe the importance	of insurance services a	as soc	ial sec	curity r	neasure	es.		
CC		Learn to manage the mo				20110) 1	110 010 011 0			
CC	)5	Understand the Transfor	•		-					
Unit-		Content		Contact			Learning		K	IL
No.				Ho	ur		Outco			
		duction:						l Know		
		aning, need and important	ce of Financial				t Mean	_		
		racy;					portanc			
		Different components of Financial Literacy;			2	of Fi	nancial	Literac	У	
I	• Pren	Prerequisites of financial literacy;							1	, 2
_		avings – Meaning and Difference between							1	, 2
	savi	ings and investment;								
		es of Financial Institution								
	^	vided - Banking and Non-								
		ferent investment avenues								
		icial Planning:	C C 1				ents wil			
		aning, need and importanc	e for financial				to learn			
	_	nning,				Finar	icial Pla	anning		
		nomic needs, balancing b	etween economic							
		d and resources;	.:-1		_					
II		ee pillars of investments-		1:	2				3.	, 4
		lgeting and its importance								,
	_	os involved in Financial P	-							
	•	paration of personal bud								
		budget deficit, avenue	_							
	^	olus, sources for meeting								
		ormal Society funds and crowd funding				1				
		ounts; formalities to open					ition of			
		Ferent types of Post Office	-			mone	y			
		urring deposit, savings, to	-							
Ш		an Vikas Patra; Monthly I	ncome scneme (MIS)	13	2					, 4
		ount,	DDE/ C :							
		lic Provident Funds (I	• 1							
		ngs scheme (SCSS),	Sukanya Samriddhi							
	Acc	ounts,								

	<ul> <li>Indian Postal Order; International Money transfer service; Forex Services;</li> <li>Money remittance services; Jansuraksha Scheme.</li> </ul>			
IV	<ul> <li>Insurance - As financial service provider:</li> <li>Different types of Risks and their Management, Diversification of risk;</li> <li>Meaning, need and importance of Insurance; Types of Insurance – Life Insurance, Health Insurance, General Insurance, Term Insurance,</li> <li>Pension and retirement policies;</li> <li>Post office life insurance schemes, Postal life insurance and rural postal life insurance.</li> </ul>	10	Students will understand the Different types of Risks and their Management	1, 2, 3
V	<ul> <li>Transformations in Digital Money market:</li> <li>Various functions &amp; innovative services of Banks; Mobile Banking, NEFT, IMPS, RTGS,</li> <li>Money transfer, Different types of cards- Debit &amp; Credit, E-Banking, Unified payment interface (UPI),</li> <li>Credit Scoring - CIBIL, Digital Banking, crypto currency and related transactions, Fintech, Block chain; Understanding Digital Payments.</li> </ul>	2	Students will understand the Transformations in Digital Money market	4, 5

- T1: The Young Adult's Guide to Financial Success- How To Manage Your Money& Live Better On Less By Edward M. Wolpert
- T2: Financial Freedom with Financial Control by Jagmohan Singh Pendown Press
- T3: The Richest Man in Babylon (Deluxe Hardbound Edition) by George S. Clason ixia Press Garden City, New York, Ships from and sold by MG BOOKS.
- T4: Financial literacy to financial planning by Dr. Purvi Kothari and Mr. Keyur Mehta Nexus Publications Surat Gujarat
- T5: Ernst & Young's Personal Financial Planning Guide: Take Control of Your Future and Unlock the Door to Financial Security by Ernst & Young, Robert J. Garner, Robert B. Coplan, Barbara J. Raasch, Charles L. Ratner

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
	Understand the importance of financial Knowledge and prepare						
1	financial plans and budgets and plan and manage personal	5,7,8					
	finances.						
2	Understand the need and various kind of banking institutions'	578					
4	instrument and their utilities.	5,7,8					
3	Describe the importance of insurance services as social security	579					
3	measures.	5,7,8					
4	Learn to manage the money and debt more effectively.	5,7,8					
5	Understand the Transformations in Digital Money market.	5,7,8					

	SEMESTER – IV											
Course	Title	PERSONALIT	TY DEVELOPM	ENT SK	KILL	FOR	EMP	LOY	ABIL	ITY		
		(CON	IMUNICATIVE	ENGL	ISH	& SOI	FTSK	ILLS	)			
Course	code	24UBPD2201R	<b>Total credits: 2</b>		L	T	P	S	R	O/F	C	
			Total hours: 60		0	0	4	0	0	0	2	
Pre-req		Compulsory Co-requisite Nil										
Progra		Bachelor of Optometry										
Semest		fourth										
Course			1. To enable the students for effective presentation.									
Objecti	ives	2. To presentations to		-		_	_				e.	
		3. To boost their confi	<u>~</u>							_		
CC		It will prepare the learn									ers.	
CC		It will have a positive i	*	<u> </u>		•			_			
CC	<b>J</b> 3	It will enable students	to prepare a profe	ssıonal r	esun	ne and	preser	it thei	mselve	es in an		
	24	effective manner	1.1. o. 1		1241	of (1	~4c- 1	.4				
CC		It will boost the leaders								CC at !-		
CC	JS	It will enable students manner	to prepare for inte	aview an	iu pro	esent t	nemse	ives 1	n an ei	necuve	5	
Unit-		Content		Conta	et	Ιρ	arnin	OT.			KL	
No.		Content		Hou			ıtcom	_			IXL	
1100	Presen	tation Skills		1104	_		duction		kills			
		ntroduction				111010						
I		Essential characteristics of ago presentation								1	1,3,5	
		aration of ago of present	•									
	Public	Skills				Learı	ı abou	t publ	lic skil	ls		
		of Public Speaking,										
		erstanding and Overcom	ing Fear of									
		ic Speaking, fidence and Control,										
II		for Presentations and Pu	blic Speaking,	8						1	1,3,5	
		for Using Visual Aids in										
		vering Presentations Suc	• .									
	• Dou Poin	bt Clearing and Summar	y of Main									
	1 011											
		cal session on Resume, (						_	paratio			
		g cover letter& Linked l aration, submission& scr						& sci	reening	g of		
	Resu		eening of			Resu	me					
III		tical session on cover let	er screening	8							1,3,5	
	sessi	session										
	Creating profile in LinkedIn											
		to utilize it rship & Management Ski	11 _c			Knor	v abov	ıt Cor	conta	of		
		rsmp & Management Ski cepts of Leadership	112				v abot ership	u COI	cepts	OI		
		lership Styles				Lead	стыпр					
IV	• Man	ager VS Leader		10						1	1,3,5	
		to be an Effective Lead	er									
	• Dou	bt Clearing Session.										

	Interview Skills & Dress code Ethics		Learn about interview skills	
	Types of interviews- telephonic, virtual &			
	face to face			
	Online interview, personal interview			
	Panel interview			
	Group interview			
	Types of interview questions-			
	traditional/common interview question			
$\mathbf{v}$	General Strategies for answering questions,	10		1,3,5
•	• Preparation before the interview,	10		1,3,3
	How to dress up for an interview,			
	How to maintain eye contact and positive			
	body language			
	• Interview do's and don'ts,			
	• Introduction to Dress Code Ethics,			
	Purpose and Importance			
	What to Wear During Interview Any Other			
	Formal Meetings –Male& Female			

T1: Wren ,P. C and Martin ,H. 1995. High School English Grammar and Composition, S Chand Publishing.

T2: Barrett, Grant. 2016. Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speaking, Zephyros Press.

#### **REFERENCE BOOKS:**

R1: Patil, Shailesh. (2020) Handbook on Public Speaking, Presentation & Communication Skills: Principles& Practices to create high impact presentations & meaningful conversations, Notion Press

R2: Weiser, Ryan, (2021)Winning Interview: An Ultimate Guidebook of Tricks, Strategies and Tipson Interview Preparations and Answering Questions to Getthe Job You Want!: 1 (Job Interview), Charlie Creative Lab Ltd Publisher

#### **OTHER LEARNING RESOURCES:**

- https://www.youtube.com/watch?v=YY2yjEEoB3U
- <a href="https://www.youtube.com/watch?v=ADJAcyTq1us">https://www.youtube.com/watch?v=ADJAcyTq1us</a>

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	It will prepare the learners to speak with greater	579					
1	control and charisma in front of others.	5,7,8					
2	It will have a positive impact in the thought process	579					
<u> </u>	and problem-solving skills.	5,7,8					
3	It will enable students to prepare a professional	579					
3	resume and present themselves in an effective manner	5,7,8					
4	It will boost the leadership and management qualities	5.7.9					
4	of the students.	5,7,8					
5	It will enable students to prepare for interview and	579					
3	present themselves in an effective manner	5,7,8					

			SEMESTE	ER – V	V						
Course T	itle	В	INOCULAR VISIO	ON A	ND O	CUL	AR M	OTILI	TY		
Course co	ode	24BOPT3101R	Total credits: 3		L	T	P	S	R	O/F	С
			Total hours: 30T+	-30P	2	0	2	0	0	0	3
Pre- requ	iisite	COMPULSORY	Co-requisite					NIL	,		
Program	me	Bachelor of Optometry									
Semester		V semester of third year of the Programme									
Course		This subject provides a conceptual and practical framework for understanding and									
Objective	es	examining the sensory and motor processes that mediate binocular vision. Students									
		study the anatomical, physiological and optical principles underlying normal eye									
		movements and single binocular vision.									
		2. An understandi	ng of how the coord	linatio	on of t	he eye	s may	be mo	dified	by	
		accommodation	n and associated acco	commo	odatio	n/conv	ergen	ce rela	tionsh	ips is	
		acquired. Throu	igh this, students are	e led t	o disc	uss the	e diag	nosis a	nd ma	nageme	ent
			lar conditions relate			phoria	, strab	ismus,	ambly	yopia aı	nd
			and convergence d								
			ntal orthoptic proced								
			ular vision and for the	he dia	ignosi	s and i	measu	rement	t of oc	ular	
		motility disorde									
		4. Provides essential knowledge and skills that forms a foundation for further studies in									
001		this area of orthoptic practice.  Explain about binocular vision and its grades.									
CO1		•					., .		•	1	
CO2			arious anomalies of	binoc	ular v	ision,	its inv	estigat	ions a	na	
CO3		management.	Describe the diagnosis and treatment of the anomalies of convergence & accommodation.								
CO3		Discuss convergence insufficiency and other reading difficulties.									
CO4			natomy & physiolog						ite fun	otions	
Unit-		Conten		Con		Cuiai		arning			KL
No.		Conten		Ho			Le	ar mng	Oute	ome	KL
110.	CR/	ADES OF BINOCU	II AR VISION:	110	uı	Desc	rihe a	nd exp	lain al	2011t	
		ultaneous perception						•			1,2,
		copsis advantages of		6		grades of BV, Corresponding point and normal retinal					3
I		responding point and			U	correspondance, diplopia test					
		espondence;					- F	,	rr		
		siological diplopia s	tereoacuity tests.								
		OCULAR DEFE	· ·			Desc	cribe,	illustra	te and		
	anise	ometropia, treatmen	t; Binocular			expl	ain va	rious 1	oinocu	lar	
	optio	cal defects; Aniseiko	onia symptoms;			optio	cal def	ects, c	ause,		
11	Clin	ical investigation; T	reatment			diffe	rentia	l test a	nd		2,3.
II	bino	cular muscular co-o	rdination,	6	5	man	ageme	ent			4
	orth	ophoria, binocular v	ision; Causes of								
	muse	cular imbalance – ex	xophoria,								
		horia, hetrophoria, c									
		COMMODATION						nd lear			2,3.
		NVERGENCE AN					-	ype of	_		4
III	-	ptoms of heterophor		(	6			of het		ria &	
		oismus &treatment	-					strabisr	nus		
	disso	ociated vertical diver	rgence.			&tre	atmen	t.			

	THE RELATION BETWEEN ACCOMMODATION AND		Describe, illustrate and explain about the relation	
	CONVERGENCE AND OTHER		between accommodation and	
IV	READING DIFFICULTIES:	6	convergence and other	2,3.
1.4	Insufficiency of convergence;		reading difficulties, prismatic	4
	Convergence through a spectacles lens;		effect of spectacle, treatment	
	Prismatic effects in			
	Spectacle lenses.			
	<b>EYE MOVEMENT:</b> The orbit anatomy		Explain and learn about the	
	of the extra-ocular muscles. Intractive		anatomy of EOM,	
	dynamics & orbital mechanisms and	6	physiology of ocular	
$\mathbf{v}$	neurophysiology; Physiology of ocular	U	movement	2,3.
•	movement – basic kinematics; Ocular			4
	movement-			
	monocular movement & binocular			
	movement			
	1.Demonstration of following orthoptic		Describe, explain, evaluation	
	instruments/method and their uses-		and apply different	
	Prism bar, synoptophore, Maddox		orthoptics evaluation, squint	
	wing, Maddox rod, red green		evaluation, accommodative	
Practical	goggles, raf gauge, flipper	30	evaluation. Discuss	
	2.Orthoptic investigative-		about different case studies.	1,2,
	Accommodative evaluation; squint			3,4,
	evaluation			5
	3.Case records			

T1: Clinical Management of Binocular Vision 5th Edition 2020 by Mitchell Scheiman

# **REFERENCE BOOKS:**

R1: Modern System of Ophthalmology Disorders of Cornea and Ocular Surface 2020 By AK Khurana

## OTHER LEARNING RESOURCES:

https://www.youtube.com/watch?v=K3txN1Kv0CU

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Explain about binocular vision and its grades.	2,3,5,8					
2	Discuss about the various anomalies of binocular vision, its	5,8					
	investigations and management.	3,0					
3	Describe the diagnosis and treatment of the anomalies of	3,5					
3	convergence & accommodation.	393					
4	Discuss convergence insufficiency and other reading difficulties.	5,8					
5	Explain the gross anatomy & physiology of extra ocular muscles	3,5					
	and its functions	3,3					

			SEMESTI	ER – V	V						
Course Ti	itle	LOV	W VISION AID AN	ND VI	SUAI	REH	ABIL	TATI	ON		
Course co	ode 24	BOPT3102R	Total credits: 3		L	T	P	S	R	O/F	C
			Total hours: 30T-	+30P	2	0	2	0	0	0	3
Pre-requis	site   C	OMPULSORY	Co-requisite	e	NIL						
Programm	ne	Bachelor of Optometry									
Semester		V semester of third year of the programme									
Course		1. The main objective of this program is to give the optometrist a basic understanding of									
Objective	S	low vision and to assess and examine the low vision patients. Prescribing low vision									
	1	devices for better visual function.  2. It is important to assist in counselling and rababilitating the law vision patient.									
		<ul><li>2. It is important to assist in counselling and rehabilitating the low vision patient.</li><li>3. This course deals with general and ocular physiological changes of ageing, common</li></ul>									
	3.		-			_		-	-	-	
		-	c and ocular disease aspects of ageing a					ın geri	atric p	anemis	,
	4		deals with the defin	_		_	_	Limnai	rment	tynes	of
	1		es, art of prescribing					_			
		other rehabilitation	•	5 10	1101011	GC 1101	os una		g the j	patroni	o una
CO1	Ex	plain low vision, i	ts grades and causes	s							
CO2			es of optical & non-		al devi	ices.					
CO3	Ap	Apply the knowledge and skills to do clinical examination by using low vision devices.									
CO4	Pro	Proficient in assessing low vision patients, prescribing suitable devices and provide									
		unseling for impro									
CO5	Ex	Explain and apply vision rehabilitation services to low vision patients.									
Unit-		Conten	t	Cont	tact		Lear	ning (	Outcor	me	KL
Unit- No.				Cont							KL
		NITION: Old, ne	w, proposed,				ibe and	d expla	in abo	out	KL
No.	grade	NITION: Old, ne	w, proposed,	Ho	ur	defini	ibe and	d expla	in abo	out	
	grade: epide:	NITION: Old, ne s of low vision, sta	w, proposed, atistics / between disorder,		ur	defini	ibe and	d expla	in abo	out	<b>KL</b> 1,2
No.	grades epides impai	NITION: Old, ne s of low vision, sta miology, relation b rment & handicap	w, proposed, atistics / between disorder,	Ho	ur	defini	ibe and	d expla	in abo	out	
No.	grades epides impai • Cau	NITION: Old, ne s of low vision, stamiology, relation the terminal transfer of low vision	w, proposed, atistics / between disorder, ped	Ho	ur	defini grade	ibe and tion ar s of LV	d expla id caus	nin abo	out	
No.	grades epides impai • Cau LOW	NITION: Old, ne s of low vision, stamiology, relation the trment & handicaptes of low vision VISION OPTIC	w, proposed, atistics / between disorder, ped	Ho	ur	defini grade	ibe and tion ar s of LV	d expland caus	ses of	out LV,	
No.	grades epides impai • Cau LOW MAG	NITION: Old, ne s of low vision, stamiology, relation terment & handicapuses of low vision VISION OPTICENIFICATION-re	w, proposed, ntistics / petween disorder, ped  S- lative distance /	Ho	ur	defini grade Descr explai	ibe and tion are s of LV	d explaid caus	ses of a	out LV,	
No.	grades epides impai • Cau  LOW MAG relativ	NITION: Old, ne s of low vision, stamiology, relation be rement & handicaptes of low vision VISION OPTICE INIFICATION-refer size/ angular/electors	w, proposed, atistics / between disorder, ped  S- lative distance / betrooptical	Ho	ur	Descr explain optical	ibe and tion ar s of LV	d explaid caus	ain abo	but LV,	
No.	grades epides impais • Cau LOW MAG relativ • OP'	NITION: Old, ne s of low vision, stamiology, relation between the control of the	w, proposed, ntistics / petween disorder, ped  SS- lative distance / ectrooptical ISION AIDS —	Ho	ur	Descr explain optical	ibe and tion ar s of LV ibe, ill in varion	d explaid caus	ain abo	but LV,	
No.	grades epides impai • Cau LOW MAG relativ • OP' Galilia	NITION: Old, ne s of low vision, stamiology, relation be rement & handicapeleses of low vision VISION OPTICENIFICATION-reve size/ angular/elean & keplarian teleses of low Vision VICAL LOW Vision Wester Control of the	w, proposed, atistics / between disorder, ped  S- lative distance / betrooptical  ISION AIDS — bescope	Ho	ur	Descr explain optical	ibe and tion ar s of LV ibe, ill in varion	d explaid caus	ain abo	but LV,	
No.	grades epides impais • Cau  LOW MAG relativ • OP' Galilia advan	NITION: Old, ne s of low vision, stamiology, relation between the control of the	w, proposed, ntistics / petween disorder, ped  S- lative distance / ectrooptical ISION AIDS — escope e, spectacle	Ho	ur	Descr explain optical	ibe and tion ar s of LV ibe, ill in varion	d explaid caus	ain abo	but LV,	
No.	grades epides impai • Cau LOW MAG relativ • OP' Galilia advan magni	NITION: Old, ne s of low vision, stamiology, relation be rement & handicapuses of low vision VISION OPTIC ENIFICATION-registree ize/ angular/election and & keplarian telectage/ disadvantage	w, proposed, atistics / between disorder, ped  SS- lative distance / betrooptical ISION AIDS — bescope s, spectacle advantage,	Ho	ur	Descr explain optical	ibe and tion ar s of LV ibe, ill in varion	d explaid caus	ain abo	but LV,	
No.	grades epides impais • Cau  LOW MAG relativ • OP' Galilia advan magnistand	NITION: Old, ne s of low vision, stamiology, relation be rement & handicapuses of low vision VISION OPTICE INIFICATION-region of the size of angular electron of the size of t	w, proposed, ntistics / petween disorder, ped  S- lative distance / ectrooptical ISION AIDS — escope e, spectacle advantage, ge and	6 6	ur	Descr explain optical	ibe and tion ar s of LV ibe, ill in varion	d explaid caus	ain abo	but LV,	
I I	grades epides impais • Cau LOW MAG relativ • OP' Galilia advan magni stand disadvan advan	NITION: Old, ne s of low vision, stamiology, relation be rement & handicapelses of low vision VISION OPTIC NIFICATION-rewe size/ angular/elected and keplarian telestage/ disadvantage/ magnifier-advantage/ wantage, hand held tage and disadvant	w, proposed, atistics / between disorder, ped  SS- lative distance / ectrooptical ISION AIDS — escope e, spectacle advantage, ge and magnifier- eage,	Ho	ur	Descr explain optical	ibe and tion ar s of LV ibe, ill in varion	d explaid caus	ain abo	but LV,	1,2
No.	grades epides impais • Cau  LOW MAG relativ • OP' Galilia advan magni stand disadva advan signifi	NITION: Old, ne s of low vision, stamiology, relation be rement & handicapuses of low vision VISION OPTIC ENIFICATION-reve size/ angular/eleve size/ angular/eleve size/ disadvantage/ disadvantage/ magnifier-advantage/ magnifier-advantage, hand held tage and disadvant icance of equivalent	w, proposed, atistics / between disorder, ped  SS- lative distance / ectrooptical ISION AIDS — escope e, spectacle advantage, ge and magnifier- eage,	6 6	ur	Descr explain optical	ibe and tion ar s of LV ibe, ill in varion	d explaid caus	ain abo	but LV,	1,2
I I	grades epides impai • Cau LOW MAG relativ • OP' Galilia advan magni stand disadvan signifi distan	NITION: Old, ne s of low vision, stamiology, relation be rement & handicapeleses of low vision VISION OPTICE (NIFICATION-rewe size/ angular/elestage/ disadvantage/ disadvantage/ magnifier-advantage/ magnifier-advantage/ and disadvantage and disadvantage and disadvantage and company and held tage and disadvantage and company and held tage and disadvantage and di	w, proposed, atistics / between disorder, ped  SS- lative distance / betrooptical ISION AIDS — bescope e, spectacle advantage, ge and magnifier- bage, at viewing	6 6	ur	Descr explain optical	ibe and tion ar s of LV ibe, ill in varion	d explaid caus	ain abo	but LV,	1,2
I I	grades epides impais • Cau  LOW MAG relativ • OP' Galilia advan magni stand disadvan signifi distan • TEI	NITION: Old, ne s of low vision, stamiology, relation be rement & handicapuses of low vision VISION OPTIC ENIFICATION-reve size/ angular/elected tage/ disadvantage/ magnifier-advantage/ magnifier-advantage and disadvant icance of equivalence & calculations.  LESCOPE- Distantication, stamiology, relation, stamiology, relation between two properties of low vision, stamiology, relation, stamiology, relation, stamiology, relation, stamiology, relation, stamiology, relation, stamiology, relation, stamiology, relation between two properties of low vision by the relation between two properties of low vision by the relation by the	w, proposed, ntistics / petween disorder, ped  S- lative distance / ectrooptical ISION AIDS — escope e, spectacle advantage, ge and magnifier- tage, at viewing  mce/ near, prism/	6 6	ur	Descr explain optical	ibe and tion ar s of LV ibe, ill in varion	d explaid caus	ain abo	but LV,	1,2
I I	grades epides impais • Cau LOW MAG relativ • OP' Galilia advan magni stand disadvan signifi distan • TEI half e	NITION: Old, ne s of low vision, stamiology, relation be ment & handicapeles of low vision VISION OPTICE INIFICATION-re we size/ angular/elestage/ disadvantage/ magnifier-advantage/ magnifier-advantage/ and disadvanticance of equivalence & calculations.  LESCOPE- Distantic of low vision vision of the property of the	w, proposed, ntistics / petween disorder, ped  SS- lative distance / ectrooptical ISION AIDS — escope e, spectacle advantage, ge and l magnifier- tage, at viewing  nce/ near, prism/ ion/ CCTV/	6 6	ur	Descr explain optical	ibe and tion ar s of LV ibe, ill in varion	d explaid caus	ain abo	but LV,	1,2
No.	grades epides impais • Cau  LOW MAG relativ • OP' Galilia advan magni stand disadvan signifi distan • TEI half e magni	NITION: Old, ne s of low vision, stamiology, relation be rement & handicapuses of low vision VISION OPTIC ENIFICATION-reve size/ angular/elected tage/ disadvantage/ magnifier-advantage/ magnifier-advantage and disadvant icance of equivalence & calculations.  LESCOPE- Distantication, stamiology, relation, stamiology, relation between two properties of low vision, stamiology, relation, stamiology, relation, stamiology, relation, stamiology, relation, stamiology, relation, stamiology, relation, stamiology, relation between two properties of low vision by the relation between two properties of low vision by the relation by the	w, proposed, ntistics / petween disorder, ped  SS- lative distance / ectrooptical ISION AIDS — escope e, spectacle advantage, ge and l magnifier- tage, at viewing  nce/ near, prism/ ion/ CCTV/	6 6	ur	Descr explain optical	ibe and tion ar s of LV ibe, ill in varion	d explaid caus	ain abo	but LV,	1,2

	•NON-OPTICAL LOW			
	VISIONAIDS - Larger assistive			
	devices, glare—contrast devices,			
	posture and comfort maintenance			
	devices, hand writing and written			
	communication devices, medical			
	management devices, orientation and			
	mobility devices, sensory Substitution			
	devices.			
	LOW VISION EXAMINATION-		Describe and learn about	
	Task/ goal-oriented history-medical/		different low vision	
	visual/ psychological history/ task		examination, low vision	
	analysis/ mobility/distance vision /		examination tool	
	near vision / daily living/			
	illumination/ work & school.			
III				
	Visual acuity measurement-distance/			1.2
	near/ use of log mar chart (distance			1,2,
	& near)/ lighthouse, picture chart/	6		3,4,
	visual field test/contrast sensitivity/	Ü		5
	overview of glare testing.			
	• Low vision refraction.			
	ASSESSMENT &		Describe, illustrate and	
	PRESCRIPTION OF LOW		explain about assessment &	
	VISION DEVICES-OPTICAL/		prescription of low vision	
	NON-OPTICAL /		devices-optical/ non-optical /	
	REHABILITATION SERVICES-		rehabilitation services	
	Non-optical devices-pen/ typoscope/			
IV	boldline note book/ illumination/			
1				
	letter writing guide/environmental			1.2
	modification/ signature guide/ needle	_		1,2,
	threader/ eccentric viewing	6		3,4,5
	strategies/cane/sighted guide			
	Counseling of low vision patient/			
	parents/guardians/relatives			
	OVERVIEW OF		Explain and learn about the	
	REHABILITATION SERVICES-		definition, implementation,	
	Definition/ implementation/		different of rehabilitation	
	vocational guidance/educational		services. Learn about	
	guidance / mobility & orientation		overview of different low	
	training / special teacher/ special		vision causes diseases	
	school/ braille system /			
₹7	integrated system/referral			
V	center- activity/ support/ loan.			
	Overview of systematic / retinal			
	diseases in relation to low vision: - acro			1,2,
	matopsia/ lmbb syndrome/ labers	6		3,4,5
	congenital anomaly/ down syndrome/			
	retinitis pigmentosa/			
	Diabetic retinopathy/ optic atrophy/			
	albinism/ aniridia			
	aiviiiisiii/ aiiii1UIa			1

Practical	<ul><li>LVA-</li><li>Case history.</li><li>Assessment.</li><li>Application of devices.</li></ul>	30	Describe, explain, evaluation and apply different low vision assessment, application of LVA. Discuss about different case studies	1,2, 3,4,5
	<ul><li>Application of devices.</li><li>Rehabilitation</li></ul>		about different case studies.	

T1: Low Vision Aids Practice 2nd Edition 2007 By Bhootra T2: Low Vision Aids 1st Edition 2010 By Monica Chaudhry

## **REFERENCE BOOKS:**

R1: The art & practice of low vision, by freeman &jose, butterwortpub.

R2: Understanding low vision, afbpublication.

R3: Low vision, by fayeae.e.

## **OTHER LEARNING RESOURCES:**

https://www.youtube.com/watch?v=Sm6d4t873oI

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Explain low vision, its grades and causes	2,3
2	Identify different types of optical & non-optical devices.	7,8
3	Apply the knowledge and skills to do clinical examination by	4.5
3	using low vision devices.	4,5
	Proficient in assessing low vision patients, prescribing	
4	suitable devices and provide counseling for improve quality	2,3
	of life.	
5	Explain and apply vision rehabilitation services to low vision	7,8
3	patients.	7,0

	SEMESTER – V										
Course T			CLINICAL EX	KAMIN	1	1					
Course co	ode	24BOPT3103R	Total credits: 5		L	T	P	S	R	O/F	C
			Total hours: 60T		4	0	2	0	0	0	5
Pre-requ		COMPULSORY	Co-requisite		NIL						
Program				elor of C							
Semester	1		V semester of th								
Course		1. An eye exam helps detect eye problems at their earliest stage — when they're most									
Objective	es	treatable. Regular eye exams give eye care professional a chance to help you correct									
		or adapt to vision changes and provide you with tips on caring for the eyes									
		2. Interpretation o the findings of the various clinical optometry procedures									
		3. This course covers various clinical optometry procedures involving external									
		examination, anterior segment and posterior segment examination, neuropthalmic									
		examination, glau-	coma evaluation.								
CO1		Identify the ocular sy	ymptoms, color vis	sion in c	linica	l setting	gs and	devel	op abi	lity to	
		perform visual acuit									
CO2		Describe various ocu									
	CO3 Describe various ocular structures						nation				
CO4		Recognize technique									
CO5 Unit-	1	Identify the investigation Content		r assessi Conta			Lagra	ina (	)toom		KL
No.		Conten		Hou	l		Leari	nng C	Outcon	ne	KL
110.	ше	TORY OF THE OP	HTHAI MIC	1100	_	Descri	ha and	l avnl	ain ah	out	
						ophtho		_			
		UBJECTS-				_		-			
_		Ocular symptoms				Testing	g, cou	our vi	sion te	esting	
I		ision distance and near									1,2
		sion									
		olour vision- methods	of testing,								
		ificance	TION			ъ.	1 '11		1		
		T LAMP EXAMINA				Descri					
		xamination of eyelids,	conjunctiva and			explain				_	
		lera xamination of cornea		10		of illu			_		
П			141	12		overall eye examination					3,5
		xamination of iris, cili	ary body and								,
	•	ıpil									
		xamination of lens	IDX7			D	1	11	- 1 4	1	
		INICAL OPTOMET olor coding in optome				Descri				-	2,3,
		bbreviation in optome	-			eye ass				uing	5
III		ye related headache	· · · · · · ·	12	2	in opto	•		•		
	-	ry eye assessment test				Abbre	viatio	n in op	otomet	ry	
		xamination of near po									
		ESTIGATION OF				Descri	be, ill	ustrate	and e	xplain	
IV		xamination of intraoci				about				•	1,2,
		xamination of angle or		12		glauco					3,4,5
		ESTIGATION OF						learn a	bout		-, .,-
		xamination of muscle				Explain and learn about differential diagnosis of					
v		irschberg test & krims	skv			squint					
'		erks three steps test.		12							1,2,
		iplopia charting									3,4,5
	י ט	ipiopia charing									

Practical	<ul> <li>Presbyopic add power calculation</li> <li>Writing prescription</li> <li>SOME IMPORTANT         INVESTIGATION-     </li> <li>Paediatric optometry- assessment of</li> </ul>	30	Evaluation and apply comprehensive test of patient like history taking, subjective and objective refraction, paediatric vision assessment	1,2, 3,4,5
	INVESTIGATION-			3,1,3

T1: Clinical Examination in Ophthalmology 2nd edition 2016 by PK Mukherjee.

## **REFERENCE BOOKS:**

R1: Paediatric Optometry, By Jerome Rosner

R2: Vision development, By ILG &Bullis.

R3: Management of special population, by Dominique maino

## **OTHER LEARNING RESOURCES:**

https://www.youtube.com/watch?v=YqL6IMGE5os

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Identify the ocular symptoms, colour vision in clinical settings and develop ability to perform visual acuity testing	2,3							
2	Describe various ocular structures by using slit lamp examination.	4,5,7,8							
3	Describe various ocular structures by using slit lamp examination.	7,8							
4	Recognize techniques for examining intraocular pressure.	7,8							
5	Identify the investigative techniques for assessing squint.	4,5,7,8							

SEMESTER – V																				
Course Title CONTACT LENS II  Course code 24BOPT3104R Total credits: 3 L T P S R O/F																				
Course c	ode 24BOPT3104R Total cred	Total credits: 3 L T P S R							C											
	Total hour	rs: 30T+30	P	2 0	2	0	0	0	3											
Pre-requ	isite COMPULSORY Co-re																			
Program	me	Bachelor of Optometry																		
Semester	V semest	ter of third	l year of tl	he prog	ramm	e														
Course	1.To perform a basic contact len	1. To perform a basic contact lens (CL) history and examination, and to be aware of																		
Objective	es additional basic tests and ques	additional basic tests and questions that are required for CL patients with more complex																		
	needs																			
	2. Recognize various types of fit	ting Identif	fy and man	age the	advers	e effec	ts of	conta	ct											
	lens.																			
	3. The subject provides the stude	ent with sui	table knov	vledge l	oth in	theoret	ical a	and												
	practical aspects of contact ler																			
CO1	Demonstrate various techniques																			
CO2	Discuss in details about extended				sable c	ontact	lense	S.												
CO3	Demonstrate the important steps			orkup.																
CO4	Explain about prosthetic eye fitt	0 1																		
CO5	Discuss various techniques of co	ontact lens	modification	ons.																
Unit-	Content		Contact	ct Learning Outcome				t Learning Outcome				Learning Outcome			Learning Outcome					KL
No.			Hour																	
I	DIFERENT TYPES OF CONTAC					Describe, illustrate and														
	<b>FITTING:</b> Contact lens fitting in						explain about different													
	astigmatism; Contact lens fitting in		6	therap	S	1,2,														
	keratokonus; Contact lens fitting in c					fitting, cl fitting in children,														
	Rgp lenses; Instruction regarding ha and care of lenses; Cosmetic and pro		care and maintenances of cl					Í												
II	SOME MORE BENEFICIAL CON			Describe, illustrate and																
"	LENS AND ITS CONTACT LENS					explain various type of														
	<b>SOLUTION:</b> Extended wear lenses			_		therape														
	wear; Disposable lenses; Contact lens	s-bifocal,	6			_			1,2											
	multifocal; Therapeutic and bondage		U	contact lens, contact lens solution and their composition																
	lenses; Contact lens solutions – princ	ciple of		Solutio	ii aiia t	nen co	inpos	111011												
TTT	action, compositions			D	1 1	1	1	-4												
III	CONTACT LENS IMPORTANTS WORKUP: Writing prescription to the control of the contro					explair		ut												
	for order cl; Checking the parameter			contac		1,2,														
	Follow up examination; Contact lens		6			ameters			5											
	complication and the management.			•		on; con	iplica	ation												
***					anagen															
IV	OCULAR PROSTHETIC:	a	_			ustrate			1,3,											
	Prosthetic eye fitting procedures an conformers	ia	6			prost			4,5											
									,-											
V	CONTACT LENS MODIFICATIO		6	_		ut lear	n ab	out	1,3,											
	Finger lishing; Re-cn(cleaning) of the		U	CL mo	odificat	ions			4,5											
	surface edge; Re-blending the poster periphery; Polishing of the front or b																			
	surfaces	ac K																		
Practical				Descr	be, illu	strate a	ate and													
	2. RGP contact lens fitting					pply ab		:1	1,2,											
	3. Do's and don'ts of contact lens		30	_					3,4,5											
	4. Basic designs of contact lens			fitting and basic cl design.																

T1: Textbook of contact lenses by R Sinha and V.K DADA

## **REFERENCE BOOKS:**

R1: Fitting guide for rigid and soft contact lenses – H. A. Stein, Slatt, M. L. Freeman (Mosby).

R2: Iacle module.

R3: Contact lenses (the clao guide to basic science and clinical practice). – Kenddall/hunt publishing co.

#### OTHER LEARNING RESOURCES:

https://youtu.be/0pPVkAcwp7Q

	CO PO Mapping									
SN	Course Outcome (CO) Mapped Program C									
1	Demonstrate various techniques of contact lens fitting.	3,5,8								
2	Discuss in details about extended wear, daily wear and disposable contact lenses.	3,5,8								
3	Demonstrate the important steps in the contact lens workup.	3,5,8								
4	Explain about prosthetic eye fitting procedures.	3,5,8								
5	Discuss various techniques of contact lens modifications.	3,5,8								

			SEMESTER	R - V									
Course T	itle		BIOS	STATIS	STIC	CS							
Course co	ode	24BOPT3105R	Total credits: 2	L	T	P	S	R	O/F	C			
			Total hours: 30T	2	0	0	0	0	0	2			
Pre-requi	site	COMPULSORY	Co-requisite				N	IL					
Programi	me		Bachelo	or of Op	oton	netry							
Semester		V semester of third year of the programme											
Course		To provide the knowledge about biostatistics and its importance in health sciences											
Objective	es	studies.											
		2. To provides a con	mprehensive concept	of statis	stica	l tools r	elated	to para	medical				
		sciences											
			s with the probability						nal decision	on in			
			tain situation prevaili										
CO1		_	nental concepts of bio	statistic	es, ar	nd meth	ods for	collec	ting prima	ıry			
		and secondary data											
CO2			classification and pre		on te	echnique	es incl	uding	frequency				
			agram, histogram etc										
CO3			Discuss sampling methods and descriptive statistics.										
CO4		Understand conditional probability and analyze normal distribution.											
CO5		Explain the concepts of null hypothesis, types of errors in hypothesis testing and											
T 7 24		statistical tests.	4	C4-	-4	t Learning Outcome							
Unit- No.		Conte	nt	Conta Hou			Learn	ing Ot	itcome	KL			
110.	INT	RODUCTION ABO	NTT	nou	Ľ	Docoril	o and	ovnloi	n about				
		STATISTICS: Vari					Describe and explain about tatistics variable data						
I		lation sample; Paran				calculation, method of data							
1	_	, methods of collecti		6		collection							
		ces of collecting seco											
		SSIFICATION &	·			Describ	e, illu	strate a	and	1,2,			
		DATA: Frequency d				explain about different types							
П		ency polygon; Bar d		6		explain about different types of data; classification, bar							
	Ogiv	e; Percentile &quart	iles.			diagram, histogram							
	DES	CRIPTIVE STATI	STICS-			Describ	e and	learn a	bout	1,2,			
	• D	escriptive Statistics:	Measures of			descrip	tive st	atistics	,	4			
	lo	cation, Measures of	Dispersion,			samplii	ng stati	stics					
III	C	oefficient of variation	on, Introduction to	6									
111	C	orrelation		U									
		ampling statistics: sa											
		mpling distribution,	_										
		rvey-sampling and i											
		BABILITY DISTR				Describ				1,2,			
		sical definition, cond				explain		_	-	4			
	^	ability, probability i				distribu							
IV		bution of random va	•										
		bution: Random Van		6									
		bution, Poisson distribution and their pro-											
	aistri	bution and their proj	perues										

	TESTING OF HYPOTHESIS-		Explain and learn about	
V	<ul> <li>Testing of hypothesis- Null hypothesis, alternative hypothesis,</li> <li>Types of errors</li> <li>Introduction and uses of statistical tests</li> <li>Chi-square test, Student's t-test, F-test etc.</li> </ul>	6	testing hypothesis, types of error, introduction and uses of statistical test	1,2,

T1: Biostatistics, P. N. Arora and P.L. Malhan

T2: Mahajan's Methods in Biostatistics, Mahajan.

T3: Biostatistical Analysis, J. H. Zar

T4: Introductory biostatistics, Chap T. Le. John Wiley, USA

## **REFERENCE BOOKS:**

R1: Fundamentals of Statistics by S.C.Gupta.

R2: Statistical Methods in Biology, N. T. J. Bailey

#### **OTHER LEARNING RESOURCES:**

ERP, Youtube links, Google etc

	CO PO Mapping								
SN	Course Outcome (CO)	<b>Mapped Program Outcome</b>							
1	Explain the fundamental concepts of biostatistics, and methods for collecting primary and secondary data	1,2,8							
2	Discuss the data classification and presentation techniques including frequency distribution, bar diagram, histogram etc.	1,2,8							
3	Discuss sampling methods and descriptive statistics.	1,2,8							
4	Understand conditional probability and analyze normal distribution.	1,2,8							
5	Explain the concepts of null hypothesis, types of errors in hypothesis testing and statistical tests.	1,2,8							

O/F C 0 5
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1,2,
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1,2,
quint. 3,4,5
3,1,5
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$r = \begin{bmatrix} 1,2,\\2,4,5 \end{bmatrix}$
3,4,5
t

	MECHANISMS LEADING TO SQUINT- TYPES OF SQUINT—  • Latent/ manifest  • Horizontal/ vertical paralytic/ concomitant ASSESSMENT OF VISUAL SENSORYSTA TUSINSQUINT.  • Amblyopia  • Suppression  • Binocular single vision— SMP, fusion, stereopsis.  MANAGEMENT OF—  • Convergence insufficiency  • Amblyopia  • Suppression  • ARC  • Use of prism - For exercise & correction	9	Describe, illustrate and explain about clinical, diagnostic and management of squint.	1,2, 3,4,5
V	AMBLYOPIA  • Definition. Neuropathology. Classification. Clinical features. TREATMENT-  • Occlusion.  • Penalisation.  • Role of drugs	9	Describe and explain about the amblyopia.	1,2, 3,4,5
Practical	DEMONSTRATION OF FOLLOWING ORTHOPTIC- Instruments/method and their uses-	30	Describe, demonstrate and explain the orthoptic evaluation.	1,2, 3,4,5

T1: Clinical management of binocular vision by Mitchell schimen

# **REFERENCE BOOKS:**

R1: Theory and practice of squint and orthoptics by A K Khurana

# OTHER LEARNING RESOURCES:

ERP, GOOGLE AND YOUTUBE.

	CO PO Mapping								
SN	Course Outcome (CO)	<b>Mapped Program Outcome</b>							
1	Demonstrate the use of various orthoptic instruments in clinical settings.	2,3							
2	Evaluate the motor signs in squint, understand and implement the methods in assessing the degree of squint.	5,7,8							
3	Demonstrate various types of charts to assess ocular motility status	5,7,8							
4	Determine the visual sensory status of squint and its management.	3,5,7							
5	Discuss the clinical features of amblyopia and its management.	3,5,7							

SEMESTER – VI												
Course	e Title		SYSTEMIC CO	NDITIC	NS A	AND T	THE E	$\mathbf{Y}$	E			
Course	e code	24BOPT3202R	T ( ) )						O/F		C	
			Total hours: 30		0	0	0		0	0		2
	quisite	Compulsory	Co-requisit					Ni	1			
Progra				elor of O	-							
Semest			VI semester of									
Course			1. Describe hypertension and its ocular manifestations, and understand the impact of									
Object	ives	acquired heart disc	•	alogy ale	ogific	notion	and r	mai	nagan	nant of	dial	hotos
		2. Discuss the diagnostic mellitus, emphasiz				zation,	and 1	па	nagen	nent of	urai	betes
		3. Explain the diagr				cation	of th	vro	oid di	isorders	ano	d
		their ocular manif										
		tuberculosis, lepro										
CC		Describe the hyperte										
CO	2	Discuss the diagnosi	s, pathophysiolog	y, classif	icatio	n and i	manag	em	nent o	t diabet	es	
CO	13	mellitus. Understand various	acquired beart dia	eases and	ite in	nnact	n Ave					
CO		Explain the diagnosi	-						cular	manifoo	tatio	one
CO		Discuss tuberculosis	2 '							mainies	tati	J118.
Unit-		Content	s, icprosy, sypiniis	Contact			earni			rome		KL
No.				Hour		_		8	oute			
	ARTE	RIAL HYPERTENS	SION-		D	escribe	e, illu	str	ate a	nd		
		physiology, classifica		ex	kplain a	about l	hyp	perten	nsion.			
I		amination, diagnosis, complications,										1,2
		gement.										
	пурег	tension and the eye										
	DIABI	ETES MELLITUS-				Describe, illustrate and						
		ophysiology, classific				explain about the types, diagnosis, complication and						
п		res, diagnosis, compli	ications,	6								1,2
		anagement.				management of diabetes mellitus.						,
		etes mellitus and the one of the one of the one of the one of the other of the othe		memtus.								
		TRED HEART DISI		D	escribe	illus	tra	te and	1			
		oolism				kplain a				•		
Ш	• Rhe	umatic chart disease		understanding						1,2		
1111		-acute bacterial endoc	arditic.	U		athoph						1,2
	• Hea	rt disease & the eye.				nd prog		of	acqui	ired		
	THYD	OIDDICEACE			_	heart disease.  Describe, illustrate and explain						
		OIDDISEASE- atomy and physiology	of the thyroid			escribe e types				expiain		
	glan		of the thyroid							agement		
IV	_	ssification of thyroid	disease	6		thyroi						1,2
		gnosis, complications				•						,
	feat	ures, management of	thyroid disease									
	_	olving eye.										
		ERCULOSIS-	1.6							l explair	1	
		ogy, pathology, clinica				e types	_			agemant		
		onary tb, diagnosis, conent of Tuberculosis is				complication and management of tuberculosis.						
V	TROI	6		1						1,2		
	• Lepro		<b>_</b>									
	• Syph											
	• Mala											

T1: Manual of Ophthalmology Clinical Diagnosis and Treatment of Eye Disease 2016 by Nema H.V

T2: Parsons Diseases of the Eye, 23rd Edition 2019 By Sihota

#### **REFERENCE BOOKS:**

R1: Clinical ophthalmology – jack j. Kanski (butterworth-heniman)

R2: Systemic disease and the eye - do.

#### **OTHER LEARNING RESOURCES:**

https://www.youtube.com/watch?v=Z6s5-_DocoY

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Describe the hypertension and its ocular manifestations.	2,7,8						
2	Discuss the diagnosis, pathophysiology, classification and management of diabetes mellitus.	2,7,8						
3	Understand various acquired heart diseases and its impact on eye.	2,7,8						
4	Explain the diagnosis, physiology, classification of thyroid and its ocular manifestations.	2,7,8						
5	Discuss tuberculosis, leprosy, syphilis, malaria and its influence on eye.	2,7,8						

			SEMESTER	R – VI						
Course T	itle		CLINICAL EXA	AMINA	TIC	ON OF I	EYE I	[		
Course co	ode	24BOPT3203R	Total credits: 6	L	T	P	S	R	O/F	C
			Total hours: 60T+60I	2 4	0	4	0	0	0	6
Pre- requisite Compulsory Co-requisite			Co-requisite				N	il		
Programi	Programme Bach									
Semester			VI semester of this							
Course			hniques of ophthalmos	copy ar	nd d	levelop	skills	to effe	ctively	
Objective	es	examine the fu								
			apply various clinical in	nvestiga	tion	techniq	ues, ac	curatel	y interp	oreting
		results for ocula	•			1 1:			.•	
			ophthalmological exam			_	ptosis	evalua	ition an	id visual
CO1			and understand their clir				1 .	<u> </u>	- (1	C 1
CO1		<u> </u>	iques of ophthalmoscop							fundus.
CO2			us clinical investigation		_		_			
CO3			ohthalmological examin sual field charting.	nauon t	ecnn	nques, a	ana ae	monst	iale pto	<b>DS1S</b>
CO4			sual field charting. t color codes associated	l with oc	1110r	· disansa	c and t	nadiaa	tions	
CO5			and its relation to the e		urai	uiscasc	s and i	neurea	tions.	
Unit-			atent	Contac	ot .	т	aarni	ng Ou	tcoma	KL
No.		Con	itent	Hour			Aai III	ng Ou	Come	KL
110.	PO	STERIOR SEGN	/ENT	11001		Describe	e. illus	strate	and	
	EXAMINATION-					explain a	•			
		Ophthalmoscopy-direct and indirect				of fundu				
I	1 -	• Examination of fundus								1,2,3,5
		Examination of vitreous								, ,- ,-
	• Ex	examination of optic disc								
		Examination of optic disc								
	CL	INICAL INVEST	FIGATION-		]	Describe	e, illust	rate an	ıd	
	• Ex	camination of lacri	mal system		6	explain t	the FF	A and	OCT.	
	• Ex	camination of the c	orbit							
	• M	acular function tes	t							
	• Co	ontrast sensitivity t	est							
II	IN	<b>TERPRETATIO</b>	N OF FOLLOWING							1,2,3,4,5
	INS	STRUMENTS-		12						
	• FF	FA								
	• O	CT								
	• IC	G								
		ındus photo Hump	•							
			INVESTIGATION-			Describe			out	
III		euro-ophthalmolog	ical examination	12	1	the inves	stigatio	n		1,2,3,5
		• Ptosis evaluation								1,2,0,0
	+	isual field charting	N.Y.			D "1	*11			
		LOR CODING I			Describe, illustrate and					
IV		HTHALMOLGY  ferent color code is		12		explain about colour 1,2,3				
			n ocular diseases n ocular medications	12	'	coding.				
	ווע	Terent color code I	ii ocuiai medications							

	OCULAR INVESTIGATION AND HEADACHE-		Describe, illustrate and explain about headache and	
V	• Introduction of headache	12	ocular investigation.	1,2,3,4,5
	<ul> <li>Headache in relation with eye</li> </ul>			
	Investigation			
	1. Evaluation, diagnosis & optometric		Demonstrate, diagnose and	
	management		evaluate all the management	
	Of children with mental retardation c.p.		of children with special	
	dyslexia, Multiple sensory motor handicaps.		cases.	
	Visual disorders in senior citizens,			
	evaluation, diagnosis.			1,2,
Practical	2. Refraction in special cases (pseudophakia,	60		3,4, 5
	aphakia, irregular corneal astigmatism,			5
	coloboma of iris, choroids, retina,			
	nystagmus, post r.k., prk, lasik, congenital			
	cataract, glaucoma).			
	3. Sports vision.			

T1: Clinical Examination in Ophthalmology 2nd edition 2016 by PK Mukherjee.

#### **REFERENCE BOOKS:**

R1: Paediatric Optometry, By Jerome Rosner

R2: Vision development, By ILG & Bullis.

R3:Management of special population, by Dominique maino

## OTHER LEARNING RESOURCES:

https://www.youtube.com/watch?v=YqL6IMGE5os

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Identify the techniques of ophthalmoscopy and apply the skills in examining the fundus.	2,3							
2	Discuss the various clinical investigations techniques and interpretation of result	4,5							
3	Discuss neuro-ophthalmological examination techniques, and demonstrate ptosis evaluation and visual field charting.	7,8							
4	Describe different color codes associated with ocular diseases and medications.	4,5							
5	Discuss headache and its relation to the eye.	7,8							

		SEMESTER -	- VI								
Course Ti	itle PUE	BLIC HEALTH AND	COM	MUN	NITY O	PTO	METR	Y			
Course co	ode 24BOPT3204R	Total credits: 2	L	T	P	S	R	O/F	C		
		Total hours: 30T	2	0	0	0	0	0	2		
Pre- requi	isite Compulsory										
Programm	me	Bachelor of Optometry									
Semester		VI semester of third year of the programme									
Course	•	1. Identify and differentiate between different levels of health care and explain									
Objective	_	epidemiological concepts of blindness and visual impairment.									
	_	2. Explain various initiative programs aimed at eliminating the causes of avoidable blindness and discuss the components of health economy, including the role of Third									
	Party Administra		or near	ıın ec	onomy	, iliciu	ung m	e roie (	n mira		
		ess of handling ocular e	emerae	encies	and m	anacii	ng diffe	rent tw	nes of		
	eye injuries.	ess of handring ocular c	cilicigo		s and m	anagn	ig diffe	Tent ty	pes or		
CO1	• •	entiate between differe	nt leve	ls of	health a	care.					
CO2	•	niological concepts of b					irment				
CO3		s initiative programs so						voidat	ole		
	blindness										
CO4	Discuss about the	Discuss about the components of health economy and the role of Third-Party									
	· · · · · · · · · · · · · · · · · · ·	Administrators (TPA).									
CO5			ar emergencies in different types of eye injurie								
Unit-	Conte	nt	Conta		L	earniı	ng Out	come	KL		
No.	CONCEDEDE DUDI I		Hour			:11	.44	1			
	CONCEPTOF PUBLIC				Describe, illustrate and explain about Introduction						
I	<ul> <li>Principles of primary, tertiary care.</li> </ul>	secondary and	6		_	lion	1,2				
1	<ul><li>Dimension, determina</li></ul>	nts and indicators of	U		to public health						
	health	ints and marcators or									
	EPIDEMIOLOGY OF	BLINDNESS -	Describe, illustrate and						1,2		
II	Defining blindness an		6		explain about the basic						
	Vision screening	•		pı	principles of epidemiology.						
	VISION2020-			D	escribe	, illus	strate a	ınd	1,2		
	• The right to sight			ex	kplain a	bout t	he visio	on			
III	• NPCB and refractive	blindness-	6	20	020						
	optometrist's leas prin	nary health care									
	provides	rovides									
		EALTH ECONOMICS- Describe, illustrate and						and	1,2		
IV	Health system		6		kplain a		nealth				
	Health care's in service	•	-	ec	conomi	cs					
	TPA (Third Party Ad			-	•1	*11		1	1.0		
	OCULAREMERGE	NCIES –			Describe, illustrate and 1, explain about eye						
	Foreign body     Eve pain				kpiain a nergend		ye				
V	• Eye pain		5		nei gen	168					
	Watering     Injuries perforating of	un manfanatir = 0-									
	• Injuries-perforating, of chemical	on periorating &									
	CHEIIICAI										

T1: Global optometry resources by Brien Holden

## **REFERENCE BOOKS:**

R1: Global optometry resources by Brien Holden

## OTHER LEARNING RESOURCES:

https://www.youtube.com/watch?v=jkq8FDgc8

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Identify and differentiate between different levels of health care.	1,5,7,8							
2	Explain the epidemiological concepts of blindness and visual impairment	1,5,7,8							
3	Explain the various initiative programs sought to eliminate the causes of avoidable blindness	1,5,7,8							
4	Discuss about the components of health economy and the role of Third-Party Administrators (TPA).	1,5,7,8							
5	Explain the process of handling ocular emergencies in different types of eye injuries.	1,5,7,8							

			SEMESTER -	VI								
Course 7	Γitle	P	ROFESSIONAL PRA	CTI	CE M	ANA	GEME	NT				
Course	code	24BOPT3205R Total credits: 2 L		T	P	S	R	O/F	C			
			Total hours: 30T	2	0	0	0	0	0	2		
Pre-requ		Compulsory	Co-requisite				N	il				
Program		Bachelor of Optometry										
Semeste	r	VI semester of third year of the programme										
Course		1. Describe the legal and ethical frameworks governing medical and paramedical										
Objectiv	es	professions, ensuring compliance with professional standards and regulations.										
		2. Explain the fundamentals of accounting principles, practices, and taxation concepts, and discuss the functions and importance of public relations in a healthcare setting.										
			•	•					-	_		
			nplement visual rehabi ssary to facilitate the									
			risually impaired indivi			on pi	ocess, j	promo	illig eye il	eann		
001		**	,			1.		1	. 1 .			
CO1			nd ethical framework go entals of accounting print							sions.		
CO ₂			relations and its functi		s, pra	CHUE	s, and ta	rati011	concepts.			
CO4		•	lement the visual rehab		on ser	vices						
CO5			requirements necessar				eye do	nation	process.			
Unit-		Co	ntent		Co	ntact		Learı		KL		
No.					H	our		Outco	come			
		WS AND OPTOME				Describe, illustrate			ustrate			
I		Laws governing medical and paramedical professions.					and explain about					
•		International optometry					laws a	1,2				
	• Eth		787									
		SIC ACCOUNTANG roduction	Σ <b>Y</b> −					,		1,2		
		nciples of accountanc			and e							
		irnal and ledger			accour	nancy.						
		al balance										
		bsidiary book.										
п		ty cash book.		6								
		les books.		Ū								
		rchase register.										
		ock register.										
		nk reconciliation and	banking procedures									
		lance sheet (profit &lo										
	• Ge	neral ideas about inco	ome tax and sales tax									
		BLICRELATION (F	PR)-				Descri	be, ill	ustrate	1,2		
		finitions					and e	xplain	public			
		-its function from pub					relatio	n.				
III		ernal and external asp		6								
		-analysis, promotion										
		blic relation with pres										
		blic relation with prin					D .	1 '11	44	1.0		
		VISUALREHABILITATION- Rehabilitation services-definition,					Descri			1,2		
IV		plementation-mobility		6	and ex							
			<u> </u>	,	visual rehabitee.					1.0		
$\mathbf{V}$	EY	EBANKING AND E	YE DUNATION			6			d explain	1,2		
							about	eye ba	nking.			

T1: Practice management in optometry by Neil Gailmard

# **REFERENCE BOOKS:**

R1: Optometry practice management by Irving Bennett

# OTHER LEARNING RESOURCES:

https://www.youtube.com/watch?v=ZMQvjJY2IfA

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Describe the legal and ethical framework governing medical and paramedical professions.	5,6,7,8							
2	Explain the fundamentals of accounting principles, practices, and taxation concepts.	5,6,7,8							
3	Discuss about public relations and its functions	5,6,7,8							
4	Understand and implement the visual rehabilitation services	5,6,7,8							
5	Discuss the essential requirements necessary to facilitate the eye donation process.	5,6,7,8							

			SEM	ESTER –	VII							
<b>Course Title</b>		CLIN	NICAL OBS	ERVATIO	ON -I	(HOS	SPITA	L PO	STING	<del>;</del> )		
Course code	24BOPT4101R Total credit		its: 18	L	T	P	S	R	O/F	С		
			Total hour	s:540	0	0	36	0	0	0	18	
Pre- requisite	COMPULS	SORY	Co-re	quisite	NIL							
Programme				Bachelor	of Op	tomet	ry					
Semester			VII semeste	er of fourt	h yea	r of th	e prog	gramn	ne			
Course	The clinica	l observ	ation time p	eriod prov	ides t	he stu	idents	the op	portur	nity to con	ntinue	
Objectives	to develop	confiden	ice and incre	ased skill i	n diag	gnosis	•					
Course	Skills/know	ledge to	be acquired	at the end	of this	cours	se-					
Outcome	Wide academic & clinical exposure to different departments of eye. Receive											
	* *	opportunities to practice independently in outreach camps.										
	Receive sco	pe to lea	arn from reno	owned ophi	halm	ologis	ts and	experi	enced	optometris	sts.	
				Content								
General OPD		1.	50cases	Weekly 1 case report to be submitted								
(History taking	g-DO)											
		10	0 cases	Minimum 3 different case reports To be submitted at the						d at the		
Contact Lens		(5RC	GP+5Soft)	end of the Postings								
Optical		5	0cases	Weekly1	case 1	eport	To be	submi	tted			
Low Vision ca	are Clinic	5	cases	Minimun	n 3 dif	ferent	case r	eports	to be	submitted	at the	
		end of the Postings										
	5cases					Minimum 3 different case reports to be submitted at the						
Binocular Visi	Binocular Vision clinic			end of the Postings								
Ophthalmolog	y clinic			Minimum 3 different case reports to be submitted at th							at the	
(Common eye	conditions)	2	5cases	end of the	e Post	ings						

SEMESTER – VII										
<b>Course Title</b>	Case Report-I									
Course code	24BOPT4102R	Total credits: 4 L T						O/F	C	
Course code	24DO1 14102K	Total hours: 120P	0	0	8	0	0	0	4	
Pre-requisite	COMPULSORY	Co-requisite	NIL	,						
Programme	Bachelor of Optometry									
Semester	VII semester of fourth year of the Programme									
Course Objectives	demonstrate their und articulation. This old	ely and comprehensively doc derstanding and application of bjective emphasizes the dev s, critical thinking, and the ly.	f theo velopi	retica nent	ıl kno of t	owled ooth	ge th writt	rough en and	verbal d oral	
Course Outcome	Students will be able to demonstrate their proficiency in documenting practical experiences and effectively communicate their understanding and analysis of these experiences. This outcome ensures that students not only gain practical skills but also develop the ability to articulate their knowledge and insights clearly and confidently during an oral examination.									

		SEMESTER – VII								
Course Title	OPTOMETRY ETHICS									
Course code	24BOPT4103R	Total credits: 2 Total hours: 60P	L 0	T 0	P 4	S 0	R 0	O/F 0	C 2	
Pre-requisite	COMPULSORY	Co-requisite				NII				
Programme		Bachelor of Opt	ometry							
Semester	V	II semester of fourth year	of the p	rograi	mme					
Course Objectives	<ol> <li>Equip students with comprehensive ethical frameworks and principles essential for professional optometric practice.</li> <li>Develop critical analytical skills to identify, assess, and resolve ethical challenges in clinical settings.</li> <li>Foster a professional ethos that prioritizes patient rights, confidentiality, and ethical decision-making.</li> </ol>									
Course Outcome	<ol> <li>Ethical Reasoning Proficiency: Develop advanced skills in applying ethical principles and theories specific to optometric practice.</li> <li>Professional Integrity Framework: Demonstrate comprehensive understanding of professional conduct standards and ethical responsibilities in clinical environments.</li> <li>Patient Rights and Confidentiality Protection: Implement robust strategies to safeguard patient autonomy, privacy, and confidential medical information.</li> <li>Ethical Decision-Making Competency: Critically analyze complex ethical dilemmas and develop systematic approaches to resolving challenging clinical scenarios.</li> <li>Ethical Leadership in Healthcare: Cultivate a proactive approach to ethical practice that promotes trust, transparency, and patient-centered care.</li> </ol>									

Unit No.	Content Teaching Hours Learning Outcome		Learning Outcome	Blooms Taxonomy
Unit 1	Introduction to Ethics in Optometry	12 hours	Understand the importance of ethics in optometry practice	Remembering
Unit 2	Ethical Principles and Theories	12 hours	Identify and apply ethical principles and theories in optometry	Understanding
Unit 3	Professional Conduct and Responsibility	12 hours	Demonstrate professional conduct and responsibility in clinical settings	Applying
Unit 4	Patient Rights and Confidentiality	12 hours	Uphold patient rights and maintain confidentiality	Analyzing
Unit 5	Ethical Dilemmas and Decision Making	12 hours	Analyze and resolve ethical dilemmas in optometry practice	Evaluating

SEMESTER – VIII										
Course Title	CLI	NICAL OBSER	VATION	V-II	(HO	SPITA	L PO	STING	)	
Course code	24BOPT4201R	Total credits: 1	1	L	T	P	S	R	O/F	C
		Total hours:54	0	0	0	36	0	0	0	18
Pre- requisite	COMPULSORY	Co-requis	site N	IIL.		•		•		
Programme		Ba	chelor of	Opt	tomet	ry				
Semester		VIII semester	of fourth	yea	r of tl	he pro	gramı	ne		
Course	The clinical obser	vation time peri	od provio	des t	the st	udents	the o	pportun	ity to co	ntinue
Objectives	to develop confide	to develop confidence and increased skill in diagnosis.								
Course	Skills/knowledge to be acquired at the end of this course-									
Outcome	Wide academic & clinical exposure to different departments of eye. Receive									
	opportunities to pr	actice independe	dently in outreach camps.							
	Receive scope to le	earn from renow	ned ophth	nalm	ologis	sts and	exper	ienced o	ptometri	sts.
		Co	ntent							
General OPD (History taking	g- DO)	150 cases	Weekly	1ca	se rep	ort to b	oe subi	mitted		
Contact Lens		10 cases (5RGP+5Soft)	Minimus the end				e repo	rts to be	submitte	ed at
Optical		50 cases	Weekly1 case report to be submitted							
Low Vision ca	re Clinic	5 cases	Minimum 3 different case reports to be submitted at the end of the Postings							
Binocular Visi	5 cases	Minimum 3 different case reports to be submitted at the end of the Postings								
Ophthalmology eye conditions	y clinic (Common )	25 cases	Minimum 3 different case reports to be submitted at the end of the Postings							

SEMESTER – VIII										
<b>Course Title</b>		Case Report-II								
Course code	24BOPT4202R	Total credits: 4	L	T	P	S	R	O/F	C	
		Total hours: 120P	0	0	8	0	0	0	4	
Pre-requisite	COMPULSORY	Co-requisite	NIL							
Programme		Bachelor	of Op	tome	try					
Semester	VIII semester of fourth year of the programme									
Course	Students can accurately and comprehensively document their practical experiences and									
Objectives		nderstanding and appli-								
		objective emphasizes								
	communication ski	lls, critical thinking,	and	the a	ability	to sy	nthesiz	ze and p	resent	
	information effectiv	3								
Course	Students will be able	e to demonstrate their p	rofici	ency i	n docu	ımentii	ng prac	tical		
Outcome	experiences and effe	ectively communicate t	heir u	nderst	anding	and a	nalysis	of these		
	experiences. This or	itcome ensures that stu-	dents	not on	ıly gair	pract	ical ski	lls but als	О	
	develop the ability t	o articulate their knowl	edge	and in	sights	clearly	and co	onfidently		
	during an oral exam	ination.								

SEMESTER – VIII									
<b>Course Title</b>	OCCUPATIONAL BEHAVIOURS OF OPTOMETRY								
Course code	24BOPT4202R	R Total credits: 1 L T P S R O/F C							
		Total hours:	0	0	2	0	0	0	1
Pre- requisite	COMPULSORY	Co-requisite	NIL		•				
Programme		Bachelo	r of Op	otome	try				
Semester		VIII semester of fou	rth ye	ar of t	he pro	gram	me		
Course	The clinical obser	vation time period pro	ovides	the st	tudents	s the o	opportu	nity to	
Objectives	continue to develo	p confidence and incr	eased s	skill in	diagn	osis.			
Course	Wide academic &	clinical exposure to dif	ferent	depar	tments	of eye	e. Rece	ive	
Outcome	opportunities to pra	actice independently in	n outre	ach ca	mps.				
	Receive scope to le	earn from renowned op	hthaln	nologi	sts and	l expe	rienced	optometri	ists.

SEMESTER – VIII										
<b>Course Title</b>		LOGBOOK AND VIVA-II								
Course code	24BOPT4203R	BOPT4203R   Total credits: 1   L   T   P   S   R   O/F						C		
		Total hours:	0	0	2	0	0	0	1	
Pre- requisite	COMPULSORY	Co-requisite	NIL			•				
Programme		Bachelo	r of Op	otome	try					
Semester	VIII semester of fourth year of the programme									
Course	Students can accurately and comprehensively document their practical experiences and									
Objectives	demonstrate their	understanding and a	applica	tion c	of theo	oretica	l knov	vledge th	rough	
	verbal articulation.	This objective emph	asizes t	the de	velopn	nent o	f both v	written an	d oral	
	communication sk	tills, critical thinking	, and	the a	bility	to sy	nthesiz	ze and pr	esent	
	information effecti	vely.								
Course	Students will be ab	le to demonstrate thei	r profic	eiency	in doc	ument	ting pra	actical		
Outcome	experiences and ef	fectively communicate	e their	under	standir	ng and	analys	is of these	•	
	experiences. This of	outcome ensures that s	tudent	s not c	only ga	in pra	ctical s	kills but a	lso	
	develop the ability	to articulate their kno	wledge	and in	nsights	s clear	ly and	confidentl	у	
	during an oral exar	nination.								



## Assam down town University

## Curriculum and Syllabus

# Bachelor of Radiography and Advanced Imaging Technology

# OUTCOME BASED EDUCATION FRAMEWORK CHOICE BASED CREDIT SYSTEM

Version: 2.2

# FACULTY OF PARAMEDICAL SCIENCES

July, 2024

**PREAMBLE** 

Assam down town University is a premier higher educational institution which offers 57

Bachelor and Master and Ph.D. degree programmes across 10 faculties. These programmes,

collectively embodies the vision and mission of the university. In keeping with the vision of

evolutionary changes taking place in the educational landscape of the country, the university has

restructured the course curriculum as per the guidelines of National Education Policy 2020. This

document contains outline of teaching and learning framework and complete detailing of the

courses. This document is a guidebook for the students to choose courses and related

extracurricular and co-curricular activities for completing the course and to be eligible for the

degree. This volume also includes the prescribed literature, study materials, texts and reference

books under different courses as a guidance for the students to follow.

Recommended by the Board of Studies (BOS) meeting of the Faculty of Paramedical Sciences

held on dated 22/06/2024 and approved by the  $51^{st}$  Academic Council (AC) meeting held on

dated 26/07/2024.

Chairperson, Board of Studies

Amolh

Member Secretary, Academic Council

Downey

#### Vision

To become a Globally Recognized University from North Eastern Region of India, Dedicated to the Holistic Development of Students and Making Society Better

#### Missions

- 1. Creation of curricula that address the local, regional, national, and international needs of graduates, providing them with diverse and well–rounded education.
- 2. Build a diverse student body from various socio-economic backgrounds, provide exceptional value-based education, and foster holistic personal development, strong academic careers, and confidence.
- 3. Achieve high placement success by offering students skill-based, innovative education and strong industry connections.
- 4. Become the premier destination of young people, desirous of becoming future professional leaders through multi-disciplinary learning and serving society better.
- 5. Create a highly inspiring intellectual environment for exceptional learners, empowering them to aspire to join internationally acclaimed institutions and contribute to global efforts in addressing critical issues, such as sustainable development, Climate mitigation and fostering a conflict–free global society.
- 6. To be renowned for creating new knowledge through high quality inter disciplinary research for betterment of society.
- 7. Become a key hub for the growth and excellence of AdtU's stake holders including educators, researchers and innovators
- 8. Adapt to the evolving needs and changing realities of our students and community by incorporating national and global perspectives, while ensuring our actions are in harmony with our foundational values and objectives of serving the community.

#### **Programme Details**

#### **Programme Overview**

The Bachelor of Radiography & Advanced Imaging Technology Programme offers a holistic approach to prepare students for careers in medical imaging. Through a blend of theoretical coursework, practical laboratory sessions, and supervised clinical practicum experiences, students gain a comprehensive understanding of Radiographic principles and techniques. Emphasizing the importance of patient care, safety, and ethical considerations, a Programme in stills critical thinking skills essential for interpreting imaging results and collaborating effectively with healthcare teams. The students emerge as skilled radiographers ready to conduct various imaging procedures, in X- rays, CT scan, MRI and USG imaging in diverse healthcare settings.

#### I. Specific Features of the Curriculum

The duration of the certified course for Bachelor of Radiography & Advanced Imaging Technology degree under Assam down town University shall extend over a period of six academic semesters (three years). Students also undergo clinical posting in 5th & 6th semester in hospitals and diagnostic centres. After completion of course, students undergo clinical internship for a period of 6 months. The curriculum also provides skill enhancement and value-added courses along with the core papers.

#### II. Eligibility Criteria:

- He/she has passed the Higher Secondary (10+2) with Science (PCB) or equivalent examination recognized by any Indian University or a duly constituted Board with pass marks in Physics, Chemistry, and Biology.
- Minimum percentage of marks: 45% aggregate. 5% relaxation for SC/ST, EWS and specially abled students.
- Eligibility Criteria for lateral Entry: Candidates with 10+2 with 2 years diploma and 10 with 3 years of diploma in Radiography & Imaging qualification with three months of clinical internship are eligible for the admission to Undergraduate Program for direct admission in the Third semester.

#### **III. Program Educational Objectives (PEOs):**

**PEO-1:** AdtU BRAIT graduates will be well prepared for establishing successful careers as Radiographers and medical imaging specialists in the hospitals, diagnostic centres and other healthcare units.

**PEO-2:** AdtU BRAIT graduates will be academically prepared in operating and maintaining various radiographic equipments and imaging modalities by following AERB guidelines.

**PEO-3:** AdtU BRAIT graduates will actively engage in professional development practices to continually enhance their skills and expertise within Radio-imaging field.

#### IV. Program Specific Outcomes (PSOs):

**PSO1: Practice-In-Industry:** Demonstrate scanning proficiency and clinical practice efficiency during clinical posting and internship in the healthcare industry.

**PSO2: International Competency:** Apply comprehensive understanding to excel in the profession with global competency through international and industry-oriented certification courses.

**PSO3: Techno-Professional Efficiency:** Apply a comprehensive understanding of radiological and imaging concepts for accurate investigations providing enhancing diagnosis with quality images in healthcare services.

#### V. Programme Outcome (POs):

**PO1: Professional Knowledge:** Apply the knowledge of physics fundamentals and the functioning principles of diagnostic imaging modalities in relevance to human anatomy, physiology, and biochemistry in healthcare.

**PO2**: **Procedures and Techniques:** Identify the radiographic techniques and formulate procedures to meet specified imaging of the human body ensuring the safety of patients and personnel.

**PO3:** Modern Equipment Use: Operate and maintain modern imaging equipment efficiently ensuring the quality of the images.

**PO4**: **Documentation:** Effectively prepare and maintain patient information, procedural details and other relevant data confidentially, both in manual and digital forms.

**PO5: Professional Ethics:** Exhibit confidentiality in conducting standardized radiological procedures and hospital practices within the realm of ethical guidelines in medicolegal issues and radiation safety boards.

**PO6:** Communications: Communicate effectively with all stakeholders, like the healthcare professionals, TPAs and prepare adequate reports and presentations.

**PO7: Individual and teamwork:** Perform efficiently as an individual or as a member of the multidisciplinary healthcare team.

**PO8:** Lifelong learning: Ability to engage in self-directed lifelong learning comprehensively with technological advancements, and sustainable environment practices for the cause of humanity.

#### VI. Total Credits to be earned: 131

- P/T: One credit for every two hours of laboratory and practical.
- CR: One credit for every three hours of clinical training / clinical rotation posting.
- RP: One credit for every two hours of Research Project per week Max credit 20-25.

#### **VII. Career Prospects:**

- Diagnostic Radiographers & technologist are employed in hospitals in both privates and governments as the demand are increasingly within local community healthcare settings.
- Radiographers are now expanding their roles in a range of advanced practice and position with responsibility for patient management and image interpretation.
- Potential career routes include Trauma and Emergency, General Radiography, Interventional Imaging, Pediatrics and Image reporting as well as specialist imaging modalities such as Ultrasound, CT scan, MRI and Radionuclide Imaging.

#### **EVALUATION METHODS**

The student performance shall be evaluated through In-semester (Sessional) and semesterend examinations. A weightage of 40% or as prescribed by the Programme shall be added to the score of the end-semester examination.

#### A. INTERNAL ASSESSMENT:

The teacher who offers the course shall be responsible for internal assessment by conducting in-semester (sessional) examination and evaluating the performance of the students pursuing that course. The components for internal assessment are illustrated in the table given below.

SN	Components/Examinations	Marks Allotted
1.	In-Sem Exam–I (ISE-I) (Written Examination)*	30
2.	In-Sem Exam-II ( ISE-II) (Written Examination)*	30
3.	Assignment	10
4.	Presentation (SP)	10
5.	Quiz	5
6.	Class Performance based score*	5

^{*}are compulsory

Note: Total Internal assessment should be out of 40

#### **INSTRUCTION**

- 1. If a student fails to appear in the any of the component without any valid reason he/she shall be marked zero in that component. However, the course teacher at his discretion may arrange for the missed test on an alternate date for the absentee students after determining ground with genuine/valid reasons for the absent.
- 2. The report of evaluation of an activity towards the in-semester (sessional) component of a course shall be duly notified by the concerned course teacher within a week of completion.
- 3. The Programme coordinators should upload the in-semester marks to the ERP and forward acknowledgement of all the courses of the Programme to the Controller of Examinations before the start of the end-semester examination.

#### **B. SEMESTER END EXAMINATION:**

Time table for end semester examination is published at least 25 days prior to the start of Examination.

#### I. Pre-Examination:

#### Eligibility Criteria for a student to appear in University Examinations:

The student shall only be allowed to appear in a University Examination, if:

- i) He/ She is a registered student of the University;
- ii) He/ She is of good conduct and character;

iii) He/ She has completed the prescribed Programme of study with minimum percentage of attendance as laid down in the Regulations of the Programme concerned.

Under special cases, a student may be allowed to appear for an examination without being registered in the University but the result of the said student will be kept on hold till the registration of the concerned student is completed.

#### **II.Admit Card:**

Admit card for the examination may be downloaded through ERP where the system will generate a Unique ID Cards through online.

The University shall have the right to cancel admission for examination of any candidate on valid grounds.

#### **III.Pattern of Question Papers**:

The question paper shall follow the principles of Bloom's Taxonomy. Table

<b>S. N.</b>	Level	Questions/ verbs for test
1	Remember	List, Define, tell, describe, recite, recall, identify, show who, when, where, etc.
2	Understand	Describe, explain, contrast, summarize, differentiate, discuss, etc.
3	Apply	Predict, apply, solve, illustrate, determine, examine, modify
4	Analyze	Classify, outline, categorize, analyze, diagrams, illustrate, infer, etc.
5	Evaluate	Assess, summarize, choose, evaluate, recommend, justify, compare, etc.
6	Create	Design, Formulate, Modify, Develop, integrate, etc.

Note: No course is to be evaluated on basis of all 6 knowledge levels.

The format of the question paper across all the Programme follow a unique pattern and the total marks is 60

Table 1: Question paper pattern for End semester examination

Sl no.	Question pattern	Total marks
1	MCQs (10 Questions)	10
2	2 Marks questions (10 Questions)	20
3	4 Marks questions (5 Questions)	20
4	10 Marks questions (1 Question)	10

#### **IV. Examination Duration:**

Each paper of 60 marks shall ordinarily be of two hours duration.

#### V. Practical Examinations, Viva-Voce etc.:

- i) Practical examination shall be conducted in the presence of one external expert and one or more internal examiners.
- ii) Viva-Voce, Oral examinations of the Project report, Dissertation etc. shall be undertaken by a Board of Examiners constituted by the respective Dean of Programme with the advice of Supervisor(s).

#### VI. Procedure of Expulsion:

If any candidate is found to be using any unfair-means during the examination, the invigilator may cease his/her answer sheet and report it directly to the Officer-in- Charge. The Office-in-Charge of the center may take appropriate decisions as per the rules and procedure of the examination. The Officer-in-Charge may allow the students to write the exam with new answer sheet or may expel the student from appearing the paper depending on the nature of unfair-means. In case of Computer based test, the students may be directed to write an apology letter and sign in the prescribe expulsion form. The student may not be allowed to write that examination.

#### VII. Instruction to the Students:

- (i) The students shall not bring to the Examination Hall, any electronic gadget used as a means of communication or record except electronic calculator, if required.
- (ii) The students shall not receive any book or printed or hand written or photo copy (Xerox) or blank-paper from any other person while he/she is in the examination-room or in laboratory or in any other place to which he/she is allowed to have access during course of examination.
- (iii) The students shall not communicate with any other candidate in the examination room or with any other person in and outside the examination- room.
- (iv) The students shall not see, read or copy anything written by any other candidate, nor shall he/she knowingly or negligently permit any other candidate to see, read or copy anything written by him/her or conveyed by him/her.
- (v) The students shall not write anything on the Question Paper or in other paper or materials during the examination, or pass any kind of paper to any other candidate in the examination-room, or to any person outside the room.
- (vi) The students shall not disclose his/her identity to the examiner by writing his/her name or putting any sign / symbol in any part of his answer-script.
- (vii) The students shall not use any abusive language or write any objectionable remark or make any appeal to examiner by writing in any part of his answer- script.
- (viii) The students shall not detach any page from the answer-script or insert any authorized or unauthorized loose sheet into it. He /she shall also not insert any other answer-script / loose sheet by removing the pins of the origin answer-scripts and re-fixing it.
- (ix) The students shall not resort to any disorderly conduct inside the examination-room or misbehave with the invigilator or any other examination official.

#### VIII. Provision for an Amanuensis (writer):

- (i) A candidate may be provided with an Amanuensis (writer) to write down on dictation on his/her behalf on ground of his/her physical disability to write down by himself / herself due to accident or any other reason. The amanuensis may be provided till he / she recovers from the physical disability. The physical disability to write down by himself / herself must be supported by Medical Certificate from a competent Medical Officer.
- (ii) The qualifications of the amanuensis so provided must not be equal or higher than that of the candidate. This is also to be supported by Certificate from the Faculty of Study where the Amanuensis is provided.
- (iii) Such candidates are to be accommodated in a separate room under the supervision of an invigilator so that the fellow candidates are not disturbed in the process.

#### C. Credit Point:

It is the product of grade point and number of credits for a course, thus, CP = GP x CR

#### i. Credit:

A unit by which the course work is measured. It determines the number of hours of instructions required per week. 'Credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. Credits assigned for a single course always pay attention to how many hours it would take for an average learner to complete a single course successfully.

#### ii. Grade Point:

Grade Point is a numerical weight allotted to each Grade Letter on a 10-point scale.

#### iii. Letter Grade:

Letter Grade is an index of the performance of students in a said paper of a particular course. Grades are denoted by letters O, A+, A, B+, B, C, P, F and Abs. Student obtaining Grade F/ Grade Abs shall be considered failed/absent and, will be required to appear in the subsequent ESE. The UGC recommends a 10-point grading system with the following (Table: 1) Letter Grades:

- (i) A Letter Grade shall signify the level of qualitative/quantitative academic achievement of a student in a Course, while the Grade Point shall indicate the numerical weight of the Letter Grade on a 10-point scale.
- (ii) There shall be 08 (eight) Letter Grades bearing specific Grade Points as listed in Table 1, where the Letter Grades 'O' to 'P' shall indicate successful completion of a course.
- (iii) Apart from the 08 (eight) regular Letter Grades listed in Table 1, there shall be 03 (three) additional Letter Grades, which shall be awarded if a Course is withdrawn or spanned over the next Semester or remains incomplete as stated in Table 2.

**Table 2: Letter Grades and Grade Points** 

Letter Grade	Grade Points	Description
0	10	Outstanding
A+	9	Excellent
A	8	Very Good
B+	7	Good
В	6	Above Average
С	5	Average
P	4	Pass
F	0	Fail
Abs	0	Absent
UFM	0	Unfair Means

#### iv. Grade Point Average:

#### a. SGPA (Semester Grade Point Average)

The SGPA of a student in a Semester shall be the weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered in that Semester, irrespective of whether he/she could or could not complete the Courses. More specifically, the calculation of SGPA shall take into account the Courses graded with Letter Grades 'O' to 'F' as given in Table 1.

$$SGPA = \frac{\sum_{i=1}^{n} C_i G_i}{\sum_{i=1}^{n} C_i}$$

$$(1.1)$$

The SGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.1) up to two decimal places, where n is the total number of Credit Courses registered by the student in that Semester, Gi is the Grade Point secured in the ith registered Course and Ci is the Credit (weight) of that Course.

#### **b.** CGPA (Cumulative Grade Point Average)

- (i) The CGPA of a student in a Semester of a Programme shall be the accumulated weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered and successfully completed so far starting from the enrolment in the Programme. In other words, taking into account all the Courses graded with 'O' to 'P' as given in Table 1.1, generally the CGPA of a student shall be calculated starting from the first Semester of his/her enrolled Programme, while the CGPA of a lateral-entry student shall be calculated starting from the Semester of his/her enrolment.
- (ii) The CGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.2) up to two decimal places, where N is the total number of Credit Courses registered and successfully completed so far by the student, Gi is the Grade Point secured in the ith completed Course and Ci is the Credit (weight) of that Course.

$$CGPA = \frac{\sum_{i=1}^{N} C_i G_i}{\sum_{i=1}^{N} C_i}$$
 (1.2)

(iii)The CGPA shall be convertible into equivalent percentage of marks using Equation Conversion of CGPA to percentage marks: = CGPA*10

#### **D. Post-Examination**

#### i. Transcript or Grade Card or Certificate:

A marking certificate shall be issued to all the registered students after every Semester. The Semester mark sheet will display the course details (code, title, number of credits, grade secured) along with total credit earned in that Semester.

#### ii. Grievance Readdress Mechanism:

Students with any dissatisfaction or grievance regarding the marks awarded in any of the Papers / Courses may appeal to the Controller of Examinations for remedial action such as Re-evaluation within 10 days of the declaration of result.

- (i) A student has options to appeal for re-evaluation of his /her answer script to the Controller of Examination.
- (ii) Application for re-evaluation / re-scrutiny of answer scripts shall be made in the definite proforma available with the Examination Office through the head of the respective departments within 10 days of declaration of the results of the respective examinations.
- (iii) The Controller of Examination may appoint an examiner for re-evaluation and will consider and recognize the evaluation done by a University appointed examiner.
- (iv) There shall be no provision for re-evaluation of the Practical Papers, Project Work, and Dissertation etc. However, the students fail in practical examination or viva voice and wish to appear again may apply to be evaluated can do so with the next schedule.
- (v) After screening the application for re-evaluation, the CoE may send the answer scripts of the student to the examiners appointed by the CoE with the approval of Vice Chancellor.
- (vi) The marks / grades achieved by the students after the re-evaluation shall be final and binding.
- (vii) Fresh Marks sheets / Grade Card shall be issued only if the candidate secures pass marks / passing grade in the re-evaluated paper.
- (viii) Revaluation of answer scripts shall be deemed to be an additional facility provided to the students with a view to improving upon their results at the preceding examination result for any reason whatsoever shall not confer any right upon them for admission to next higher class which matters always be regulated in accordance with the relevant rules or regulations framed by the University.
- (ix) If as a result of revaluation of the candidate attracts the provision of condonation of deficiency, the same may be applied to his/her only for fresh attempt.

#### INSTRUCTION TO TEACHERS AND STUDENTS

(Teaching and Learning Methods)

In all the courses the teacher has to select topics for teacher-method which should not be less than 20 percent. The approach will be direct classroom teaching through a series of lectures delivering concepts using ITC facilities, white or blackboard. Notes may also be circulated to the students; however, the students are to be involved in the preparation of the notes. The teacher will be responsible for selecting the best note for circulation. The teacher-centric methodology has recently fallen out of favour because this strategy for teaching is seen to favour passive students.

#### 1. Student- centric / Constructivist Approach:

The topics of the courses may be selected at the start of the class and assigned one topic to each of the students for studying by themselves, prepare presentations, notes, etc., and present at respective class time after consultation and discussion with the course teachers. The teacher facilitates the learning of the students by guiding and providing input and explaining concepts. 60 percent of the course contents may be selected for this purpose. To avoid behaviour problems, teachers must lay a lot of groundwork in student-centric classrooms. Typically, it involves instilling a sense of responsibility in students. In addition, students must learn internal motivation.

- **a. Project-Based Learning:** The teacher may select 5 percent of topics for the purpose and may conduct visits to the laboratory for experiments or field surveys. The selection of the topic may be done considering the available facility for the purpose. However, in the final semester of each of the Programme the student has to undergo project-based learning at least 4 months duration. This approach will help the student to think critically, evaluate, analyze, make decisions, collaborate, and more.
- **b. Inquiry-Based Learning:** The teacher / students are supposed to list at least five questions in each contact hour and student solve these question or search for answer which becomes the home work for the students "question-driven" learning approach. The teacher may look for the correctness of the solution or the best possible answer and discuss in the successive class. This will help in the preparation for various competitive examinations and develop a habit for search for solutions.
- **c. Flipped Classroom:** About 10 percent of the course content has to be completed by this method. In this approach the students are asked to watch video or lecture prepared by the teacher or any video available (relevant to the course). A set of questions may be given to the students for searching answers by the students. The idea is that students should have more time in-classroom focusing on achieving these higher levels of thinking and learning. The Flipped classroom is also an acronym. The letters FLIP represent the four pillars included in this type of learning: Flexible environment, Learning culture shift, Intentional content, and Professional educator. As you can see, the second pillar refers to a culture shift from the traditional approach where students are more passive to an approach where students are active participants. As a result, this approach is also a student- centric teaching method.
- **d.** Cooperative Learning: The remaining five percent has to be completed by cooperative learning approach. In this approach, the students are allotted problems. During library hours the students along with the teacher visit the library and search for probable solutions for the assigned problem. The same has to be done in groups so that the students discuss among themselves for the appropriate answers. Essentially, cooperative learning believes that social interactions can

improve learning. In addition, the approach recreates real-world work situations in which collaboration and cooperation are required.

#### The percentage categorization for the completion of a theory course

Teacher-centric or Direct Classroom Teaching: Delivery by series of lectures	20%
Student-centric Approach, Students present and deliver lectures in the presence of teacher and supervised by teacher	60%
Students visit fields or perform experiments or teachers perform demonstration	05%
Flipped Classroom approach	10%
Cooperative learning approach	05%

#### Inquiry-based approach has to be followed in all of the classes

The teacher has to distribute the topics to be considered for teaching by the above-mentioned approaches and prepare a lesson plan for execution and maintain a file.

**"As a prerequisite for award of the degree, the students have to undergo a compulsory rotatory internship of six months after successful completion of academic Curriculum"

#### **Breakdown of Credits**

Sl. No	Category		Total number of Credits
1 University Core (UC)  2 University Elective (UE)  3 Programme Core (PC)  4 Programme Elective (PE)  5 Faculty Core (FC)	Skill Enhancement Course (SEC)	9	
		Ability Enhancement Course (AEC)	8
1	University Core (UC)	Field Training	
		Discipline Specific Elective (DSE)	
		Value Added Course (VAC)	6
2	University Flective (UE)	Multidisciplinary Course (MDC)	9
4	Offiversity Elective (OE)	Value Added Course (VAC)	
		Discipline Specific Core (DSC)	88
2	Programma Cara (PC)	Field Training	1
3	Programme Core (PC)	Research /Industry Internship	6
		Summer Internship	4
4	Drogramma Elactiva (DE)	Discipline Specific Elective (DSE)	2
4	Programme Elective (PE)	Value Added Course (VAC)	
5	Faculty Core (FC)	Skill Enhancement Course (SEC)	
5	raculty Core (FC)	Ability Enhancement Course (AEC)	
		<b>Total</b>	133

### **Breakdown by categories of courses**

Sl no	Category	Credits	%
1	Paramedical Sciences	124	93.23 %
2	FOCT	2	1.50 %
3	Commerce and Management	1	0.75 %
4	CLPDP	6	4.51 %
	Total	133	100%

#### SEMESTER WISE COURSE DISTRIBUTION

	G 3.7		G TIV	Course			Eng	ager	nent			Max	kimun	ı Marl	ks for
	S.No	Course Code	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total
	1	24BRIT1101R	Human Anatomy & Physiology I	DSC (Major)	4	0	4	0	0	0	6	6       40       60       100       200         4       40       60       100       200         2       40       60       0       100         1       0       0       100       100         3       40       60       0       100         1       0       0       100       100         1       0       0       100       100         20       260       240       500       100         Maximum Marks for         C       IA*       SEE*       PE*       Total         6       40       60       100       200         4       40       60       100       200         2       40       60       0       100         1       0       0       100       100         1       0       0       100       100         3       40       60       0       100         3       40       60       0       100         3       40       60       0       100         1       0       0       100       100 <td< td=""><td>200</td></td<>	200		
	2	24BRITT1102R	General Biochemistry	DSC (Minor)	3	0	2	0	0	0	4	40	60	PE*   7   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100   100	200
	3	24BRIT1103R	Basic Principles Of Hospital Practice And Patient Care	DSC (Minor)	2	0	0	0	0	0	2	40	60		100
Ι	4	24UBPD1101R	Basic Communicative English	AEC	0	0	2	0	0	0	1	0	0	100	100
Semester		24BRIT1101M/ 24BRIT1102M/ 24BRIT1103M	Introduction to Public Relations and the Media Specialization Learn /English: Beginning Grammar Specialization/ Global Warming I: The Science and Modeling Climate Change	VAC	2	0	0	0	0	0	2	100	0	0	100
	6	24BRIT1104R	Medical Psychology	MDC	3	0	0	0	0	0	3	40	60	0	100
	7	24BRIT1105R	Techno-Professional Skills I	SEC	0	0	2	0	0	0	1	0	0	100	100
	8	24UBEC1101	Extra-Curricular Activities	Extra - Curricular	0	0	0	4	0	0	1	0	0	100	100
		To	otal		14	0	10	4	0	0	20				1000
	S.No	Course Code	Course Title	Course				ager							
				Category	L	T	P	S	R	O	C	IA*	SEE*	PE*	Total
	1	24BRIT1201R	Human Anatomy and Physiology II	DSC (Major)	4	0	4	0	0	0	6	40	60	100	200
	2	24BRIT1202R	Biochemistry: Biomolecules & Their Metabolisms	DSC (Minor)	3	0	2	0	0	0	4	40	60	100	200
Semester II	3	24BRIT1203R	Fundamental of Patient Care & Safety	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	100
es	4	24UBPD1201R	Functional English	AEC	0	0	2	0	0	0	1	0	0	100	100
Sem	5	24BRIT1204R	Self-Study (Seminar/Presentation)		0	0	2	0	0	0	1	0	0	100	100
	6	24UGGP1201R	General Pathology	MDC	3	0	0	0	0	0	3	40	60	0	100
	7	24UBES1201R	Environmental Science	VAC	2	0	0	0	0	0	2	40	60	0	100
	8	24UBCC1201	Co-Curricular Activities	Co- Curricular	0	0	0	4	0	0	1	0	0	100	100
		To	otal		14	0	10	4	0	0	20	200	300	500	1000

	S.	Course Code	Course Title	Course			Eng	gage	ment	t		Max	imum	Marl	ks for
	No	Course Code	Course Title	Category	L	T	P	S	R	O	C	IA*	SEE*	PE*	Total
	1	24BRIT2101R	Radiation Physics	DSC (Major)	4	0	0	0	0	0	4	40	60	0 100 100 0 100 100 100 100 100 100 100	100
	2	24BRIT2102R	Darkroom & Image Processing Techniques	DSC (Major)	3	0	2	0	0	0	4	40	60		200
	3	24BRIT2103R	Electronics & Instrumental Physics	DSC (Minor)	3	0	4	0	0	0	5	40	60	100	200
	4	24BRIT2104R	Radiation Protection	DSC (Minor)	3	0	0	0	0	0	3	40	60	0	100
r III	5	24UGGM2101R	General Microbiology	MDC	1	0	0	0	0	0	1	40	60	0	100
Semester	6	24UBPD2101R	Executive English	AEC	0	0	2	0	0	0	1	0	0	100	100
Sem	7		Design Thinking And Entrepreneurship	SEC	1	0	0	0	0	0	1	40	60	0	100
	8	24BRIT2105R	Techno-Professional Skills II	SEC	0	0	2	0	0	0	1	0	0	100	100
	9	24UDLS2101R	Digital Literacy	VAC	0	0	2	0	0	0	1	0	0	100	100
	10	24UULS2101R	Basic Acclimatization Skills	MDC	0	0	2	0	0	0	1	0	0	100	100
	11	24BRIT2109R	Field Training	FT	0	0	0	0	0	8	1	0	0	100	100
		To	otal		15	0	14	0	0	8	23	240	360	700	1300
	S.	Course Code	Course Title	Course			Eng	gage	ment	t		Max	imum	Marl	ks for
	No	Course Code	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total
	1	24BRIT2201R	Magnetic Resonance Imaging	DSC (Major)	3	0	0	0	0	0	3	40	60	100	200
	2	24BRIT2202R	Computed Tomography	DSC (Major)	3	0	0	0	0	0	3	40	60	100	200
	3	24BRIT2203R	Clinical Radiography	DSC (Major)	3	0	0	0	0	0	3	40	60	0	100
r IV	4	24BRIT2204R	Physics of Radiology	DSC (Major)	3	0	2	0	0	0	4	40	60	100	200
Semester IV	5	24BRIT2205R	Contrast & Special Radiography	DSC (Major)	3	0	0	0	0	0	3	40	60	0	100
Sen	6	24BRIT2206R	Self-Study (Seminar/Presentation)	AEC	0	0	2	0	0	0	1	0	0	100	100
	7	24UBPD2201 R	Enhanced Professional Skills	AEC	0	0	2	0	0	0	1	0	0	100	100
	8	24BRIT2206R	Techno-Professional Skills IV	SEC	0	0	2	0	0	0	1	0	0	100	100
	9	24UUFL2201R	Financial Literacy	MDC	0	0	2	0	0	0	1	0	0	100	100
		To	otal		15	0	10	0	0	0	20	200	300	700	1200

	S.		G THE	Course		•	Eng	agei	nent			Max	imum	Mar	ks for
	No	Course Code	Course Title	Category	L	T	P	S	R	o	C	IA*	SEE*	PE*	Total
	1	24BRIT3101R	Clinical Observation I	DSC (Major)	0	0	0	20	0	0	5	0	0	Mark   PE*	100
	2	24BRIT3102R	Clinical Observation II	DSC (Major)	0	0	0	20	0	0	5	0	0		100
erV	3	24BRIT3103R	Clinical Observation III	DSC (Major)	0	0	0	24	0	0	6	0	0	100	100
Semester	4	24BRIT3104R	Case Presentation	Research	0	0	0	0	12	0	2	0	0	100	100
Sei	5	24BRIT3105R	Internship (Summer Training)	Internship	0	0	0	16	0	0	4	0	0	100	100
	6	23BRITSI01	Summer Internship	Summer Internship	0	0	0	0	0	24	3	0	0	100	100
	7	23BRITDT01	Digital Tech	VAC	2	0	0	0	0	0	2	100	0	100	100
		7	<b>Fotal</b>		2	0	0	80	12	24	27	100	0		700
	S.   Course Code   Course Title		Course Category	L	Т	Eng P	gagei	nent R	0	С	Max IA*				
	1	24BRIT3201R	Digital Imaging Technology	DSC (Major)	3	0	0	0	0	0	3	40	60		100
	2	24BRIT3202R	Ultrasound & Mammography	DSC (Major)	3	0	0	0	0	0	3	40	60	0	100
T	3	24BRIT3203R	Equipment of Advanced Modalities & Quality Assurance	DSC (Major)	4	0	0	0	0	0	4	40	60	0	100
er VI	4	24BRIT3204R	Interventional Radiology & Nuclear Medicine	DSC (Major)	3	0	0	0	0	0	3	40	60	0	100
Semester	5	24BRIT3205R	Patient Care in Diagnostic Radiology	DSC (Major)	3	0	0	0	0	0	3	40	60	0	100
Ser	6	24BRIT3206R	Lab Based Research Project	Research	0	0	0	0	24	0	4	0	0	100	100
	7		Finishing School	AEC	0	0	4	0	0	0	2	0	0	100	100
	8	24BRIT3207R	Techno-Professional Skills V	SEC	0	0	4	0	0	0	2	0	0	100	100
	9	24BRIT3208R	Quality Assurance & Quality Control In Diagnostic Radiology	SEC	2	0	0	0	0	0	2	40	60		100
			<b>Fotal</b>		18	0	8	0	24	0	26	240	0 0 0 0 0 0 0 0 mum SEE* 60 60 60 0 0	300	900

^{*}IA: Internal Assessment, SEE: Semester End Examination, PE: Practical Examination

		SEMESTE	R–I						
Course Ti	itle	HUMAN ANATO	MY & 1	PHYSIC	LOG	Y I			
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	and skeleton in the human better CO1 Understand the anatomical terminology  and functions.  CO3 Describe the composition of Explain respiratory system and Understand the anatomy and and distribution in the body.  CO5 Introduction To Anatomical To Basic Structure and Function of Level of Organization—Body Fareas, Planes and Sections. Co anatomical terminology  Structure and Function of Cell Membrane, Cellular Transport  Musculo-Skeletal System and Function of Cell Membrane, Cellular Transport						iiic iui	neuons	).
CO4	1. To study the basic anatomical structures jectives 2. To provide a comprehensive condition and skeleton in the human body.  CO1 Understand the anatomical terms are Explore knowledge of Musculoskel and functions.  CO2 Explain respiratory system and class Understand the anatomy and physicand distribution in the body.  CO3 Describe the composition of the human body.  CO4 Explain respiratory system and class Understand the anatomy and physicand distribution in the body.  CO5 Introduction To Anatomical Terms,  Basic Structure and Function of Cell  • Level of Organization—Body Parts are Areas, Planes and Sections. Common anatomical terminology  • Structure and Function of Cell  Membrane, Cellular Transport  Musculo-Skeletal System and Bones  Bones: Classification & types  According to morphology.  Tissue and its types Cartilage  Loints: definition classification and						fluid	Lcomr	osition
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	Membrane, Cellular Tra	ansport							
	Musculo-Skeletal Syster	n and Bones							
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	Respiratory System-	omary secretion.		uigesti	, c sysu	~111 <b>.</b>			
	Anatomy of the Respirato	ory tract							
	Mechanisms and Regulat	•		The stu					
IV	Gaseous exchange in lung	•	10	unders			_		1,2,3
	Lung volumes, and capac			anaton	-		_	-	1,4,5
	Respiratory abnormalities			system	and its	mech	anisms	S.	
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	cyanosis, dyspnea, Asphyxia,			
	hyperventilation, hypoventilation,			
	tachypnoea and bradypnea.			
	Cardiovascular System and Blood:			
	Mediastinum-division			
	Structure of heart and blood vessels.	Idation,  Id Blood: Id vessels. Id vessels		
	Systemic circulation, pulmonary			
	circulation, and coronary circulation			
	Cardiac output, cardiac cycle, conducting		The students will be able to	
<b>T</b> 7	system of heart.	10	understand the knowledge on	
V	Heart sounds, pulse, blood pressure and	10	Cardiovascular system and the	1,2,3
	their regulation.		functions of blood.	
	Composition and functions of blood,			
	plasma, and body fluids.			
	Functions of RBC, WBC, and Platelets,			
	Hemoglobin, Blood hemostasis, Blood			
	groups			
	1. Study of Skull, Vertebrae, Ribs and			
	bones of upper limb.		779	
	2. Study of compound Microscope.			
Practical	3. Measurement of blood pressure, arterial	30		1 2 2 4
	pulse.	ion, hypoventilation, and bradypnea.  Idar System and Blood: Indivision heart and blood vessels. Evaluation, pulmonary and coronary circulation att. In pulse, blood pressure and on. In and functions of blood, body fluids. IRBC, WBC, and Platelets, Blood hemostasis, Blood  In the students will be able to understand the knowledge on Cardiovascular system and the functions of blood.  In the students will be able to understand the knowledge on Cardiovascular system and the functions of blood.  In the students will be able to apply the knowledge of anatomy & physiology in the practical fields  In the students will be able to apply the knowledge of anatomy & physiology in the practical fields	1,2,3,4	
	4. Bleeding time (BT) Clotting time (CT).			
	5. Hemoglobin estimation.			

T1: Ross and Wilson Anatomy and Physiology in Health & Illness-14th Edition.

T2: B.D. Chaurasia: Volume I – Upper limb & Thorax, Volume II – Lower limb, Abdomen & Pelvis, Volume III - Head, Neck, Face, Volume IV- Brain-Neuro-anatomy.

T3: Vishram Singh: Textbook of Anatomy Upper limb & Thorax, Textbook of Anatomy Abdomen & Lower limb, Textbook of Head, neck and Brain

#### **REFERENCE BOOKS:**

R1: Peter L. Williams and Roger Warwick:- Gray's Anatomy Descriptive and Applied, 36th Ed; Churchill Livingstone.

R2: T.S. Ranganathan: Textbook of Human Anatomy 6. Inderbir singh, GP Pal: Human Embryology.

R3: Textbook of Histology, A practical guide:- J.P Gunasegar.

#### **OTHER LEARNING RESOURCES:**

https://openstax.org/books/anatomy-and-physiology-2e/pages/1-1-overview-of-anatomy- and physiology

	COPO Mapping	
SN	` ′	Mapped Programme Outcome
1	Understand the anatomical terms and basic structure and function of cells.	1,7,8
2	Explore knowledge of Musculo skeletal system and bones along with their special features and functions.	1,7,8
3	Describe the composition of the human digestive system and their specific functions.	1,7,8
4	Explain respiratory system and classify various respiratory disorders.	1,7,8
5	Understand the anatomy and physiology of the cardiovascular system, fluid composition and distribution in the body.	1,7,8

		SEMESTER – I						
Course Ti	le	GENERAL BIO	CHEMIS	STRY				
Course co	le 24BRIT1102R	Total credits: 4	L	T P	S	R	O/F	C
Course co	16 24DK111102K	Total hours: 45T+30P	P 3	0 2	0	0	0	4
Pre-requis	Knowledge about the different bio molecules and their functions.	Co-requisite		nowledge nical prop				
Programn		ADIOGRAPHY & AD	VANCE	D IMAG	ING T	ECH	NOLC	GY
Semester		all/ I semester of first ye						
Course Objective	focusing on the clinica 2. To explain the energ	ledge in the technical aspalledge in the technical aspalledge for the form on A' actical knowledge for the	dy metabo TP in the	olites. e human b	ody aı	nd cell	s.	
CO1	Understand the source	s, functions and metaboli	lism proc	ess of Ca	rbohyc	lrates.		
CO2		fication of amino-acids a					f Prote	ein.
CO3	Describe the significan	nce, classification and fur	nctions o	of lipids.				
CO4	*	ture and functions of Nuc						
CO5	Explain the fundament	als and importance of ac		and buffe	rs			
Unit-No.	Conte	nf l	Contact Hour	Learn	ing Oı	itcom	9	KL
I	CARBOHYDRATES-Declassification of carbohydrates (Glucose, Bulleton Starch) and the Biological significance of	Irates. Common Fructose, Starch, eir sources.	10	To unde knowled Carbohy classific	ge abo	out	3	1,2,3
П	PROTEINS-Definition of the biological significance its classification. Essential amino acids.	e. Amino acids and	8	To under knowled Proteins classific	ge abo	out		1,2,3
Ш	LIPIDS-Definition and clipids. Classification of F Examples and functions of lipids (Phospholipids, Gly	atty Acids. of some common	8	To under knowled Lipids, i classified function	ge abo t's ation a	out		1,2,3
IV	NUCLEIC ACIDS-Basic of DNA and RNA. Funct RNA.		8	To under knowled and RNA	ge abo		A 1	,2,3,4
V	ACID-BASE BUFFERS bases, Ph, buffer. Acid ba	ase balance.	8	To under knowled base and	ge abo	out acio	ls,	5,6
Practical	<ol> <li>To identification and d biochemistry laboratory g apparatus.</li> <li>To identification and d biochemistry laboratory i (Principle and Application)</li> <li>Qualitative test for cate To perform Molisch's to</li> </ol>	emonstration of enstruments ens).	30	To apply knowled biochemi practical	ge of l stry in	the		1,2,3

of sugar in an unknown sample.		
• To perform Fehling's test for determination		
of reducing and non-reducing sugar in an unknown sample.		
To perform Benedict's test for		
determination of reducing and		
Non reducing sugar in an unknown		
sample.		

T1: Text book of Medical Biochemistry by Chatterjee and Shinde

T2: Text of Medical Laboratory Technology by Prafula Godkar

T3: Text book of Biochemistry by Dr. D.M. Vasudevan, Sreekumari S. Jaypee Publishers, New Delhi.

#### **REFERENCE BOOKS:**

R1: Biochemistry by V. Satyanarayan, Books and Allied Pvt. Ltd. Calcutta

#### OTHER LEARNING RESOURCES:

https://www.khanacademy.org/science/biology/human-biologyhttps://open.oregonstate.education/

	CO PO Mapping	
SN	Course Outcome (CO)	<b>Mapped Programme Outcome</b>
1	Understand the sources, functions and metabolism process of	1,7,8
2	Carbohydrates.  Identify various classification of amino-acids and recognize the significance of Protein.	1,7,8
3	Describe the significance, classification and functions of lipids.	1,7,8
4	Comprehend the structure and functions of Nucleic Acids.	1,7,8
5	Explain the fundamentals and importance of acid, base and buffers	1,7,8

			SEMES	ΓER – I							
Course	Title	BASIC PRIN	CIPLES OF HOS	SPITAL PF	RACTI	CE A	ND P	ATIEN	IT CARI	Ξ	
Course	code	24BRIT1103R	Total credits:		T	P	S	R	O/F	C	
			Total hours: 30		0	0	0	0	0	2	,
Pre-requ			Co-requisite				N				
Prograi		BACHELOR OI	FRADIOGRAPH						CHNOL	OGY	
Semes	ter		Fall/ I semester of								
		1. To impart the known	wledge in patient in	n a holistic	approa	ch foi	the o	verall v	vellbeing	of th	ie
		patient.	1 ' 1 1 1	1.	1 41		1.4	11.	1.6		c
Cour	se	2. To impart a comp		ge on mean	ai etni	ics and	a tne q	uanty	and funct	ions (	OI
Object	ives	medical professional 3. To provide a gross		logal hazar	done	f mad	lical n	rofossi	on.		
		4. To give a compreh	•	•			•			nev	
		situations poisoning,	_			st aiu		anumi	g cilici ge.	псу	
		5. To incorporate a g	• • •	• • • • •		estiga	ition ai	nd labo	ratory se	t iin	
		Understand different			-					t up.	
CO	1	components of hospi	_	01 100010 11	coping	,, r <b>o</b> pe	, time	055	Cittiai		
		Comprehend the bas	-	n rules of F	irst Ai	d and	effect	ivelv ii	nplemen	t the	
CO	2	skills in certain medi					011000	-	p		
904		Understand and appl	<del>_</del>	wledge of p	atient	safety	and c	are to	ensure ba	sic ca	are
CO	3	needs of patients.	•	0 1							
CO	4	Assessment of comm	non laboratory acci	dents and it	s effec	tive n	nanage	ment.			
CO	5	Assess vital signs an	d effectively manag	ge the abno	rmaliti	es.					
Unit-		Content		Contact		Lea	rning	Outco	me	K	I.
No.				Hour		Dear					
		pital And Records &	<del>-</del>								
		ospital and records & 1	-								
		efinition and Functions	•								
		assification, organizat	ion and			1	. 1.1	1	1 1		
	_	artments of hospitals	D (" ' ' ' C					e knov	vledge		
I		anagementof hospitals	Definition of	10			_	ıls, it's	.:4: 0_	1,2	2,3
		rds and reports	1			d kee		cora wi	riting &		
		fferent types of record	-		16001	u kee	ping.				
	reco	llues objectives and m	iamtenance of								
	l	inciple of good record	Lymiting								
		erence of records & re	•								
		lical Professional An									
		Medical Profession	a Logar Hazaras								
	l	rst aid									
	l	ms & objectives of fir	st aid								
		iorities of first aid Go			Unde	erstan	d the k	nowle	dge		
II		qualities & responsibi		8				nd obje	_	1,2	2,3
	and c	quanties & responsion	incs of first andci							1	
		mple first aid measure				st aid					
	• Si		es in selected			rst aid	•				
	• Sin	mple first aid measure	es in selected oning Snake bite			rst aid					
	• Sin	mple first aid measure litions like–food poise	es in selected oning Snake bite oreign bodies in			rst aid					

Ш	HYGIENE AND BASIC CARE Need of patients, Personal Hygiene and Maintenance of Hygiene. Maintaining therapeutic environment. Safety factors for patients such as safety from mechanical injury, thermal & chemical injury, radiation & bacteriological injury, safety from allergens. Different positions of the body: Supine position, Prone Position, Cardiac position, Lateral Position, Fowler's position.	8	Understand the knowledge about maintaining the hygiene and safety in the hospitals.	1,2,3
IV	CONSUMER PROTECTION ACT FOR MEDICAL: Professional Act of commission, rashness, negligence & damage Advantage & disadvantage of the act. SHOCK Types of shock General Features of shock Instigations of shock Initial management & first aid of shock	8	To understand the knowledge about consumer act for medical.	1,2,3
V	HYPERGLYCEMIA AND HYPOGLYCEMIA: Clinical features Diabetes laboratory tests for diabetes Different types of glycosuria Ketone bodies, Glucose tolerance test. Etiology, Clinical Features Investigation and Management Hypoglycemia	8	Understand the knowledge on hyperglycemia and hypoglycemia.	5,6

T1: Fundamentals of Hospital Practice and Patients care by Vyakarnam Nageshwer

#### **REFERENCE BOOKS:**

R1: Primary Health Care People, Practice, Place by Valorie A. Crooks, Gavin J. Andrews. Ashgate, Farnham, United Kingdom

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Programme Outcome					
1	Understand different functions, process of record keeping, reporting and essential components of hospital management.	4,7					
2	Comprehend the basic principles, golden rules of First Aid and effectively implement the skills in certain medical emergencies.	1,6,7					
3	Understand and apply fundamental knowledge of patient safety and care to ensure basic care needs of patients.	1,6,7,8					
4	Assessment of common laboratory accidents and its effective management.	1,5,7					
5	Assess vital signs and effectively manage the abnormalities.	1,2					

			SEMESTER	<u> </u>	<u> </u>								
Course Title BASIC COMMUNICATIVE ENGLISH													
C	1-	24IIDDD1101D	Total credits: 2	L	T		P	S	R	O/F		C	
Course code		24UBPD1101R	Total hours: 30P	0	0 4		4	0	0	0		2	
Pre-req	uisite	Co-requisite Nil											
Program	mme	BACHELOR O	BACHELOR OF RADIOGRAPHY & ADVANCED IMAGING TECHNOLOGY										
Semester Fall/ I semester of first year of the Programme													
Cour	200	1.To introduce the students to the basics of English grammar and their application.											
Object		2. To enhance communication skills through listening and speaking exercises.											
Object	1103	3.To learn and understand the importance of pronunciation of words.											
CO	1		grammatical rules will	enal	ble th	ne s	tude	nts to	impr	ove the	e speak	ing and	
		writing skills.											
CO			ners to use the language			ely.							
CO			h listening and speaking										
CO		•	heir vocabulary and use										
CO	5	It will give an intro	oduction on the concept					ion, it	s imp	ortance	e and b	arriers.	
Unit-		Con	tent	(	Contact			Learning Outcome					
No.					Hou	ır						KL	
		dule 1- Grammar Parts of Speech			6					•.	1.0.0		
I							Learn about how to write			1,2,3,			
		ticles	diana Cambanana				sp	speech, articles etc.				4,5	
		firmative and Nega	tive Sentences										
		dule 2- Grammar Determiners entence Construction from jumbled words											
II							L	earn a	1,2,3,				
11		pes of Sentences (A		U	6		the sentence.						
	etc.)	pes of bentences (1											
		lule 3- Building Vocabulary											
III		synonyms								how to	)	1,2,3, 4,5	
		antonyms					cl	change the word.					
		ule 4- Speaking Ski	lls	$\dagger$									
		troduction and gree										1.0.0	
IV		onunciation			6		L	earn a	about	how to	speak.	1,2,3,	
	3. As	sking and offering i	nformation								-	4,5	
	4. Vi	deo Recording for	self-analyze										
	Mod	ule 5- Communicat	ion Skills										
	1. In	atroduction to Communication,											
	2. In	portance of Comm											
v	3. Pu	. Purpose of Communication,					L	earn a	about	out how to		1,2,3,	
•	4. Types of Communication,				8		co	communicate				4,5	
	5. Ba	Barriers to Communication,											
	6. How to improve/ tips to improve												
	comi	munication skills											

T1: Wren & Martin (2017). High School English Grammar and Composition. S. Chand Publishing.

T2: Pal, Rajendra. Suri, Premlata (2022). English Grammar & Composition. Sultan Chand and Sons Publishing.

T3: Debnath, Adhir. (2018). A Textbook of English Grammar and Composition. Bina Library

#### **REFERENCE BOOKS:**

R1: Mitra, Barun. (2016) Personality Development and Soft Skills 2/E, Oxford University Press.
R2: Murphy, Raymond. (2012) English Grammar in Use Book with Answers: A Self-Study and Practice Book for Intermediate Learners of English, Cambridge University Press

#### **OTHER LEARNING RESOURCES:**

https://youtu.be/53SIKuCuHv0 https://youtu.be/Ljjiw9mC_Cg https://youtu.be/xQfYiHbAjJo

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Programme Outcome						
1	The application of grammatical rules will enable the students to improve the speaking and writing skills.	1,6,8						
2	It enables the learners to use the language effectively.	1,6,8						
3	It will strength both listening and speaking skills.	1,6,8						
4	It will strengthen their vocabulary and use of words.	1,6,8						
5	It will give an introduction on the concept of communication, its importance and barriers.	1,6,8						

			SEMESTE	ZR – I						
Course 7	Course Title MEDICAL PSYCHOLOGY									
Course of	code	24BRIT1104R	Total credits: 3	L	T	P	S	R	O/F	C
			Total hours: 45T	3	0	0	0	0	0	3
Pre-requisite		D. CITTLE OD O	Co-requisite	0.457	4 N. C.	<del></del>	Ni			
Program		BACHELOR OF RADIOGRAPHY & ADVANCED IMAGING TECHNOLOGY								
Semest	er	1 4: .	Fall/ I semester of	•			_		1	1 1 '
Course Objectives		<ol> <li>Aims to provide students with a comprehensive understanding of human behavior admental processes.</li> <li>Explore various psychological domains such as cognitive, developmental, social, andabnormal psychology, gaining insights into how individuals think, feel, and act.</li> <li>To be equipped with critical thinking skills and an appreciation for the complexities of human behavior, enabling them to apply psychological concepts to real-world situations.</li> </ol>								
CO1		Understand the si	gnificance, history, sc	ope and l	oranch	es of j	osycho	ology.		
CO2			gy of human behavior							
CO3		•	erent stages of hun	nan grov	vth an	d de	velopr	nent	and th	e factors
CO4		influencing it.  Understand the concept and types of motivation, emotion, stress along with the management of stress and conflict.  Apply skills to assess mental health and identify the warning signs of poor mental health.								
Unit- No.		Conte	ent	Contac Hour		Lea	rning	Outc	ome	KL
I	•	roduction to Psycho Definition of psycho Evolution of moder Branch of psycholo	ology n psychology	9	Introduces the knowledg of psychology its evolution in modern world and different branches of it.			n 1,2,3,		
п	• ]	plogy of Behavior Body mind relation process in health an Brain and behavior: system, neurons and Association cortex, hemispheres.	dillness nervous 1 synapse,	Explains the biology behavior the mindset a all the complex function.						
Ш	Gre	owth and Developm Life span: different development (Infan adolescence, adulth old age) Heredity and enviro heredity and enviro and psychological o	stages of cy, childhood, ood, middle age, onment: roleof nment inphysical	Describes the growth a development of a person.				erson.	4,5	
IV	• ]	otivation and Emotion Motivation: meaning theories, motives are	g, concepts,types, ad behavior.	Explains the techniques of keeping one motivated and maintaining emotional processes.				d 1,2,3,		
V	in e	otion: definition, comotions, theories, estments, emotions i	-	9						1,2,3, 4,5

**T1:** Andrew W. Ellis, Anne H. Goodall, and Philip R. Houghton "Medical Psychology: A Clinical Introduction"

#### **REFERENCE BOOKS:**

R1: John L. O'Leary and Michael A. L. Hawkins, "Principles and Practice of Behavioural Medicine"

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Programme Outcome						
1	Understand the significance, history, scope and branches of psychology.	1,2						
2	Discuss the biology of human behavior and sensation.	1,3						
3	Identify the different stages of human growth and development and the factors influencing it.	1,4,7						
4	Understand the concept and types of motivation, emotion, stress along with the management of stress and conflict.	3,5						
5	Apply skills to assess mental health and identify the warning signs of poor mental health.	3,5						

	SEMESTER – I											
Course Title		TECHNO PRO	FESSI	IONA	L SKI	LLS I						
Course code	24BRIT1105R	Total credits: 1 Total hours: 15T	L 1	T 0	P 2	S 0	R 0	O/F 0	C 1			
Prerequisite	Nil	Co-requisite			NILL							
Programme	BACHELOR OF	RADIOGRAPHY &	ADV	ANCE	ED IM	AGIN	G TE	CHNOI	LOGY			
Semester		Fall/ I semester of f	ïrst ye	ar of	the Pro	ogram	me					
Course Objectives	_	ge about radiological a and interpretation of r	-		its term	ninolog	gy by s	studying	the g the			
CO1	Describe and ident CT and MR Image	ify cross-sectional ana	atomy i	in the	sagittal	l, coro	nal, an	d axial	planes on			
CO2	Describe the prope	er diagnostic anatomy.										
CO3	Students will be ab	ole to efficiently search	n the In	terne	t for red	quired	inforn	nation.				
CO4	Differentiate norm	al anatomy, and build	a perso	onal re	esource	syste	m for f	uture st	udy.			
Unit No.	Co	ntont	Conta Hour	ct	Lear	rning	Outco	me	KL			
I	upper lim supply.  Shoulder Clavicle, Coracoid Cavity  Arm B Forearm Ulna Elb. Wrist Bo		3	F	To learn about the Radiological anatomy of upper limbs.				1,2,3,			
II	<ul> <li>Radiologic lower limb supply:</li> <li>Femur, Pa Tarsal Bor</li> </ul>	cal anatomy of os and its blood tella, Tibia. Fibula. nes. Metatarsal alanges. Arches of	my of s blood  To learn about the Radiological anatomy of lower limbs.				1,2,4,					

- T1: Gray's Anatomy for Students by Richard Drake
- T2: Diagnostic and Surgical Imaging Anatomy: Brain, Head and Neck, Spine by Anne G. Osborn and H. Ric Harnsberger

#### **REFERENCE BOOKS:**

- R1: Human Anatomy (Part 1, 2 and 3) by B.D Chaurasia
- R2: Textbook of Anatomy Head, Neck and Brain by Vishram Singh R3: Anatomy and Physiology by Ross and Wilson

#### OTHER LEARNING RESOURCES:

1. www.mrimaster.com

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Programme Outcome						
1	Describe and identify cross-sectional anatomy in the sagittal, coronal, and axial planes on CT and MR Images.	1,6,8						
2	Describe the proper diagnostic anatomy.	1,6,8						
3	Students will be able to efficiently search the Internet for required information.	1,6,8						
4	Differentiate normal anatomy, and build a personal resource system for future study.	1,6,8						

			SEMESTER	- I						
Course	Title		EXTRA CURRIC	CULA	R A	CTIVI	ΓIES			
Course	code	24UBCC1101	Total credits: 1	L	T	P	S	R	O/F	C
Course	coue	240DCC1101	Total credits. 1	0	0	0	4	0	0	1
Pre-req	uisite		Co-requisite					[il		
Program	mme	BACHELOR OF	RADIOGRAPHY &	ADV	ANC	ED IM	AGIN	IG TE	CHNO	LOGY
Semes	ster		Fall/ I semester of fir	-			_			
Cour Object  CO  CO2  CO3	1 2 3	curricular activities. 2. To learn about to events and competite 3. To provide opposacademic curricular Explore different act photography, dramato Develop confidence competitions, according Apply knowledge at level competitions.	teamwork and leaders ions. ortunities for personaum. tivities organized by v., and literacy. to participate in regulating to individual inter	hip all groarious ar clul ests.	bilities  bwth a  clubs  b activ	on in diverse extracurricular and costs by engaging students in club-led and practical learning beyond the s, such as dance, music, wities, including workshops and er-university, state, and national				
CO	5	Evaluate overall gro	valuate overall growth alongside academic development.							
Unit- No.		C	ontent			Contact Hour	t	Lear Outc	_	KL
I	trained overa and V general curred Days Value Drant complete been will	ees to participate in all development. The Workshops, Guest Learn knowledge debayed affairs, Discussion Celebrations, Asset Education programmatics, Singing compoulsory for all the stumade for games and	ne opportunity to the n various activities are institute conducts actures, Essay writing, ates, quiz and discussion on social justice, embly, Weekly meeting, and also organizations. Games and Stadents. Provision has, a sports in college. The association and will also a participate in it.	for the Semin project ssion Nation ngs are Dan ports therefore collections.	neir nars cts, on nal and ace, are fore	60	and con through grown	non-v nmunic ough sentation up disc	cation	1

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Programme Outcome					
1	Explore different activities organized by various clubs, such as dance, music, photography, drama, and literacy.	6,7,8					
2	Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests.	6,7,8					
3	Apply knowledge and skills to represent ADTU in inter-university, state, and national level competitions.	6,7,8					
4	Explore new platform to learn from invited experts in their respective fields.	6,7,8					
5	Evaluate overall growth alongside academic development.	6,7,8					

	SEMESTER – II									
Course Tit	le	HUMAN ANATOMY A	ND	PHYS	IOLO	GY II				
Course cod	le 24BRIT1201R	Total credits: 6	L	T	P	S	R	O/F	C	
		Total hours: 45T+60P	4	0	4	0	0	0	6	
Pre-requisi	Human Anatomy	Co-requisite				Ni	l			
_	And Physiology 1	And Physiology I BACHELOR OF RADIOGRAPHY & ADVANCED IMAGING TECHNOLOGY								
Programm								INOLO	JGY	
Semester		utumn/ II semester of fir	•					iologia	o1	
		1. To provide a comprehensive concept of all the anatomical position and physiological function of the human body								
Course		2. To understand the underlined mechanism and regulation of the human body.								
Objectives		anatomy and physiology	_				•			
Objectives					•	•			nd	
	health.	reproductive, and endocrine systems, and their roles in maintaining homeostasis and health.								
CO1		ture and function of excret	ory s	ystem.						
CO2		organs and nervous system	_ •	•		functi	ons			
CO3	Identify different type	es of immune cells and lyr	npha	tic sys	tem in	the bo	dy.			
CO4	Understand the struct	ture and functions of male	and t	female	repro	ductive	syste	n.		
CO5	Develop fundamental	knowledge of the endocr	ine sy	ystem	and the	eir regu	ılation	•		
Unit-No.	Co	Content			Learning Outcome				KL	
			H	Iour			5 0 410			
	Jrinary System				Kno					
	Structure of kidney, ureter, urinary bladder,					_		siology		
I	nale and female urethra.			8		rinary			1,2	
	Functions of kidneys, nephron.				human body.					
	Urine formation.									
	Nervous System									
	• Classification of Nerv	•								
	• Central Nervous syste	•								
	cord, blood supply of b									
	<ul> <li>Cranial nerves and sp</li> </ul>									
		system, sensory system			Kno	wledge	e about			
II	and			12		vous sy			1,2,	
	• Autonomic Nervous S	•							3	
	• Functions of brain, ar	nd spinal cord								
	• Synapse, reflex arc									
	• Cerebrospinal fluid									
	<ul><li>Sensory Organs:</li></ul>	•								
	Skin, Ear, Nose, Tong	Skin, Ear, Nose, Tongue Eye								
	Lymphatic and Immu	•					_			
	• Structure of lymphatic	• Structure of lymphatic system and functions.				ınderst		out		
III	• Immunity – Antigen,		5		phatic			1,2		
	response.			3		Immunological Sy			-,-	
	Acquired immunity									
IV	Reproductive System									
_ ,	• Structure of male and	female reproductive		10	Toι	ınderst	and ab	out	1,2,	

	organs.		Reproductive system	3
	Structure of breast			
	Changes during puberty			
	Ovulation,			
	Menstrual cycle			
	Pelvic cavity with its boundaries and contents			
	Endocrine System			
v	Different endocrine glands		To understand about the	1,2,
•	Hormones and functions of endocrine glands	10	Endocrine System.	3
	Regulation of secretion hormones.		Zindorinie System.	
	1. Study of pelvic bones and bones of lower			
	limbs of human body.		To apply the knowledge	
	2. Study of organs: Brain, heart, lung, liver,		of anatomy and	1,2,
Practical	kidney	30	physiology in the	3,4,
	3. Blood group	30	practical fields	5,4, 5
	4. DLC			3
	5. Total count of RBC and WBC			

T1: Fundamentals of Anatomy Pamela K Levangie, Cynthia C Norkin JP Bros Medical Publishers, New Delhi

T2: Fundamentals of Medical Anatomy Duane nudson 2nd ed. Publisher Springer, 2007

T3: A book of Physiology Dr Khurana CBS Publishers & Distributors

T4: Ross and Wilson Anatomy and Physiology Anne Waugh, Allison Grant 12th edition, ElsevieHealth Sciences

#### **REFERENCE BOOKS:**

R1: Medical anatomy JP Bros Medical Publishers, Bangalore 1st Indian Ed 1997

R2: Clinical Anatomy JP Bros Medical Publishers, Bangalore 5th Ed 1996, 1st Indian Ed 1998

R3: Ganong's Review of Medical Physiology Kim E. Barrett 26th Edition, McGrawHill

R4: Best & Taylor Physiological basis of Medical practice Y. Tripathi O.P. Tandon 13th edition, Wolters Kluwer

### OTHER LEARNING RESOURCES:

https://openstax.org/books/anatomy-and-physiology-2e/pages/1-1-overview-of-anatomy-andphysiology

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Programme Outcome					
1	Understand the structure and function of excretory system.	1					
2	Comprehend sensory organs and nervous system along with their functions	1					
3	Identify different types of immune cells and lymphatic system in the body.	1,2					
4	Understand the structure and functions of male and female reproductive system.	1,7					
5	Develop fundamental knowledge of the endocrine system and their regulation.	1,8					

SEMESTER – II											
Course T	itle	BIOC	CHEMISTRY: BIOMOI			ND IT	SM	IETA	BOLIS	M	
		24BRIT1202R	Total credits: 4	L	T	P	S	R	O/F		С
Course c	ode	-	Total hours: 45T+60P	3	1	2	0	0	0		4
Pre-requi	cita	General	Co-requisite		•	•		Nil	•		
_		Biochemistry	_								
Program		BACHELOR	OF RADIOGRAPHY							<b>10</b> 1	LOGY
Semeste	er		Autumn/ II semester o								
		. To impart the knowledge in the technical aspects of biochemical studies specially focusing on the									
Course		clinical findings in various body metabolites									
Objectiv	es		<ul><li>2. To understand the energy flow in the form on ATP in the human body and cells.</li><li>3. To give a practical knowledge for the qualitative determination of carbohydrate, proteins and lipids.</li></ul>								
CO1		•	owledge on classification	, mech	anism o	of enzy	yme	s, and	tactors	atte	ecting
CO1		enzyme actions.			-4-l1:	: 41	la a la	. d.,			
CO2			e mechanism of carbohyd						4		11
CO3			abolism of protein and its							OI	body.
CO4			cess of Lipids metabolism ifferent types of vitamins							ree	e and
CO5			icies in the body.	anu III	micials,	tiiCII (	cias	sirical	1011, SUU	100	s anu
Unit-		signs of deficien	icies in the body.	(	Contact	Learning Outcome					
No.			Content		Hour				come KL		
	EN	ZYMES:									
	De	finition and classi	ification of enzyme.			knowledge about					
I	Bas	asic idea of co-enzyme, iso-enzyme.			10	enzymes				1,2	
	Me	chanism of enzy	me Action.			enzy	/mes	5			
		ctors affecting en	•								
			E METABOLISM			knowledge about					
II	-	lycolysis, Kreb's Cycle, Gluconeogenesis,			10	carbohydrates			3,4,5		
		cogenesis, Glyco				metabolism					
		OTEIN METAI				,					
***		insamination Dea			10			lge abo	out		2245
III		ea Cycle and its S	_		10	*					2,3,4,5
		T (Liver Function T (Renal Function				metabolism		ISIII			
		PID METABOL	<u> </u>							+	
IV			Acids. Ketone bodies		10			-	out lipid		1,2,3,4
1 4		tosis and ketoacio			10	meta	aboli	ism			1,2,5,4
		TAMINS AND N									
			ification of vitamins								
			ty. Sources and functions	of							
V		-	and its Deficiency.		16			lge abo		]	1,2,3,4,5
		ndividual minerals (calcium, phosphorus, iron,				vitai	mıns	s and 1	ninerals		
	ma	gnesium, copper,	selenium, molybdenum	etc)							
-their sources, function and properties.											
			the determination of								
		teins:						y the			
Practical		Heller's Test			30			lge of		1	1,2,3,4,5
_ raciicai			cid test for protein		20			istry ir			.,_,,, ,,,
		Precipitation test				prac	tica	l field	S.		
	• [	Lipid solubility Te	ests								

T1: Biochemistry U Satyanarayana and U Chakrapani 5th Edition (2020)

T2: Practical Clinical Biochemistry Shruti Mohanty 1st Ed

T3: Essentials of Practical Biochemistry Gupta Prem Prakash Gupta Neelu Jaypee Brothers Medical Publishers (P) Ltd

#### **REFERENCE BOOKS:**

R1: Leininger Principles of Biochemistry David L Nelson and Michael M Cox 7th edition

R2: Haper's Illustrated Biochemistry Robert Murray, Daryl K Granner et al 29th edition

R3: Biochemistry Lubert Stroyer, Jeremy M Berg, et al 5th edition

R4: Biochemistry David E Metzler 2nd edition

#### OTHER LEARNING RESOURCES:

ERP notes

Online study materials

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Programme Outcome					
1	Comprehend knowledge on classification, mechanism of enzymes, and factors affecting enzyme actions.	1					
2	Comprehend the mechanism of carbohydrate metabolism in the body.	1					
3	Explain the metabolism of protein and its significant effects on different organs of body.	1					
4	Describe the process of Lipids metabolism and associated clinical conditions.	1,7					
5	Determine the different types of vitamins and minerals, their classification, sources and signs of deficiencies in the body.	1,8					

			SEMESTER – II									
Course '	Title	FUNDAM	ENTAL OF PATIE	NT CA	RE	AND	SAFI	ETY				
Course	codo	24BRIT1203R	Total credits: 2	L	T	P	S	R	O/I	7	C	
Course	coue	24DK111203K	Total hours: 30T	2	0	0	0	0	0		2	
Pre-		Basic Principle Of										
requis		<b>Hospital Practice And</b>	Co-requisite				Ni	il				
_		Patient Care										
Progran		BACHELOR OF RAD							HNC	LO	GY	
Semest	ter		/ II semester of first	-								
		1.To impart knowledge on meeting the highest standards of professional quality in health										
Cours		sector.										
Objecti	ives	2. To bring efficiency to the		haalth	aaat	~**						
CO1		3.To teach the value and e Describe signs and symptom					nedia	ite m	anage	mer	nf	
CO2		Understand medical ethics							mage	11101	10.	
CO3		Identify the different types					-					
		* **						nia ar	nd its			
CO4	ŀ	immediate management.	Determine the signs and symptoms of hyperglycemia and hypoglycemia and its immediate management.									
COS		Proficient in performing q	uality laboratory inve	estigati	on p	rocess	and	labora	atory			
COS	,	management.										
Unit-		Content		Cont	act	]	Lear	ning		I	KL	
No.				Hou	ır	(	Outc	ome				
		oning:										
	• De	finition										
	• Ca	uses of poisoning										
	• So	urces of Poisoning										
	• Syı	ymptoms of poisoning				To understand the						
	• Fir	First aid & Management										
	• An	tidotes				knowledge about the hospitals, it's functions and record writing& record keeping.				1,2,3,4,5		
I	• Co	mmon drugs poisoning		8								
	• Ca	rbon monoxide poisoning										
	Lega	al Responsibility:										
	• Ac	t of commission						1 0				
	• Ac	t of omission										
	• Ac	t of rashness, negligence &	damage									
	• Le	gal liabilities of medical pro	fession									
	Adv	antage & disadvantage of th	e act.									
	• Ma	alpractice										
	• Civ	vil negligence										
	• Cli	nical negligence						nd the				
TT	• Co	rporate negligence		_			viedg ims a	e abo	ut	1	2.2	
II		eparation of patients		5				ına s of fi	ret	1,	,2,3	
		eparation of equipment's co	llection of			aid.	cuves	01 11	151			
		imen of urine, stool, sputum				aiu.						
	_	Pericardial fluid, Peritoneal fluid, Pleural fluid, etc.										
	• Do	finition				Und	erstar	nd the	;			
III		pes of shock		6		knowledge about					23	
		neral Features of shock			maintaining th		-	e	2,3			
	₹ Ge	nerai reatures of SHOCK				hygi	ene a	nd				

		l	6	
	• Instigations of shock		safety in the	
	• Initial management & first aid of shock		hospitals.	
	Definition			
	Clinical features			
	Diabetes laboratory tests for diabetes.			
	• Different types of glycosuria			
	• Ketone bodies			
	Glucose tolerance test.			
	Definition			
	• Etiology & Clinical Features			
	Investigations for hypoglycaemia			
	Definition			
	Names & classification of drugs			
	Different preparations of drugs		To understand the	
IV	• Effects of drugs	4	knowledge about the safety uses of	1 2 2 4
1 1 1	Adverse effects of drugs	4	equipment's in	1,2,3,4
	• Tolerance, Abuse, addiction of drug		the laboratory	
	Different routes of drug administration		the laboratory	
	Storing of medicine Units of standard measurement			
	Function of medical Professional			
	Qualities of good professional			
	• Ethics of Medical Profession			
	Laboratory designing			
	Laboratory management			
	Different laboratory			
	• Functions of receptionist, Head of section,		Determine the	
V	laboratory specialist, business manager, quality	9	knowledge about	1,2,5
	officer, safety officer		the vital signs	
	Disposal of yeasts			
	• Reporting of tests of laboratory			
	Quality control and accreditation			
	• Control of fire, infection, corrosive chemicals,			
	toxic fumes, broken glasses, carcinogen.			
	• Legal and ethical regulation.			

T1: National Health Programmes of India National Policies and Legislations Related to Health J. Kishore 14th edition

T2: A Dictionary of Public Health Paperback J Kishor 1st edition

T3: Health System in India: Crisis & Alternatives, National Coordination Committee Jan Swasthya Abhiyan  $1^{st}$  edition

# **REFERENCE BOOKS:**

R1: In search In Search of the Perfect Health System Mark Britnell January 1, 2015 by Palgrave MacMillan

R2: Fundamental Concepts and Skills for the Patient Care Technician- Text and Workbook Package Kimberly Townsend 1st edition

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Programme Outcome					
1	Describe signs and symptoms of common poisonings and its immediate management.	1,5,7					
2	Understand medical ethics and its importance on the healthcare system.	1,6,7					
3	Identify the different types of shock along with the management.	1					
4	Determine the signs and symptoms of hyperglycemia and hypoglycemia and its immediate management.	1,2,8					
5	Proficient in performing quality laboratory investigation process and laboratory management.	4,5,6,7					

		SEMESTE	ER – II								
Course '	Title	FUNCT	IONAL I	ENGI	LISH						
Course	code 24UBPD1201F	R Total credits: 2	L	T	P	S	R	O/F	С		
		Total hours: 30p	0	0	4	0	0	0	2		
Prerequ	isite Basic English	asic English Co-requisite NIL									
Progran	nme BACHE	LOR OF RADIO			DVA	NCE	D IM	AGIN	G		
Semeste	or A1		CHNOLO of first v		f the	Prog	ramr	ne			
Course		Autumn/ II semester of first year of the Programme  1. To introduce the students to the basics of English grammar and their									
Objectiv						- 6					
	exercise	exercises.									
	3. To learn	and understand the	importan	ce of	pronu	ınciat	ion o	f word	s.		
CO	The learner will	be able to analyze	and use th	ne tecl	hniqu	es in	langu	age us	e		
	2 Cammunitari	and habari1 1	211a:11 1	0004 1	ho!	-21£	1:				
CO		and behavioural skarn the effective and									
CO		n their vocabulary a				or ur	e unn	e			
CO	U	ntroduction on the c				ation	its ii	mnorta	nce and		
	barriers.	inoduction on the c	onecpt of	Com	manne	ation	, 165 11	проги	nee and		
Unit	Conte	nt	Contact Learning Out				utco	tcome KI			
No.			Hour								
I	Module 1-										
	Grammar Interchange				e a			with	,5		
	Interrogative and Asso Exclamatory and Asso			prop	er Gr	allilli	aı.				
	Types of Tenses	ertive Semences									
	Common Errors										
II	Module 2 - Vocabula	ry	6	Lear	n abo	out vo	cabul	lary	1,2,3,4		
								•	,5		
	Homonyms Homopho	ones									
III	Reading Skills	_	8	Lear	ling	1,2,3,4					
	Techniques of Effective	•		skill	S				,5		
	Gathering ideas and intext	nformation from a									
IV	Module 4 - Conflict	Management	6	Lear	n abo	ut co	nflict		1,2,3,4		
	Definition				agem	ent			,5		
	Type of Conflict Man	agement									
Effects of Conflict Management											
V	Module 5 - Time-Ma	nagement Skills	8	Lear		bout	the	time			
	Introduction To Time	a Managamant		man	agem	ent sl	CIIIS		,5		
	Introduction To Time Importance of Time	_									
	Basic Tips to Maintain	_									

T1: Wren & Martin. (2017). High School English Grammar and Composition.S.Chand Publishing.

T2: Pal, Rajendra. Suri, Premlata (2022). English Grammar & Composition. SultanChand and Sons Publishing.

T3: Debnath, Adhir. (2018). A Textbook of English Grammar and Composition. Bina Library

#### **REFERENCE BOOKS:**

R1: Swan, Michael., (2014) Practical English Usage, Cambridge University Press

R2: Taylor J.and Wright, J., IELTS Advantage Reading Skills: A step-by-step guide to a highIELTS reading score, Delta Publishing by Klett.

#### OTHER LEARNING RESOURCES:

1. https://clockify.me/time-management-techniques

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Programme Outcome						
1	The application of grammatical rules will enable the students to improve the speaking and writing skills.	1,6,8						
2	It enables the learners to use the language effectively.	1,6,8						
3	It will strength both listening and speaking skills.	1,6,8						
4	It will strengthen their vocabulary and use of words.	1,6,8						
5	It will give an introduction on the concept of communication, its importance and barriers.	1,6,8						

		SEMESTER-II							
Course Title	SELI	F STUDY (SEMINAR					1	0/15	<u> </u>
Course code	24BRIT1204R	Total credits: 1 Total hours: 15T	L 1	T 0	P 0	S 0	R	0/F 0	<u>C</u>
Pre- requisite		Co-requisite				•	1	•	
Programme	BACHELOR OF RADIOGRAPHY & ADVANCED IMAGING TECHNOLOGY								
Semester	Autumn/II semester of first year of the Programme								
Course Objectives	<ol> <li>Develop Independent Learning Skills – Enhance self-motivation, time management, and research abilities to explore topics independently.</li> <li>Improve Research and Analytical Abilities – Strengthen the ability to gather, analyze, and synthesize information from various sources critically.</li> <li>Enhance Presentation and Communication Skills – Develop written and verbal communication skills through reports, discussions, and presentations.</li> </ol>								
CO1	Develop the ability topics with minimal g	o learn independently,	, mana	ige ti	me e	effectiv	ely,	and e	xplore
CO2		nd analytical skills by	gathe	ring, o	evalu	ating,	and	synthe	esizing
CO3	presentations, and disc								•
CO4	and proposing logical					nalyzin	g co	mplex	issues
CO5 SL No.	Improve self-disciplin	e and time managemen CONTE		earnin	g.				
1.	Reflex actions and the		1115						
2.	Effect of hormonal im								
3.	DNA replication: Hov	v genetic information is	copie	d.					
4.	Importance of hygiene	e and infection control i	n hosp	itals.					
5.	Use of personal protect	ctive equipment (PPEs)	in pati	ients'	care.				
6.	Enzymes: Mechanism	of Action and Regulat	ion.						
7.	Gene Regulation and	Expression							
8.	Cellular Respiration a	nd ATP Production							
9.	Biochemical Basis of	Diabetes Mellitus							
10.	Liver Function Tests a	and Their Biochemical	Basis						
11.	Renal Function Tests	and Clinical Significan	ce						
12.	Biochemistry of Anen	nia and Hemoglobinopa	athies						
13.	Skeletal System: Bone	es, Joints, and Their Fu	nctions	S					
14.	Muscular System: Typ	pes of Muscles and The	ir Mov	emen	its				
15.	Cardiovascular System	n: Anatomy of the Hear	rt and	Blood	Circ	culation	n		
16.	Respiratory System: A	anatomy of Lungs and l	Mecha	nism	of Bı	eathin	g		
17.	Digestive System: Str	ucture and Function of	Major	Orga	ns				
18.	Urinary System: Anat	omy of Kidneys and Ex	cretio	n Prod	cess				
19.	Endocrine System: Gl	ands and Hormonal Re	gulatio	on					

20.	Anatomy of the Human Brain and Cranial Nerves
21.	Lymphatic System and Immunity
22.	Anatomy of the Eye and Visual Pathway
23.	Anatomy of the Ear and Mechanism of Hearing
24.	Anatomy of the Skin and Its Functions
25.	Types of Bones and Bone Formation (Ossification)
26.	Functional Areas of the Brain and Their Roles
27.	Reflex Actions and Neural Pathways
28.	Spinal Cord: Anatomy and Functions
29.	Structure of Arteries, Veins, and Capillaries
30.	Heart Valves and Blood Flow Through the Heart
31.	Blood Composition and Functions
32.	Lymphatic Circulation and Its Role in Immunity
33.	Lungs and Their Lobes: Structure and Function
34.	Mechanism of Gas Exchange in the Lungs
35.	Control of Breathing by the Brain
36.	Structure and Function of the Diaphragm
37.	Oxygen Transport in Blood and Tissue Respiration
38.	Role of Salivary Glands and Digestion of Food
39.	Small Intestine: Structure and Absorption of Nutrients
40.	Large Intestine and the Process of Waste Elimination
41.	Nephron: Structure and Function in Urine Formation
42.	Adrenal Glands and Their Hormonal Functions
43.	Thyroid Gland: Anatomy and Hormonal Regulation
44.	Pituitary Gland: Master Gland of the Body
45.	Male vs Female Reproductive Anatomy
46.	Anatomy of the Tongue and Sense of Taste
47.	Olfactory System: Anatomy of the Nose and Sense of Smell
48.	Structure of the Retina and Vision Processing
49.	Anatomy of the Ear: Hearing and Balance Mechanism
50.	Skin Receptors and the Sense of Touch
51.	Roles and Responsibilities of Healthcare Professionals in a Hospital
52.	Basic Patient Care Skills: Hygiene, Mobility, and Nutrition
53.	Effective Communication with Patients and Families

54.	Infection Control and Hospital Hygiene Practices
55.	Medical Ethics and Patient Rights in Healthcare
56.	Hospital Waste Management and Biohazard Disposal
57.	Vital Signs Monitoring and Interpretation
58.	Handling Patients in Shock and Trauma Cases
59.	Intensive Care Unit (ICU) Patient Management
60.	Hospital Acquired Infections (HAIs) and Their Prevention
61.	Body Fluid Compartments and Electrolyte Balance
62.	Acid-Base Balance and Its Regulation
63.	Synaptic Transmission and Neurotransmitters
64.	Heart Sounds and ECG Interpretation
65.	Microcirculation and Capillary Exchange
66.	Shock and Its Physiological Mechanisms
67.	Role of Enzymes in Digestion and Absorption
68.	Liver Physiology and Detoxification
69.	Renal Clearance and Glomerular Filtration Rate (GFR)
70.	Adrenal Gland Hormones and Their Effects
71.	Physiology of Growth Hormone and Development
72.	Menstrual Cycle and Hormonal Regulation
73.	Lipoproteins and Their Role in Atherosclerosis
74.	Allosteric Enzymes and Their Regulation
75.	Glycogen Metabolism: Glycogenesis and Glycogenolysis
76.	Ketogenesis and Its Role in Starvation and Diabetes
77.	Electron Transport Chain and Oxidative Phosphorylation
78.	Lipid Profile and Its Clinical Significance
79.	General Management and First Aid for Poisoning Cases
80.	Medical Negligence and Malpractice: Causes, Consequences, and Prevention
81.	Occupational Hazards in Hospitals: Safety and Legal Considerations
82.	Essentials of Setting Up a Clinical Laboratory
83.	Good Laboratory Practices (GLP) and Quality Control
84.	Laboratory Accreditation and Certification Standards (NABL, CAP, ISO 15189)
85.	Waste Disposal and Biohazard Management in Laboratories
86.	Chemical Spill Management and Emergency Protocols
87.	Consumer Protection Act and Its Impact on Medical Laboratories

88.	Pulse Rate and Its Variations: Normal vs. Abnormal Conditions
89.	Ketone Bodies: Formation, Functions, and Role in Diabetes
90.	Diabetic Ketoacidosis (DKA): Causes, Symptoms, and Treatment
91.	Diabetes Mellitus: Definition, Causes, and Risk Factors
92.	Management and Treatment Strategies for Hypoglycemia
93.	Essential Minerals in Human Nutrition: Macro and Microminerals
94.	Deficiency Disorders Related to Vitamins and Minerals
95.	Vitamin A: Functions, Deficiency Disorders, and Sources
96.	Vitamin D: Role in Bone Health and Calcium Absorption
97.	Vitamin E: Antioxidant Properties and Health Benefits
98.	Vitamin K: Role in Blood Clotting and Bone Metabolism
99.	Role of Vitamins and Minerals in Preventing Chronic Diseases
100.	Dietary Sources and Bioavailability of Vitamins and Minerals
101.	Vitamin and Mineral Deficiencies in Special Populations (Pregnancy, Elderly, Athletes)

			S	EMESTEI	R – II									
Cours	e Title			Gen	eral Pa	the	ology	,						-
Cours	e code	24UGGP1201R		l credits: 3			T	P		S	R	O/F	1	C
				Total hours: 45T   3   0   0   0							0	0		3
	quisite	Nil		requisite						Nil				
	amme	BACHELOR OF									reci	INOI	<u> </u>	ΞY
Sem	ester	1 70 (6 '11'		ster of firs										
Cou	ırse	1. To get famili	_	•										
Obje	ctives	2. To obtain an			•			n ın t	ne b	ody				
		3. To understan								С. С		1 1		
C	<b>D1</b>	The students will l			of patr	1010	ogy, s	source	es o	inte	ection	, heal	ıng	and
C	22	transmission of organism in the body.  The students will learn about cell injury, mechanisms and its morphology.												
		The students will learn about cell injury, mechanisms and its morphology.  The students will learn organs and cells involved in immunity.												
	O3 O4	The students will lea								to co	11000			
									iiiu i	is ca	uses			
CO	Jo	To learn about neo	piasia, tuii		ia carci	nog	genes	18.				1		
Unit- No.		Content		Contact Hour		I	Learı	ning (	Out	come	e		ŀ	KL
110.	INTR	ODUCTION TO		Hour										
		HOLOGY												
	Histo	ry		Stude	ents	will	unde	ersta	nd th	ne bas	sics			
I		ces of infection	5	of pa			and i	ts ro	ole ir	n dise	ase	1,	2, 3,	
		mission of organism	to the		diagn	osi	s.							
	body	11.6 *** 11	1.											
		d infection, Wound h	ealing											
		L INJURY		Students will understand the						the				
	Cell i				causes, mechanisms, and effects of cell injury, along with cellular adaptations to growth and						of			
II		anism of cell injury hology of cell injury		10							ılar	1,	2, 5	
		lar adaptation of grov	vth &											
		entiation	vill &		differentiation.									
	IMM	UNITY												
	Immu													
111		ns of immune system		10	Stude								1	2
III		nus, Spleen, Bone ma	rrow	10	immu		•	orgar		and		ells	1	., 3
		of immune system B			involved in the immune response.									
		K cell, Macrophage	es.											
		AMMATION			Stude	ents	wil	l be	ab	le to	def	ine		
		ition, signs, types and Chronic Inflam			inflar	nm	ation	, rec	ogni	ize i	ts sig	gns		
IV		itions, Causes, Featu		10	and									
1 1		nical mediators of	103	10	acute								1,	2, 3,
		mation			and id			he ch	emi	cal n	nediat	ors		
				invol	ved	l.								
		PLASIA			Students will understand the									
	Defin				conce	_		_			_			
$\mathbf{v}$		acteristics of tumors	_	10	betwe			nign			nalign		1,2, 3, 4	
•		nogens & carcinogen			tumo	-		nd		arn		out	_,_	, -, -
		rence between benigr	gn and		carcii	_			the	pro	cess	10		
	maligi	nant tumors		carcii	10g	enesi	S.							

- 1. Textbook Of Pathology by Harsh Mohan
- 2. KUBY Immunology 6th /7th edition

#### **REFERENCE BOOKS:**

1. Robbins And Cotran Pathologic Basis of Disease" by Kumar, Abbas, And Aster

#### OTHER LEARNING RESOURCES

- 1. <a href="https://www.youtube.com/@DrDeveshMishra">https://www.youtube.com/@DrDeveshMishra</a>
- 2. Miller MA, Zachary JF. Mechanisms and Morphology of Cellular Injury, Adaptation, and Death. Pathologic Basis of Veterinary Disease. 2017:2–43. e19. doi: 10.1016/B978-0-323-35775-3.00001-1. Epub 2017 Feb 17. PMCID: PMC7171462.
- 3. Stone WL, Basit H, Zubair M, et al. Pathology, Inflammation. [Updated 2024 Aug 11]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK534820/
- 4. https://www.sciencedirect.com/journal/neoplasia

			SEMESTER	– II							
Course	Title		ENVIRONMI	ENTA	L SC	IENCI	E				
Course	code	24UBES1201R	Total credits: 2	L	T	P	S	R	O/F	C	
			Total hours: 30T	2	0	0	0	0	0	2	
Pre-req		Nil	Co-requisite					Vil			
Progra			RADIOGRAPHY &						CHNOL	OGY	
Seme	ster		utumn/ II semester of						1		
Cour Object	ol 01 02	its associated problems.  3. To develop a world population which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively towards solutions of current problems and prevention of new ones.  Understand the importance of Environment Studies and the need for public awareness.  Identify natural resource, its importance, and its impacts on the environment.									
		• •	e of biodiversity and th	•		ethods	of co	nservat	on of		
CO	14	biodiversity.									
CO	5	Explain various env	ironmental pollution ar	d its i	impac						
Unit-			Content			Cont		Lear	_	KL	
No.	N / 14		- C 4 - 1 - 4	1:		Hou	ır	Outo	ome		
I	Multidisciplinary nature of environmental studies:  Definition, scope and importance (2 lectures) Need for public awareness.  Social Issues and the Environment from Unsustainable to Sustainable development. Urban problems related to energy. Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns. Case Studies.  Environmental ethics: Issues and possible solutions.  Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies.  Waste land reclamation. Consumerism and waste products.  Environment Protection Act. Air (Prevention and Control of Pollution) Act.  Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act.  Issues involved in enforcement of environmental legislation. Public awareness					6	]	Learn ab Introduc Environi	tion to	1,2,3,4	
п	resou Fores d e f minii Wate groun bene explo	ning, dams and their effects on forest and tribal people.  ater resources: Use and over-utilization of surface and					Learn ab applicati natural re		1,2,3,4		

	problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. Case studies. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.  Human population and the Environment Population growth, variation among nations. Population explosion — Family Welfare Programme. Environment and human health. Human Rights. Value Education. HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health. Case Studies.			
III	Ecosystems Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the Following ecosystem: - Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries.	8	Learn about Ecosystem	1,3,4,5
IV	Biodiversity and its conservation Introduction — Definition: genetic, species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels. India as a mega-diversity nation Hot-sports of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man- wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.	7	Knowledge about Biodiversity	3,4,5
V	Environmental Pollution Definition Cause, effects and control measures of:-Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards. Solid waste. Management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies. Disaster management: floods, earthquake, cyclone and landslides Field work Visit to a local area to document environmental assets river/ forest/ grassland /hill/ mountain. Visit to a local polluted site- Urban/Rural/Industrial/Agricultural. Study of common plants, insects, birds. Study of simple ecosystems- pond, river, hill slopes, etc.	5	Knowledge about various environmental pollutions.	3,4,5

- T1. Harucha E. B, Textbook of Environmental Studies, Orient Blackswan Publishing.
- T2. Tiwari V. K A Textbook of Environmental Studies, Himalaya Publishing House
- T3. Chatwal G. R. & Sharma H. Environmental Studies, Himalaya Publishing House

### **REFERENCE BOOKS:**

- R1. Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Stadards, Vol I and II, Enviro Media (R)
- R2. Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
- R3. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad 380 013, India, Email: mapin@icenet.net (R)
- R4. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Programme Outcome						
1	Understand the importance of Environment Studies and the need for public awareness.	1,5,8						
2	Identify natural resource, its importance,  and its impacts on the environment.	1,8						
3	Explore in-depth knowledge on concept of ecosystem.	1,8						
4	Understand the value of biodiversity and the various methods of conservation of biodiversity.	1,8						
5	Explain various environmental pollution and its impact on human and ecosystem.	1,5,8						

			SEMESTER	R – II											
Course	e Title	CO-C	URRICULAR	ACTI	VIT	IES									
Course	e code	24UBCC1201	<b>Total credits:</b>	1	L	T	P	S	R	O/F	C				
			~		0	0	0	4	0	0	1				
Prereq	quisite	Compulsory	Co-requisi	te				Nil							
Progra	amme	BACHELOR OF RATECHNOLOGY	ADIOGRAPHY	<b>7 &amp; A</b> ]	DVA	NCEI	O IM	AGIN	G						
Semes	ter	Autum	n/ II semester o	f first	year	r of th	e Pro	gram	me						
Course		It is to develop the of the learners.	social and soft	skills a	and t	o pron	note a	ı holis	tic de	velopı	ment				
	01	The students will be engaged in different activities headed under different clubs namely dance, music, photography, drama, literacy, etc.													
CO	02		The students will participate in regular club activities like workshops,												
C	03	competitions as per their interest and hobbies.													
	<i>J S</i>	The students will be trained to represent ADTU in various university, state and national level competitions.													
CO	04	The students will be grespective fields.		to ear	n fro	m invi	ited e	xperts	in the	eir					
CO	05	The students will get considering the overal	•		_		_	ethodo	ology						
Unit No.		Content		Cont Ho		Le	arnir	ıg Ou	tcome	e	KL				
I	outsid	encourages a range e the regular curriculu earner's interest.					ectwit	ability th pee		rk					
II	social	activities are aimed to and soft skills and cdevelopment of the le	d promote a		-	Abilityto prioritize tasks,  Balance multiple commitments,									
IV	Keeping in mind the 360-degree learning methodology the students are engaged in different activities headed under different clubs viz. Dance, music, photography, drama, literary etc.  The students are encouraged to participate				0	Ability to communicate effectively in various formats, such as public speaking, team discussions, or performances.  Understanding of					3,4,5				
	in regular club activities, workshops, competitions as per their interest and hobbies.				-	andw	orkpl	alism, ace be	ehavio	ours.					
V	trained Unive	tudent members of defented in represent AdtU in resity student and netitions.	various inter					self-av intere		ess					

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Programme Outcome							
1	The students will be engaged in different activities headed under different clubs namely dance, music,photography, drama, literacy, etc.	6,7,8							
2	The students will participate in regular club activities like workshops, competitions as per their interest andhobbies.	6,7,8							
3	The students will be trained to represent ADTU in variscite university, state and national levelcompetitions.	6,7,8							
4	The students will be given a platform to earn frominvited experts in their respective fields.	6,7,8							
5	The students will get an exposure of 360-degree learning methodology considering the overallgrowth along with the academics.	6,7,8							

			SEMESTER – III									
Course	e Title		RADIATION P	HYSI	CS							
			Total credits: 4			TP	S	R	0/1	F	С	
Course	e code	24BRIT2101R	Total hours: 60T	_		0 0	0	0	0		4	
Pre-rec	quisite	Nil	Co-requisite				1	Nil				
Progra	amme	BACHELOR O	F RADIOGRAPHY & ADV	ANCI	E <b>D</b> I	MAG	ING '	TECH	NO	LO	GY	
Seme	ester	]	Fall/ III semester of second y	ear of	the	Progr	ramn	1e				
Cou	IMCO.	1.To understand f	undamentals of physics and its	applic	catio	on in m	edica	l imagi	ing.			
Objec		2. To understand a	bout x-ray and its properties.									
Objec	uves	3. To understand about the equipment's used in diagnostic radiology.										
CC	)1	Understanding of	the physics related to diagnost	ic ima	ıging	g.						
CC	)2	Understanding of	X-ray equipment, circuits, and	l funda	ame	ntal pr	operti	es, inc	ludir	ng tl	neir	
	<i>,</i> <u> </u>	units and quantities.										
CC	)3	•	nderstanding the physical prop	perties	of 2	X-rays	and t	he con	struc	tion	ı of	
		· ·	X-ray tubes.									
CC	)4	•	nderstanding of the intricate in	teracti	ions	betwe	en rac	liation	and	mat	iter,	
			inciples of radioactivity.									
CC	)5	Proficient in the u	se and understanding of X-ray	<del>, ^ ^</del>		ıt.						
Unit-		$\mathbf{C}$	ontent	Cont		Learn	ing (	Outcon	ne	K	KL	
No.		C CONCEPT:		Hou	ur							
I	• Eins • Electronic Electronic Place • Mag • Electronic Place • Mag • Electronic Place • Mag • Electronic Place • Law	mic structure, Periodic table, n  on: tric induction  at tic effect of an electric current tion on and self-induction	13	3	Learn basic Physi	conce	at the epts of		1,	2,3		
п	<ul> <li>Alternating current-transformers theory and losses</li> <li>X-RAY CIRCUITS: Energy bands in solids</li> <li>Semiconductors and semiconductor devices.</li> <li>P-n junction diode as a rectifier.</li> <li>Logic gates.</li> <li>Self- rectifying circuits.</li> <li>Fuses, switches and interlocks</li> <li>Cathode ray oscilloscopes</li> <li>mA – kVp, mAs</li> <li>High tension Transformer</li> </ul>				2	ray ci	rcuits		-	4	.,5	
III	X-RA Histor • Natu			13	3		ry, pro	t the oductio ties of		1,2,	3,4,5	

	• Sources of X-rays		x-rays.	
	• Electromagnetic waves			
	• Interaction of electrons with target-spectra of x-rays			
	• Properties of X- rays			
	• Production of X- rays			
	Bremsstrahlung radiation			
	Characteristics radiation			
	• factors affecting X-Ray-emission spectra			
	• X-ray Quantity and quality			
	• Heel effect			
	• Filtration – added, inherent			
	X-ray Tube:			
	General features of X-ray tube			
	• Types – Fixed and rotating			
	• Rating and faults in X-ray tubes			
	• Characteristics of X-ray tube			
	• X-ray tube for mammography			
	• Tube stand and ceiling tube support			
	• Generator			
	INTERACTION OF RADIATION WITH MATTER: Attenuation, attenuation co-efficient, absorption and			
	scattering Photo electric absorption			
	Compton scattering			
	Coherent scattering			
	Photoelectric disintegration			
	Pair production		Knowledge about interaction of x-rays with Matter and about the	
	• Interaction of charged particle and neutrons with matter			
IV	• Interaction of X- and Gamma rays in body-fat-soft-tissue- bone contrast medium	12		1,2,3,4
	• HVT – TVT		history and basic	
	RADIOACTIVITY:		nuclear physics.	
	Unstable atoms			
	Radioactive series			
	Radioactive transformation			
	Decay constant			
	• Half-life			
	• Average life			
	Radioactive elements			
	X- RAY EQUIPMENT'S:		77 1 1	
	• X-ray table and types		Knowledge on x-	
V	• Grids and its types	10	ray machine and	1,2,4
	• Cassette and intensifying screens		its components.	
	Fluoroscopy and its equipment			

- T1: Thomas S Curry "Christensen's Physics of Diagnostic Radiology", 4th Edition August (1990)
- T2: Joseph Selmen, 'The fundamentals of x-ray and radium physics' 5th Edition (1994)
- T3: D. Noreen Chesney "X-ray Equipment's for Student Radiographers" 3rd edition (1984)

# **REFERENCE BOOKS:**

- R1. K. Thayalan 'Basic radiological Physics 2nd Edition (2001)
- R2. Satish K Bhargava 'Textbook of Radiology for Residents and Technicians' 6th Edition (2022)

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Programme Outcome					
1	Understanding of the physics related to diagnostic imaging.	1					
2	Understanding of X-ray equipment, circuits, and fundamental properties, including their units and quantities.	1,2					
3	Comprehensive Understanding the physical properties of X-rays and the construction of X-ray tubes.	1,2					
4	Comprehensive understanding of the intricate interactions between radiation and matter, with a focus on principles of radioactivity.	1					
5	Proficient in the use and understanding of X-ray equipment.	1,2					

SEMESTER – III														
Course Title DARKROOM & IMAGE PROCESSING TECHNIQUES														
Course coo	le 24B1	RIT2102R	Total credits:	L	L	T	P 2	S	R	O/F	C			
			Total hours: 45T-		3	0	0	0	0	4				
Pre-requisi		Nil	Co-requisite		~		~ T T T	Ni			C T T			
Programn			DIOGRAPHY & A						CHN	OLO	GY			
Semester			II semester of secon	-										
		1.To learn the basic principle of darkroom, its design and layout and its approach in												
Course		g techniques.												
Objective	<b>S</b>		struction of Cassettes.		-	_			•					
· ·	3.To educ		s in detail about vario	•	ogra	aphic p	roce	sses,	image	stand	lard,			
			maging standard, qua											
CO1			n and the accessories											
CO2			s & techniques of x-r	ay film	pro	cessin	g and	effe	ctive s	storag	e			
	_	es for films.												
CO3	Proficient chemicals		of chemicals and eff	ective st	tora	ge tecl	hniqu	es fo	r proc	essing	5			
			tion and maintenance	of cass	ettes	s. X-rs	av fili	m and	l inter	sifvir	าด			
CO4	screens.	na me construct	aron una mamenane	or cass	0000	o, 11 10	• 5 1111			1911 ) 11	<b>.</b> 6			
CO5		rate the factors	affecting radiographi	c image	s an	d its o	ualit	y.						
TI				Contac					4		TZT			
Unit-No.		Conten	l	Hour	•	Lea	4F11111	g Ou	tcom	е	KL			
		Planning & Ac	•											
	• Introduction	on to Dark Roc	om											
	• Construction	Construction and layout												
	• Dark room	n accessory & c	hemical											
I	• Dry Bench	Dry Bench- Hopper, drawer, cupboard &			Learn about introduction					on	1,2,3			
1	hangers, H	hangers, Hatches & Dryer			-   (	of Darkroom								
	• Wet Bench	Wet Bench- Processing tanks												
	• Safelight	Safelight												
	<ul> <li>Cassette</li> </ul>	Cassette												
	• X-ray film	X-ray films												
	Film proces	ssing and stora	ige:											
	• Manual Pr	rocessing			,	Know	امطرمم	abor	it v ro	.,				
II	• Automatic	c Processing		9		films,	_			y	3,4			
	• Film stora	ige and handling	g			hangei		ittes	ana		3,4			
	• Safelight t	test			'	nange								
	• Latent ima	age formation												
	Photochem	istry:												
	<ul> <li>Preparatio</li> </ul>	on of chemicals												
	<ul> <li>Apparatus</li> </ul>	Control of Ten	nperature											
III	• Acidity, al	lkalinity, pH, th	ne processing cycle	9		Learn	abou	t wor	king o	f	2,3,4			
111	• replenishn	ment, checking	and adjusting			wet a			_		2,3,4			
	• Replenish	ment rates in m	anual and			,,,,,		ny oc	711011					
	automatic	processing												
	• Silver Rec	covery												
	Cassettes, I	ntensifying scr	een & X-ray film:			Learn	ohow	t outo	motic					
IV	• Constructi	ion of cassette		9				i auto	nnatic		3,4,5			
	• Loading a	nd unloading o	f cassette			processing								

	<ul> <li>Care and maintenance.</li> <li>Construction of intensifying screen; layer</li> <li>Intensifying factor</li> <li>crossover effect</li> <li>Characteristics of intensifying screen; determination of relative speeds</li> <li>film screen contact</li> <li>Effects of kV and mA on variation of emitted radiation intensity.</li> <li>Construction of X-ray film</li> </ul>			
	<ul><li>Composition &amp; its types</li><li>Characteristics of x-ray film</li></ul>			
V	<ul> <li>Image Quality:</li> <li>Factors affecting Image Quality</li> <li>Density, contrast, resolution, magnification, focal spot blur</li> <li>Image distortion</li> <li>Image unharnesses</li> <li>Optimal image quality</li> </ul>	9	Learn about radiographic image formation	3,4,5
Practical	<ol> <li>Manual processing-Loading &amp; Unloading</li> <li>Safelight test</li> </ol>	15	Learn about film handling and darkroom processing in practical aspect.	3,4

- T1. Chesney's Radiographic Imaging by John Ball &Tony Price, 6th edition
- T2. Christensen's Physics of Diagnostic Radiology by Thomas S Curry, 4th Edition

# **REFERENCE BOOKS:**

R1. Fundamental of X-Ray and Radiation Physics by Joseph Selman, 4th Edition R2. Radiologic Science for Technologists by Stewart C. Bhushong, 2nd Edition

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Programme Outcome					
1	Describe the construction and the accessories used in the darkroom.	1,3,5					
2	Demonstrate the methods & techniques of x-ray film processing and effective storage techniques for films.	1,3					
3	Proficient in preparation of chemicals and effective storage techniques for processing chemicals.	1,2,3					
4	Understand the construction and maintenance of cassettes, X-ray film and intensifying screens.	1,2,3					
5	Demonstrate the factors affecting radiographic images and its quality.	2,3					

		SEMESTER – III							
Course Title ELECTRONICS AND INSTRUMENTAL PHYSICS									
Course cod	0 24DDIT2102D	Total credits: 5	LI	ГР	S R	O/F	С		
Course cou	e 24BRIT2103R	Total hours: 45T+60P	3 (	4	0 0	0	5		
Pre-requisit		Co-requisite			Nil				
Programm		ADIOGRAPHY & ADVA				CHNOL	OGY		
Semester		III semester of second year							
Course	_	ew of electronic device con	_			ents			
Objectives	_	ew of Basic knowledge of l	-	lectroi	nics				
CO1	-	ew of Transducers and Sensor		iootior					
CO1		semiconductor devices and nd applications of amplifie		icatioi	1.				
CO ₂		alysis, and applications of		imino	circuits ar	nd oscill:	ators		
		als of digital electronics, pr							
CO4	microcontrollers and the		imorpios	01 1111	сторгосов	,015,			
CO5		designs for transducer and i	its impo	tance.					
TI24 NI-	C	44	Contact	t .			171		
Unit-No.	Con	tent	Hour	Le	arning O	utcome	KL		
	Semiconductor Devices and	nd Applications:							
	• Introduction to P-junction	on Diode and V-I							
	characteristics								
	• Half wave and Full-wa								
	• Capacitor filter.								
I	• Zener diode and its Char	•	Learn about Introduction to basic electronics			1 2 2 4			
1	• Zener diode as voltage	6				1,2,3,4			
		Regulated power supply IC based on 78XX and 79XX series, Introduction to BJT, its input-							
	output and transfer chara	-							
	single stage	icteristics, B31 as a							
	CE amplifier, frequency								
	bandwidth.	•							
	Operational amplifier and	its applications:							
	• Introduction to operation	al amplifiers							
	• Op-amp input modes and	l parameters							
	• Op- amp in open bepcome	nfiguration							
II	• op-amp with negative fe	edback study of practical	8		rn about		1,2,3,4		
	op amp IC741				olifiers and	d its	_,_,_,		
	• Inverting and non-inver			app	lications				
	applications: summing a	-							
	unity gain buffer, compa	rator, integrator and							
	differentiator. Timing Circuits and Oscil	lators:							
	• RC-timing circuits	141015.							
	<ul> <li>IC 555 and its application</li> </ul>	ons as a stable and mono-		Lea	rn about ti	mino			
III	stable multi vibrators	one as a smore and mono-	6			5	2,3,4,5		
	• Positive feedback, Barkl	huizen's criteria for	-		cillators		2,3,4,3		
	oscillation	101							
	R-C phase shift and We	in bridge oscillator.							

	Digital Electronics Fundamentals:  • Difference between analog and digital signals  • Boolean algebra			
IV	• Basic and Universal Gates, Symbols, Truth tables, logic expressions Logic simplification using K- map, Logic ICs, half and full adder/subtractor, multiplexers, demultiplexers, flipflops, shift registers, counters Block diagram of microprocessor/microcosm troller and their applications.	8	Knowledge about digital electronics used in x-ray and ultrasound circuits	3,4,5
V	Transducers and Instrumentation: LVDT, A.C and D.C Tachometers, Capacitance transducers, Thermistor based thermometers, Strain gauge, Ultrasonic transducer and their electrical circuits. CRO, Phosphors, LED, LCD, and Plasma display, seven segment, dot matrix system, Guest Host effect. Generation and Distribution of Electrical Energy, Earthing, Fuse, Circuit Breakers, Insulators, High Tension Cables. Discharge through Capacitors, Rectifiers (Half wave, Full wave and Self Rectifiers).	6	Knowledge about Rectifiers, capacitors, transistors etc.	3,4,5
Practical	<ol> <li>To study the behavior of half wave, full wave and bridge rectifier.</li> <li>To study the behavior of a filter circuit.</li> <li>To plot the graph of forward and reverse bias characteristics of a Si junction diode.</li> </ol>	64	Learn about practical knowledge electronics and instrumental physics	3,4,5

- T1. J.B Gupta "Electronic Device and Circuits" Kitson Books 6th edition 2018.
- T2. Electrical and Electronic Measurement and Instrumentation by A.K Sawhney
- T3. Hand book of Medical Radiology by C Ramamohan.

## **REFERENCE BOOKS:**

- R1. Floyd, "Electronic Devices" Pearson Education 9th edition, 2012.
- R2. R.P. Jain, "Modern Digital Electronics", Tata Mc Graw Hill, 3rd Edition, 2007. R3. Essential Physics for Radiology and Imagine by Akash Ganguly and Rezaul Karim. R4. Fundamental of X-Ray and Radiation Physics by Joseph Selman.

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Programme Outcome					
1	Understand the various semiconductor devices and its application.	1					
2	Explain the principles and applications of amplifiers.	1					
3	Comprehend design, analysis, and applications of various timing circuits and oscillators.	1					
4	Describe the fundamentals of digital electronics, principles of microprocessors, microcontrollers and their applications.	1					
5	Explain various circuit designs for transducer and its importance.	1,3					

SEMESTER – III											
<b>Course Titl</b>	e	RADIATI	ON P	ROT	ECT	TON					
Course cod	e 24BRIT2104R	Total credits: 3	L	T	P	S	R	O/F	C		
	·	Total hours: 45T	3	0	0	0	0	0	3		
Pre-requisit		Co-requisite					Nil				
Programme		F RADIOGRAPHY							DLOGY		
Semester		Fall/ III semester of s									
Course Objectives	dose etc. 2. To introduce the	<ul><li>1.To introduce the students about the concepts related to radiation dose, exposure, effective dose etc.</li><li>2.To introduce the students about the concepts related to effect of radiation on human being.</li></ul>									
GO1		ents about various reg		ry boo	nes,	guidei	ines and	sarety sta	indards.		
CO1		liation quantities and u		1' .'							
CO2		ological effects of ioniz									
CO3	•	s types of radiation de									
CO4		hazards and principle									
CO5	Discuss the import	ance of various regula	tory t			deline	s and saf	fety standa	ards.		
Unit-No.	(	Content		Cont Ho		Lea	rning O	utcome	KL		
I	Radioactivity- Sourceradioactive sources-radiationmanmade of radiation - Qualit Kerma- Exposure- A Dose- Weighting Fa Occupational Exposure public	des and Units: Radiation ces of radiation - natural cosmic rays-terrestrial e radiation sources. Un y factor - Flux- Fluence absorbed dose- Equivalent cors-Effective Dose course Limits- Dose limit	ral its ce – lent ts to	6	,	To learn about the Radiation and its types, and also units and measurement of radiation.			1,2		
II	excitation and free rehydrolysis of water, cell- Chromosomal application for the best Effects of whole book dose fractionation, eradiation on each of including fetus-Some effects-stochastic and Acute exposure and factors affecting rateffects of non-ionizing ultrasound, lasers,	action of radiation on aberration and its siological dosimetryly and acute irradiation effects of ionizing major organ system actic effects and heredid deterministic effects chronic exposure- LDS dio- sensitivity. Biologing radiation like	n, tary	6	j	about	the biolets of ioni	-	1,2,3,4,5		
Ш	IR, UV and magnetic fields.  Radiation detection and Measurements: Ionization of gases- Fluorescence and Phosphorescence -Effects on – secondary standard dosimeters – film dosimeter –			To acquire knowledge on radiation detectors-			1,2,3,4,5				

	principle-function and uses. Advantages & disadvantages of various detectors & its appropriateness of different detectors for different type of radiation measurement.			
IV	Radiation protection: Radiation protection of self and patient- Principles of radiation protection, time-distance and shielding, shielding - calculation and radiation survey— ALARA- personnel dosimeters (TLD and film batches) - occupational exposure.	4	To learn about ALARAprinciple.	1,2,3,4,5
V	Radiation Hazard evaluation and control: Philosophy of Radiation protection, effects of time, Distance Shielding. Calculation of Workload, weekly Calculated dose to radiation worker & General public Good Work practice in Diagnostic Radiology. Planning Consideration for radiology, including Use factor, Occupancy factors, and different shielding material.	4	To learn about hazards of radiation and take safety measures for radiation protection.	1,2,3,4,5

- T1: Radiological Science for Technologist: Physics, Biology and Protection, 8th Edition, 2004, Bushong, Stewart C.
- T2: Safety code for medical diagnostic X-ray equipment and installations, 1986, Radiological Safety Division, AERB.
- T3: Radiological safety in Enclosed Radiography installations, 1986, Radiological Safety Division, AERB.

## **REFERENCE BOOKS:**

R1: Radiological safety in Enclosed Radiography installations, 1986, Radiological Safety Division, AERB.

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Programme Outcome					
1	Understand the radiation quantities and units.	1,5					
2	Understand the biological effects of ionizing radiation.	1,5,8					
3	Identify the various types of radiation detectors and their uses.	3,5,7					
4	Describe radiation hazards and principle of radiation protection.	1,5,6,7					
5	Discuss the importance of various regulatory bodies, guidelines and safety standards.	1,5,6,7					

			SEMESTER - III							
Course Title MOOCs										
		Total credits:1	L	Т	P	S	R	O/F	C	
Course	e code	2102M/ 2103M	Total hours: 15	1	0	0	0	0	0	1
Prereg	quisite	Compulsory	Co-requisite		l	l	N	IL		
Progra	amme	Bachelo	r of Radiography & Ac	dvance	d Im	agin	g Teo	chnol	logy	
Semes	ter	Fa	ll/ III semester of seco	nd of th	ne pr	ogra	mme	•		
	ourse ectives	around 2,300 studen Knowledge", organiz was widely recognize	Open Online Courses) hats took part in a course zed by the University of ed as the year of the Molacity, or edX, gained a second course of the Molacity, or edX, gained a second course of the Molacity.	e called of Man OOC, b	d "Co itoba ecau	onne (Car se so	ctive nada) me N	s and	l Conne	ective 2012
C	CO1	interactive participati	ine course (MOOC) is a ion and open access via	the wel	<b>)</b> .					
	202	sets, MOOCs provid students, professors,	ional course materials sele interactive user forument teaching assistants (	ns that (TAs).	help					
	203		development in distance MOOC, students gain			thro	ngh	2000	ccihla	neer-
C	<b>CO4</b>		rithout the need for spec							peer-
C	CO5	Students usually don	I't need to buy any book within the MOOC conte	ks for th	nese	cours	ses, t	ecau	se al rea	
Unit No.		Content		Contac Hour	L garning ( liifea			come	K L	
I	The common duration of a MOOC is from 6 to 12 weeks. A MOOC is accessible 24 hours a day, 7 days a week. The majority of the content is delivered asynchronously (meaning students can access it in			Learners gain a solid understanding of specific subjects or skills						1,2
II	A standar of 5-10n	articipants to join in at and class becomes in a Mainutes each. The learn is usually assessed in a Mainute are usually assessed in the control of the contro	MOOC asset of videos ning of students in a	3	ur sp	nders ecifi	tandi		a solid of ets or	1,2,3
Ш	An impostudent MOOC graded:	important component of MOOCs is assignments.  dent have to upload assignment solutions into the OOC platform. Assignments can be evaluated and  3					of	1,2		
IV	post qu Usually, MOOC, with an education	component is the formations that other is there are no pre-repaired apart from having a internet connection Modernal or academic backgrounds.	equisites for taking a access to a computer ost of the time, the	Learners gain a solic understanding of specific subjects of skills,				of	1,2,3	
V	these co	s usually don't need to courses, because al red within the MOOC concess texts.	eading is either be	3	ur sp	earne nders ecifi tills,	tandi		a solid of ets or	1,2,3

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Programme Outcome						
1	A massive open online course (MOOC) is an online course aimed at large – scale interactive participation and open access via the web	6,7,8						
2	In addition to traditional course materials such as videos, readings, and problem sets, MOOCs provide interactive user forums that help build a community for the students, professors, and teaching assistants (TAs).	6,7,8						
3	MOOCs area recent development in distance education.	6,7,8						
4	By completing a MOOC, students gain knowledge through accessible, peer-supported learning without the need for specific academic prerequisites.	6,7,8						
5	Students gaining knowledge through provided resources, with no need for additional textbooks.	6,7,8						

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ous and									
It will develop their critical thinking ability and develop an independency in their									
professional career									
Accurately to convey ideas and information with clarity and precision.  Utilizing appropriate language, tone, and style for diverse audiences and contexts.									
KL									
1,2									
2,3									
1,2,3,4									
3,4,5									
3,4,5									
	3,7,3								
2,3,4,5									
2,5,1,5									

- T1. Lata, P. Kumar, S. (2015). Communication Skills, Second Edition. India: Oxford University Press.
- T2. Barrett, Grant. 2016. Perfect English Grammar: The Indispensable Guide to Excellent Writing and Speaking, Zephyros Press.
- T3. Mc Dowell, Gayle Laakmann. 2008. Cracking the Coding Interview (Indian Edition).

## **REFERENCE BOOKS:**

- R1. Zinsser, William. (2006) On Writing Well: The Classic Guide to Writing Non-fiction, Harper Perennial
- R2. Lacinai, Antonio. (2016) Understanding Body Language: 51 gestures and what they signal, Books on Demand

## OTHER LEARNING RESOURCES:

https://learning.shine.com/talenteconomy/career-help/top-group-discussion-skills/https://www.thoughtco.com/what-is-nonverbal-communication-1691351

CO PO Mapping						
SN	Course Outcome (CO)	Mapped Programme Outcome				
1	It will develop their writing skills through various techniques of language use.	6,7,8				
2	It will enable the learners to manage behaviors, thoughts, and emotions in a conscious and productive way.	6,7,8				
3	It will develop their critical thinking ability and develop an independency in their professional career	6,7,8				
4	Accurately to convey ideas and information with clarity and precision.	6,7,8				
5	Utilizing appropriate language, tone, and style for diverse audiences and contexts.	6,7,8				

SEMESTER – III											
Cour	urse Title TECHNO PROFESSIONAL SKILLS II										
Course code		24BRIT2105R	Total credits: 1		L	Т	P	S	R	O/F	C
			Total hours: 1	5P	0	0	2	0	0	0	1
Prerequisite		Nil	Co-requisit	te		Nil					
Programme Bachelor of Radiography & Advanced Imaging Technology							ology				
Sen	nester	A	Autumn/ III sem	iester (	of se	cond o	f the p	progra	mme		
	ourse ectives	<ol> <li>To have knowledge about human anatomy and its terminology.</li> <li>To enhance proficiency in using advanced features of industry-standard software and tools.</li> <li>To develop skills in resource allocation, risk management, and project documentation.</li> </ol>									
CO1 Describe and identify cross-sectional anatomy in the sagittal, corona planes on CT and MR Images.						onal and	axial				
CO2 Describe the proper diagnostic anatomy. Differentiate r personal resource system for future study.						iate no	ormal	anaton	ny, and b	uild a	
C	03	Analyse and interpret data using advanced data analysis techniques and tools									
CO4 Utilize project management software to track progress, manage to communicate with stakeholders.						resources	, and				
C	O5	Demonstrate advanced skills in using industry-standard software, tools, and programming languages.									
Unit No.	Content			Cont Hou			Learr	ing O	utcom	e	KL
I	Radiological anatomy of Skull & Vertebrae and its blood supply: • Skull bones- Cranial Bones, Facial Bones • Vertebrae-Cervical, Thoracic, Lumbar, Sacral & Coccyx			6	To learn a knowledge about the anatomy and the blood supply of skull bones and vertebrae.					ipply of	1,2
II	Radiological anatomy of thorax and abdomen and its blood supply: Thoracic cavity & Abdominal Cavity			6	To learn a knowledge about anatomy and the blood supply thoracic cavity and abdom cavity.					ipply of	1,2
III	Radiological anatomy of pelvis and its blood supply: Pelvic girdle, Hip Joint			6			my and vis and	1,2			

- T1. B.D Chaurasia as Human anatomy.
- T2. Diagnostic and Surgical Imaging Anatomy: Brain, Head and Neck, Spine by Anne G. Osborn and H. Ric Harns berger.

# **REFERENCE BOOKS:**

- R1. Text book of Human Anatomy by A.K Dutta
- R2. Human Anatomy & Physiology by Ross & Wilson

CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Programme Outcome					
1	Describe and identify cross-sectional anatomy in the sagittal, coronal and axial planes on CT and MR Images.	1,2,3					
2	Describe the proper diagnostic anatomy. Differentiate normal anatomy, and build a personal resource system for future study.	1,2,3					
3	Analyse and interpret data using advanced data analysis techniques and tools	1,2,3					
4	Utilize project management software to track progress, manage resources, and communicate with stakeholders.	1,6,7					
5	Demonstrate advanced skills in using industry-standard software, tools, and programming languages.	3,7,					

SEMESTER – III												
Course '	Γitle		DIGITAL									
Course	ode	24UDLS2101R	Total credits: 2	L		T	P	S	R	O/F		C
			Total hours: 60P	0		0	4	0	0	0		2
Pre-requ		Nil	Co-requisite					Nil				
Progran			RADIOGRAPHY &							HNOL	OG	Y
Semest	ter		all/ III semester of sec									
			ble to identify and analy		_				tware	and th	eir ı	uses.
Cours			ble to use MS-Office su									
Objecti	ves		able to use the Internet	efficie	entl	y fo	r requ	ired in	forma	tion as	we	ell
	as for digital financial transactions.  Students will have basic understanding of Computer Hardware, Software and Computer											
CO1			asic understanding of C	Comput	er I	Hard	lware,	Softwa	re and	d Comp	oute	er
		handling										
CO2	;		e to solve basic informa	ation m	ana	igen	nent iss	sues us	ing M	S-Offi	ce	
		Products	, , , , , , , , , , , , , , , , , , , ,	T :		C	•	1: 0	.•			
CO3	•		e to efficiently search the									11
CO4	,		e to use computing tech	nnıcally	etl	nical	lly, saf	ely, Se	curely	and le	egal	lly
TT *4		for day-to-day use.	1	<u> </u>								
Unit- No.		Conte	ent	Conta Hou			Learning Outcome			K	KL	
110.	Fun	damentals of Comput	er Systems	Hou	I	T	ident	ify reli	ahla			
		annentals of Comput	*					•	aute			
I		ctions.	3			sources, detect misinformation, and				1 ′	2,3,	
_		erent Types of Comp	outers and their	3					•	and		4
		lications.				ensure data accuracy and integrity.						
			e Components of the			_			able			
		Office suite. Creatin	-				To identify reliable sources, detect					
II		Word.		3	3		misinformation, and				1,2	2,3,
	Crea	ating Presentations with MS PowerPoint.					ensure data accuracy and					1,5
	Crea	ating Spreadsheets wi	ith MS-Excel.			integrity.						
	Intro	oduction to Internet &	c CyberWorld									
	Intro	oduction to Computer	r Networks and									
	Inte	rnet.				To	ident	ify reli	able			
	Woı	d Wide Web, Websi	ites and Web portals,			so	urces,	detect				
III	Web	browsing. Web Sear	rching,	3		m	isinfor	matior	, and		1,2	2,3,
		ch engines, Introduc	~					ata acc	uracy	and	4	1,5
		ch Engine; How to se	•			in	tegrity	•				
		_	rest, etc. Creation and									
		of Email Accounts. C	•									
		oduction to Social Me	edia The Power of			_						
		ial Media,						ify reli				
		evance of Social Med	^	3				detect				
IV		scenario. Creating accounts and using some						matior				2,3,
		opular Social media portals and Apps like						ata acc	uracy	and	4	1,5
		atsApp, Facebook, T	-			in	tegrity	•				
	Lınk	kedIn. Social Media	Etiquettes.									

- T1: Computer Fundamentals: Concepts Systems& Applications Sinha Pradeep K. and Priti Sinha 3rd edition
- T2: Computer Fundamentals Goel, A Pears on India

#### **REFERENCE BOOKS:**

- R1: Fundamentals of Computers Bala Guruswamy, E Tata Mc Graw-Hill Education
- R2: Fund of Comp & Programming Bala Guruswamy Ed Sem. I
- R3: Introduction to social media, Oklahoma State University Lawson, C. 2022

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Programme Outcome							
1	Students will have basic understanding of Computer Hardware,	678							
1	Software and Computer handling	6,7,8							
2	Students will be able to solve basic information management issues	6,7,8							
2	using MS-Office Products	0,7,0							
3	Students will be able to efficiently search the Internet for required	6,7,8							
3	information.	0,7,0							
4	Students will be able to use computing technically ethically, safely,	678							
•	Securely and legally for day-to-day use.	6,7,8							

			SEMESTER – I	II												
Cour	se Title	BASI	C ACCLIMATIZING	SK	ILLS		-									
Cour	se code	24UULS2101R	Total credits: 1 Total hours:	L	T	P	S	R	1	)/F	C					
Prere	quisite	Nil	Co-requisite	0	0	2	0 N	0 i1		0	1					
	ramme		lor of Radiography &	Ad	lvanced	Ima			nolog	v						
	nester		Fall/ III semester of							, , , , , , , , , , , , , , , , , , ,						
	urse ectives	2. Students will	owledge of the fundame be able to familiarize be able to handle diffe	vith	the coo	king	equip	ment	-							
C	O1	Students will have basic knowledge of cooking methods.														
C	02	Students will gain	the knowledge of orga	nizir	ng & Cl	leanii	ng of	Room	s.							
C	03	Students will be al	ole to gain the travel m	anag	gement	conc	ept.									
C	04	Students will be able to acquire the knowledge of basic households														
C	05	Students will be at acclimatization.	ole to the physiological	and	l psycho	ologi	cal pro	ocesse	es inv	olved						
Unit No.		Conte	nt		Contact Hour	L	<b>earn</b> i	ning Outcome KL			KL					
I	• Tele • Orga • Clea	duction to mmodation Manage phone handling techn anizing of Rooms. • O uning equipment and making Process	nique Cleaning agents.		6	To acquire knowledge on accommodation Management.			1,2,3							
П	Fundamentals of Cooking  • Definition of cookery— Aim & Objectives of cooking.  • Use of basic Cooking equipment's  • Personal Hygiene and Safety  • Use of Fire & Fuels				6	on pers	acqui co sonal safety.	oking hygi	5	edge and and	1,2,3,4					
III	Metho Differe Use of Prepara Region	thods of Cooking Ferent Cuts. of Herbs and Spices. Basic Food and Beverage				ethods of Cooking fferent Cuts. se of Herbs and Spices. Basic Food and Beverage eparation.				To acquire k the knowled different type and spices in a				dge of s of herbs 1,2,3,4		
IV	<ul><li>C -fo</li><li>Rese</li><li>Regi</li><li>Pass</li></ul>	& formats orm rvation form stration form port Application forn ent Agreement	1		2	To gain knowledge about forms and formats.				1,2 ,3,4						

- $T1.\ Arora\ K(2011). Theory\ of\ cookery,\ Frank\ brothers\ \&\ company\ (pub)\ pvt\ ltd-New\ Delhi.$
- T2. Bruce H. Axler, Carol A. Litrides (2010) Food and Beverage Service Volume 1 of Wiley Professional Restauranteur, Guides.

#### **REFERENCE BOOKS:**

- R1. Mohammed Zulfikar (2010) Introductions to Tourism and Hotel Industry Introduction to Tourism and Hotel Industry. Vikas Publishing.
- R2. Sudhir Andrews (2013) Food and Beverage Service: A Training Manual, Tata Mc Graw Hill,2013

	COPO Mapping								
S.N.	Course Outcome (CO)	Mapped Programme Outcome							
1	Students will have basic knowledge of cooking methods.	6,7,8							
2	Students will gain the knowledge of organizing & Cleaning of Rooms.	6,7,8							
3	Students will be able to gain the travel management concept.	6,7,8							
4	Students will be able to acquire the knowledge of basic household's amenities for day-to-day use	6,7,8							
5	To support safe acclimatization in challenging environments	6,7,8							

SEMESTER – III																																										
Course Tit	le		FIELD TRA	ININ	G																																					
Course cod	le	24BRIT2105R	Total credits: 1		L	T	P	S	R	O/F		C																														
			Total hours:		0	0	0	0	0	8		1																														
Prerequisit		Nil	Co-requisit					N																																		
Programm	e		of Radiograph																																							
Semester			ıll/ III semester																																							
Course		1. Understanding He	•		•		Opera	tions	S.																																	
Objective	es	<ul><li>2. Exploring Patient</li><li>3. Exposure to Medi</li></ul>																																								
G01		Students will be able t					ction	ning (	of a l	nospital	, in	cluding																														
CO1		the roles of various dep	partments and th	e wor	kflov	vs wi	thin t	he he	ealtho	care sys	ten	n.																														
CO2		Students will be able									oroc	cedures,																														
		observing how protoco Students will identify									nm	ent and																														
CO3		technologies, recognizi																																								
CO4		Students will be able	to identify the	roles	s of	vario	us h	ealth	care	profess																																
		explain how interdiscip Students will reflect o	<u> </u>								1 0	hearvad																														
0CO5		during the visit, high																																								
		centered communication										_																														
Unit No.		Content		Cont		I	Leari	ning	Outo	come		KL																														
				Ho	ur						-																															
	•	Overview of healthcare Introduction to	e systems the field																																							
		environment and work					lity	to		assess																																
I	•	Safety protocols and	d emergency	10		10			ation lleng			dentify devise		1,2,3,4,5																												
		procedure	-41-1 1								_		he sp																													
	•	Code of conduct, professionalism in the																																								
	•	Overview of key tasks	•																																							
		field																																								
II	•	Training on specific equipment, or technology	ecific tools,	8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8			rove		abilit	y to		1,2,3,4,5
		fieldwork	gy relevant to							Con	IIIIuII	icaic	CIIC	Liivery																												
	•	Hands-on practice with	supervision																																							
	•	Practical exercises to	develop job-			Abi	•	to		ganize,																																
III		specific technical skills		6	<b>5</b>	prio		e, an	a co	mplete		1,2,3,4,5																														
	•	Emphasis on accuracy, e	efficiency, and		,	casi						1,2,5,4,5																														
***		best practices								0																																
IV	•	Development of interpretation for interacting with					nonsi fessio			of a de and																																
		supervisors, and client		1		•			orkpl																																	
	•	Training in	professional	5	5	_			•			1,2,3,4,5																														
		communication, both	verbal and																																							
		written																																								
	•	Self-assessment exerci																																								
$\mathbf{v}$		on learning and improv		5	•	Abili	•		refle			12215																														
•	•	Reflection on field lessons learned, a	experiences, nd personal	3	,	expe perso				dentify		1,2,3,4,5																														
		growth	r			•																																				

	COPO Mapping	
SN	Course Outcome (CO)	Mapped Programme Outcome
1	Students will be able to describe the structure and functioning of a hospital, including the roles of various departments and the workflows within the healthcare system	5,6,7
2	Students will be able to explain the basics of patient care and clinical procedures, observing how protocols are followed to ensure safe and effective treatment.	5,6,7
3	Students will identify and understand the purpose of key medical equipment and technologies, recognizing their role in diagnostics, treatment, and patient monitoring.	5,6,7
4	Students will be able to identify the roles of various healthcare professionals and explain how interdisciplinary teams work together to deliver patient care.	5,6,7
5	Students will reflect on professional behaviors and effective communication observed during the visit, highlighting the importance of empathy, teamwork, and patient-centered communication.	5,6,7

			SEMESTER	- <b>IV</b>	•						
Course	Title		MAGNETIC RE	ESON	NAN(	CE IMA	AGING	r 			
Course	code	24BRIT2201R	Total credits: 3 Total hours: 45	_	<u>L</u>	T 0	P 0	S	R	O/F 0	C 3
Pre-rec	quisite	Nil	Co-requisite			1		Nil			
Progra	mme	BACHELOR OF R	ADIOGRAPHY &	& AD	VAN	ICED I	MAGI	NG T	ECH	NOLO	GY
SEME	STER	Autun	nn/ IV semester of	seco	nd y	ear of t	he Pro	gramr	ne		
Cou Objec		<ol> <li>Providing knowledge about basic principle of MRI, equipmentation and its application and its use in diagnostic imaging.</li> <li>Providing knowledge on advancement in MRI techniques.</li> <li>Ability to perform various techniques such as plain and contrast examination, MR Angiography, Diffusion weighted/tensor Imaging, Perfusion and MR Spectroscopy.</li> </ol>									
CC	)1	Understand the basic p	principles of MRI a	ınd ch	naract	eristics	of MR	contra	ast me	edia.	
CC		Analyse encoding, dat									
CC		Describe the instrume			_						
CC		Explain the process of							_		
CC Unit-	)5 	Comprehend on MRI	protocols and mean	Con		oncatioi	1 of var	ious te	ecnnic	ues.	
No.		Content		Ho		Learning Outcome				KL	
I	and it. Align Resor Relax timing and C Contr water in bot weigh Contr action Gadol	principle of MRI: Intros motion, MR active nument, Precession and Lance, MR signal, Free ation, T1 recovery, T2 of parameters (TR& TE) contrast: ast mechanism, Relaxate, Contrast parameters, It fats and water, Protoruting, T2*decay ast agents in MRI – Use, magnetic susceptibilitationium safety, current apast media.	clei and armor equation, Induction Decay, decay, Pulse Image weighting tion in fats & mage weighting a density  es, mechanism of ty, Relativity,	12	2	Understanding the Basic interaction of hydrogen molecules with the application of external magnetic field and changes it made on image Contrast.			es	1,2,3	
П	Encode Freque Samp types, scan to Factor noise resolute echo pecho	ling, data collection & lang, data collection & lang – Gradients, slice sency encoding, Phase eling k-space, K-space first Fourier transformiming, Pre-scan and Tyrs affecting image formatio, Contrast to noise ation, Scan time Pulse sepulse sequence & its typelouse sequences & its typelouse sequences & its typelouse, types and their compagues.	election, ncoding, illing and its ation, matrix, pes of acquisition ation – Signal to ratio, Spatial equences – Spin pes, Gradient rpes MRI	1	1	Knowledge on encoding the signal in its spatial location by carefully application of gradients, formation of image and factors affecting the image.			on f	2,3	

III	Instrumentation, Equipment's and Layout of MRI: Magnetism – Permanent magnets, Electromagnets, Super conducting-magnets Fringe fields, shimming, ramping and quenching MRI coils – Shim coils, RF coils, Gradient coils the control unit, Operator interface and patient transportation system. Layout – Site selection, Layout (Magnet room, equipment room and control console), dimensions, temperature, RF shielding, Construction materials for Floor, walls and ceilings. Accessory equipment's, Safety Zone and waste disposal.	7	Knowledge on equipment's and instrumentations in MRI, Layout and safety measures from RF pulse	3,4
IV	Flow phenomena, vascular and cardiac imaging Flow phenomena, types and compensation techniques Conventional vascular imaging, MR Angiography (Black blood Imaging & Bright blood imaging), Perfusion & diffusion imaging Cardiac imaging, Peripheral & pseudo gating, Types of cardiac imaging and SPAMM.	9	Understanding the techniques of blood vessels examinations by correctly applying the specific pulse sequences	4,5
V	Advancement in MRI & MRI protocols: Advance imaging – High speed gradient system, Echo planar Imaging, Spectroscopy, MR microscopy, Functional Imaging, Interventional MRI Cross sectional anatomy of - Brain including MRA and Epilepsy, Neck, Thorax, Abdomen, Pelvis, Extremities (Upper & Lower), Spine (Cervical, Thoracic, Lumbar, Sacrum & Coccyx)	9	Ability to carry out the procedures and techniques in MRI.	4,5

- T1: Catherine Westbrook, Carolyn Kaut Roth and John Talbot 'MRI In Practice' 4th Edition (2011).
- T2: Catherine Westbrook 'Handbook of MRI Technique' 4th Edition (2014)
- T3: Catherine Westbrook 'MRI at a Glance' 2nd Edition (2009)

#### **REFERENCE BOOKS:**

- R1: Scott W. Atlas 'Magnetic Resonance Imaging of the Brain and Spine' 5th Edition (2016)
- R2: Stewart Carlyle Bushong and Geoffrey Clarke 'Magnetic Resonance Imaging: Physical and Biological Principles' Edition (2014)
- R3: Hariqbal Singh, Vikash Ojha and Santosh Konde 'Atlas of Magnetic Resonance Imaging' 1st Edition (2014) T3. Catherine Westbrook 'MRI at a Glance' 2nd Edition (2009)
- R3: Sharp, Lester W. Fundamentals of Cytology. 1st edition. Mc Graw Hill Company; 1943.

## **OTHER LEARNING RESOURCES:**

https://mrimaster.com/

 $\frac{\text{https://r.search.yahoo.com/_ylt=Awrx.fMAfIJmcgQAvza7HAx.; ylu=Y29sbwNzZzMEcG9zAzEEdnRp}{ZAMEc2VjA3Ny/RV=2/RE=1721037057/RO=10/RU=https%3a%2f%2fmrimaster.com%2f/RK=2/RS=IMdph5.GRdt8yMqpgKcPDycWPXA-}$ 

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Programme Outcome						
1	Understand the basic principles of MRI and characteristics of MR contrast media.	1,2,6						
2	Analyze encoding, data collection & image formation.	1,2,4						
3	Describe the instrumentation of MRI and it's layout.	3,5						
4	Explain the process of MR Flow phenomena, vascular and cardiac imaging.	1,2						
5	Comprehend on MRI protocols and meaningful application of various techniques.	1,2,3,8						

			SEMESTER – I										
Course	e Title		COMPUTED T					1					
Course	e code	24BRIT2202R	Total credits: 3	L	T	P	S	R	O/F	C			
_	• • •		Total hours: 45T	3	0	0	0	0	0	3			
Pre-rec		Nil	Co-requisite					Vil	CTT 10	T 0 0T			
Progra		BACHELOR OF RA								LOGY	ľ		
Seme	ester		n/ IV semester of sec								_		
		1. To introduce the stud		ots of	Comp	outed T	omo	graphy	y and p	hysical	l		
Cou	ırse	principles to qualitative					,				,		
Objec	etives		To introduce the students about the diagnostic imaging procedures and techniques used Computed Tomography.										
			•		: اسم	· · · · · · · · · · · · · · · · · · ·							
- Cr	<b>\</b> 1	3. To introduce the stud		_		nstrun	lenta	tion or	CISC	anner.			
CC		Discuss the history and											
CC		Implement the CT proto	•										
CC		Perform the data acquis		•									
CC		Describe the instrument											
CC	<b>J</b> 5	Comprehensive assessn	nent of CT parameters	s and									
Unit-		Cor	ntent			Conta			rning	Kl	L		
No.	CIT					Hou	r	Out	come				
		an systems:						7 1	1				
		ry-generations of CT sca echnology- helical/spiral						Snowle	-				
I		eters - image quality and						about Basic principle of CT		г			
1	_	struction.	memous of image			12	_	long w		2,3			
		ation dose measurements						nong w istory.	illi ils				
		ation and image acquisit					1.	instory.					
		an protocols /techniques:	1011.										
		f head and neck											
	•Thora												
		men & pelvis					ŀ	Knowle	edge				
		ulo skeletal system						bout d					
II		e – PNS. Anatomy – clini	cal indications and			8		ncodir	ig and	1.0			
	contra	indications – patient prep	aration – technique – c	ontras	st			mage ormati	a. af (	1,2	2,3		
	media	-types, dose, injection tec	hnique; timing, sequen	ice -				orman vith pr					
	image	display – patient care – u	tilization of available t	echni	ques		'	viui pi	olocors	·-			
		ge processing facilities to	-	Γ anat	omy								
	and pa	thology of different organ	n systems.										
								Knowle	_				
	Image	processing & Display s	ystems:					bout C	T				
III	_	t advances, concepts and	·	essing	of	8		mage			_		
		s in digital form using co		_				rocess	ing an	d 1,2	2,3		
			1					ecent					
	D-4	\					a	dvance	ements	•	=		
		Acquisition- c Scheme for Data Acqu	isition										
		_					L	dae					
IV		minology Data Acquisition Geometries -Ring Technology						Knowle bout C	_				
1 1	_	ay System- X-Ray Gene	rator X-Ray Tubes I	Filtrati	ion	10		nstrum		n 1,2	1,2,3		
		mation	1401, 21-1xay 14008, 1	muat	.011,		1	iiou uil	oman.	,11			
		Detector Technology - D	Detector types.										
		- Color Technology - D	tion types.		ļ								

V	Image Post -processing and Image Quality –  • Definition  • Techniques  • Windowing - Window Width and Window Level  • Image Artifact –types  • Quality Control	7	Knowledge about CT post – processing.	1,2,3	
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- T1. Computed tomography: Physical principles, clinical applications, and quality control by Euclid Seeram.
- T2. Computed Tomography for Technologists: A Comprehensive Text

#### **REFERENCE BOOKS:**

**R1:** Computed Tomography for Technologists: An Exam Review Lois Roman 1st Edition (2010) R2: Essentials of Computed Tomography George Roy 1st Edition (2007) R2: Essentials of Computed Tomography George Roy 1st Edition (2007)

#### **OTHER LEARNING RESOURCES:**

 $\frac{tomography\%23\%3a~\%3atext\%3dComputed\%2520tomography\%2520\%2528CT\%2529\%252C\%2520al}{so\%2520known\%2520as\%252C\%2520especially\%2520in\%2cto\%2520build\%2520cross-sectional\%2520images\%2520\%2528\%2522slices\%2522\%2529\%2520of\%2520the\%2520body./RK=2/RS=iHvan7OCZYSHxNZYdIM37.oabaw-$ 

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Programme Outcome							
1	Discuss the history and basic principle of CT scan.	1,3,5							
2	Implement the CT protocols and techniques in diagnostic imaging.	1,2,3,6							
3	Perform the data acquisition system and post processing of image.	1,3							
4	Describe the instrumentation of CT scanner and its advancements	1,3,4							
5	Comprehensive assessment of CT parameters and image artifacts.	1,2,3							

			SEMESTER –	· IV																	
Course	e Title		CLINICAL R	RAD	IOG	RAP	HY														
			Total credits: 3		L	T	P	S	R	O/F		C									
Course	e code	24BRIT2203R	Total hours: 457	Г	3	0	0	0	0	0		3									
Pre-rec	quisite	Nil	Co-requisite					Ni	l												
Programme BACHELOR OF RADIOGRAPHY & ADVAN						CED	IMA(	GING	TEC	HNO	LO	GY									
Seme	ester	Autum	n/ IV semester of se	econ	d yea	ar of	the Pr	ograi	nme												
		1. To introduce the stu	e students the concepts related to various positioning of the body.																		
Cou	ırse	2. To introduce the students the concepts related to various special radiographic views.																			
Objec	ctives	3. To introduce the	3. To introduce the students the concepts related to various techniques used in																		
		radiographic exami	nation.																		
CO	)1	Explain the radiograph	nic procedures and te	chni	ques	of up	pper an	d low	er ex	tremit	ies.										
CC	22	Understand the vario	us radiographic pro	cedu	res a	nd to	echniq	ues o	f diff	erent	par	ts of									
CO	)2	vertebrae.																			
CO	)3	Describe the various to	echniques and proced	dures	s of s	kull 1	adiogr	aphy.													
CO	)4	Explain the different v	iews and techniques	for o	chest	radio	ograph	y.													
CO	)5	Understand and imple	ement the various te	chni	ques	and	proced	lures	of ab	dome	n, p	elvis									
	JS	and dental radiography	<i>/</i> .																		
Unit-		Content		Contact Learning Outcox			Contact Learning Out			Contact Learning Oute			Contact Learning Outcox			Contact Learning Outcon			utcome KI		KL
No.				H	lour		Lear	·····s	Jute	, iii c											
		mities Radiography – Ha	•																		
		joint- Forearm -Elbow j																			
		oulder joint. Foot–Toes-Tarsal bones-Ankle					Knowled		Knowledge about Basic												
I	-	nt-Knee joint – patella–tibia-femur–Hip joint–			15		principle of CT along wit its history.				h										
	_	vis -sacroiliac joint Spine Radiography-			17					1,2,3											
		ebral column–Atlanta occipital articulation-																			
		cal spine- dorsal spine - lumbar spine – ım - vertebral canal-vertebral foramen.																			
											+										
		Radiography – general, s mastoid–optic foramen–	•																		
		- Superior and inferior or					Knowledge about data														
II		ll– facial bones– petrous			8		encoding and Image formation of CT with														
11		-			O	fo						1,2,3									
		e, nasal bone, sinuses of skull – mandible – n pro-Mandibular joint – Paranasal sinuses				pı	protocols.														
	_	graphy.	2 41145 41																		
		Radiography –Basic vi	ews (PA & AP) -								+										
		atory & expiratory films	` ′							nar.											
***	views	& their significance – l	arynx- trachea-		_		nowle	_													
III	thorac	cic inlet - Sternum - Rib	s – Heart and great		5		nage precent ac		_			1,2,3									
	vessel	ls – mediastinum -Diapl	nragm – double			re	cem a	ivanc	emen	ıs.											
	expos	ure technique.																			
		men & Pelvic Radiogra																			
		acute abdomen investig																			
	_	radiography: Preparations, Instructions, Various techniques, positioning digital mammography, High and low KV Technique– radiography–				K	nowle	doe al	out (	т											
IV					8		strume	_				1,2,3									
	_						61110					-,-,-									
	technique for steep range radiography –																				
		ifying screen.																			
	_	al Radiography: Stereo			10	K	nowle	dge al	out (	СТ											
V		ple-tube shifting relation	_		10		post – processing.					1,2,3									
	correc	et making and viewing of	ot stereo			1															

radiographs.—applications. Macro radiography:		
Principle sizes of focal spot its limitation in its		
application. High kV technique: technique &		
usefulness. Dental radiography- types of		
equipment's – techniques-indications-films-		
dental radiography in trauma patient		

T1: Merrill's Atlas of Radiographic Positioning & Procedures Frank, long, Smith 11th Edition

T2: Clark's positioning in Radiology Clark 12th Edition

T3: Medical X-ray Techniques in Diagnostic Radiology, Vander Plaals 3rd Edition

#### **REFERENCE BOOKS:**

R1: Radiographic Anatomy and Positioning: An integrated approach Comuelle, Andrea Gauthier 1st Edition

R2: Special Techniques in Orthopedic Radiology Stripp W 4th Edition

## **OTHER LEARNING RESOURCES:**

https://radiopaedia.org/articles/clinical-radiology-journal

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Programme Outcome						
1	Explain the radiographic procedures and techniques of upper and lower extremities.	1						
2	Understand the various radiographic procedures and techniques of different parts of vertebrae.	1,2						
3	Describe the various techniques and procedures of skull radiography.	3						
4	Explain the different views and techniques for chest radiography.	2,3						
5	Understand and implement the various techniques and procedures of abdomen, pelvis and dental radiography.	1,2,3						

			SEME	STER	RIV						
Cours	se Title		PHYS	SICS (	OF RADI	OLO	GY				
Cour	Course code   24BRIT2203R   Total credits: 1							O/F 0	C 4		
Prere	quisite	Compulsory	Co-requisite			l		Nil			
	amme		chelor of Radiogr	aphy	& Advan	ce In	nagin	g Tech	nology	7	
Semes	ster	A	utumn/ IV semest	ter of	second ye	ear of	f the p	rogra	mme		
Cours Objec		atomic struct 2. To introduce radiography.	the students to the tures, radioactivity the students to the e the students to	etc. conce	epts relate	d to p	ohysic	s behi	nd the	mechan	ism o
C	CO1	Demonstrate on the field of radio	the electromagneti logy.	c spec	ctrum, qua	ıntum	theor	y, and	their a	pplicat	ions in
CO2		Understand atom	nic and nuclear stru	ctures	s, principle	es and	d appl	ication	ns of ra	dioactiv	vity
C	203	Understand the radiology	basic fundamenta	ls of	electricity	y and	l its a	pplica	ntion ir	the fi	eld of
C	capacitors, indu		e function of estors, diodes, and tr	ansist	ors.						
C	O5	Describe the radiation quantities and dosimetry in the diverse contexts of dradiology						of diag	gnostic		
Unit No.		Conte	ent		Contact Hour		Lear	ning (	Outcon	ne	KI
I	spectrum spectra Line Fraunho their pradiation	lectromagnetic Radiation: Dispersion and sectrum, Pure and impure spectrum, Emission sectra and adsorption spectra, Continuous, and and Band spectra, Solar spectra, raunhoffer lines Electromagnetic waves & eir properties, Planck's Quantum theory of diation. Concept of photon, Photoelectric effect, Photocell, Intensity						1,2			
п	of Atoms Atoms rays Displace	Effect, Photocell, Intensity  Atomic Structure and Radioactivity: Concept of Atoms, Molecules and Nucleus, Structure of Atoms and Nucleus. Radioactivity, $\alpha$ , $\beta$ and $\gamma$ -rays and their Properties, Radioactive Displacement Law, Decay constant, Half-life Period, Unit Radioactivity, Medicinal use of								1,,3,5	

1,2,

3,4

Resistance,

8

Learn about electricity

Fundamentals of Electricity: Electric charge, Quantization of charge, Electrostatic force, Coulomb's Law, Electric Induction, Concept of Electric Lines of Force, Electric Potential, Capacitance and Capacitors, Idea of Electric Dipole Conductors, Insulators (dielectrics) and

Kirchhoff's Laws (both current and voltage

Laws) Conversion of Galvanometer into Ammeter and Voltmeter, Joule's Law of heating, Magnetic effect of Electric Current, Faraday's Laws of EM Induction, Peak value and RMS value of an AC, Construction,

Semiconductors, Ohm's Law

Transformer Losses and Regulations

Ш

IV	Fundamentals of Electronics: Distinguish between Active & Passive Circuit Elements& Electronic Appliances, Vacuum Tubes, Diode Valves, Effect of Gas in the Diode Valve, Rectifiers, Half wave and Full wave Rectifiers, their Efficiencies, Semiconductors	5	Learn about rectifiers	1,3,5
V	Radiation Quantities: Radiometric Quantities (Fluence & Fluence Rate, The Energy Fluence and Energy Fluence Rate) Interaction Quantities (Interaction Cross- section, Linear Attenuation Coefficient, Mass Attenuation Coefficient, Stopping Power, Linear Energy Transfer, The Radiation Chemical Yield, The Mean Energy Expended in a Gas Per Ion Pair formed. Dosimetric Quantities(Mean energy Imparted, The Specific Energy, Exposure & Exposure Rate, Absorbed Dose and Absorbed Dose Rate, Dose Equivalent and Effective Dose Equivalent.	8	Learn about radiation units and measurements.	2,4,5

T1: X-ray Physics and Equipment, Ashworth.

T2: Computed Radiography, MJ Brooker.

T3: The Fundamentals of X-ray and radium Physics,6thEdition, Selman

## **REFERENCE BOOK:**

R1: Clinical Sonography, A Practical guide, 1998, Roger Sanders.

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Programme Outcome							
1	Demonstrate on the electromagnetic spectrum, quantum theory, and their applications in the field of radiology.	1							
2	Understand atomic and nuclear structures, principles and applications of radioactivity.	1							
3	Understand the basic fundamentals of electricity and its application in the field of radiology.	1							
4	Comprehend the function of essential electronic components such as resistors, capacitors, inductors, diodes, and transistors.	1							
5	Describe the radiation quantities and dosimetry in the diverse contexts of diagnostic radiology.	1,5							

	SEMESTER – IV							
Course Title		L RA	DIO	GRA	PHY			
	Total credits: 3	L	T	P	S	R	O/F	С
Course cod	e 24BRIT2205R Total hours: 45T	3	0	0	0	0	0	3
Pre-requisit	e Nil Co-requisite	I			Ni	il		
Programme	BACHELOR OF RADIOGRAPHY & ADVA	NCE	D II	MAG	SING '	TECH	INOL(	OGY
Semester	Autumn/ IV semester of second	year	of th	e Pr	ogran	ıme		
Course Objectives  CO1 CO2 CO3	basic and technological aspects of special proceds 2. Differentiation and emphasis on sterilization tec 3. Understanding and implementation of contrast management and treatment of contrast media. Per procedures by ensuring safety of patients with restradiation dose.  Understand the contrast media and its types.  Demonstrate the various radiographic techniques	and emphasis on sterilization techniques and radiological procedures. In the implementation of contrast media, its classification and toxicity, reatment of contrast media. Performing the theory based special turing safety of patients with respect to dosage of contrast media and						ares. ty, and
CO4	Utilize various radiographic techniques of urinary	/ svste	em a	nd fe	male r	enrod	uctive	system
CO5	Explain the impact of high kv techniques on imag radiography.	ge qua	lity,			_		-
Unit-No.	Content	Cont Ho		Lea	arning	g Outo	come	KL
I	Pediatric Imaging:  • Special needs of patient and radiographer- use of dedicated equipment and accessories modified technical considerations - selection of exposure factors image quality considerations  • Radiation protection of the patient - special techniques in children for contrast studies.  Geriatric radiography: • Equipment and accessories – exposure factor considerations in special care.  Elderly patients' profile - difficulties during radiography – technical considerations-projections with unconventional special positioning.  Trauma/Emergency Radiography:  • Selection of suitable X-Ray equipment – patient position - radiographic projections and sequence for each patient – modification of routine positioning—radiation protection – patient care.  Operation theatre radiography:  • O. T Procedures - Operative cholangiography – orthopedic procedures –maintenance of asepsis – preparation of radiographer and equipment/accessories – careful safe use of mobile and fluoroscopic equipment – radiation protection – patient care – rapid availability of radiographic image cooperation with OT staff-type of studies done -clinical applications - clinical applications-per operative radiographs- preoperative fluoroscopy	10	0	pae	owledg diatric ograpl		ut	1,2,3

	<del>-</del>			
	studies - patient care-radiation protection of all staff. Responsibility of Radiographer during Radiological			
	Procedure			
	• Preparation of Patient for Different Procedures. •			
	Contrast Media - Positive and Negative, Ionic &			
	Non -Ionic • Adverse Reactions to Contrast Media			
	and Patient Management •Emergency Drugs in the			
	Radiology Department • Emergency Equipment In			
	the Radiology Department • Aseptic technique.			
	Procedure for gastrointestinal tract:			
	• Fluoroscopy, general considerations, responsibility			
	of radiographers. • Barium swallow			
	Barium meal and follow through.			
	Hypotonic Duodenography.			
	Small bowel enema.		Knowledge about	
II	Barium Enema routine projections for colon and	10	Procedure for	1 2 2
	rectum, colonic activators; double.		gastrointestinal tract	1,2,3
	• Contrast studies; colostomy. Special techniques for			
	specific disease to be examined.			
	Water soluble contrast media - eg. Gastrograffin			
	studies			
	Sinography Fistulogram			
	Procedures for Salivary glands and Biliary system:			
	Sialography.			
	• Intravenous cholangiography.			
	Percutaneous cholangiography.		Knowledge about	
III	• Endoscopic retrograde Cholangio -	10	Procedures for	
111	pancreatography (ERCP).	10	Salivary glands and	1,2,3
	Operative cholangiography.		Biliary system	
	• Post -Operative cholangiography (T – tube			
	Cholangiography). Percutaneous Transhepatic			
	Biliary Drainage (PTBD)			
	Procedures for Urinary system and Female			
	reproductive system:			
	• Intravenous urogram/Intravenous pyelogram			
	(IVU/IVP)		77 1 1 1	
	• Retrograde pyelography (RGU)		Knowledge about	
***	• Antegrade pyelography.	10	Procedures for	
IV	Cystography and Micturating cysto-	10	Urinary system and	1,2,3
	urethrography.		Female reproductive	
	• Urethrography(ascend ing).		system	
	• Renal puncture			
	<ul><li> Female reproductive system:</li><li> Hysterosalpingograph y &amp; FTR</li></ul>			
	<ul><li>Arthrography Discography</li></ul>			
	Macro radiography, Soft Tissue	-		
	Radiography, High kV Radiography &			
	Localization of foreign bodies:		Knowledge about	
V	General principles.	8	Macro radiography	1,2,3
	• Requirement.		- Indio Indio Grupity	1,2,5
	• Equipment's.			
	-1h			1

- I	
	• Techniques. Soft Tissue Radiography:
	High and low kilo voltage technique; differential
	filtration.
	Non - screen technique - simultaneous screen and
	non – screen technique.
	Multiple radiography.
	• Uses of soft tissue radiography.
	High kV Radiography:
	General principles Relation to patient dose
	Change in radiographic contrast.
	Scatter limitations; beam collimation; grid ratio.
	Speed and type of grid movement.
	Radiographic factor; application and uses.
	Localization of Foreign body:
	General Principle.
	Ingested; inhaled; inserted; embedded foreign
	bodies.
	• Foreign bodies in eye.
	• Preparation of the area to be investigated.
	Appropriate projection for all Techniques to locate
	non- opaque foreign body.
	Composition and functions of blood, Plasma, and
	body fluids.
	• Functions of RBC, WBC, and platelets
	• Hemoglobin.
	•Blood hemostasis Blood groups

T1: Radiological Procedures – A Guideline by Bhushan N. Lakhar

T2: Guide to Radiological Procedures by Chapman & Nakielny'

## **REFERENCE BOOKS:**

R1: A Guide on Special Radiographic Investigations &

Techniques Paperback – 1 January 2019 by Dr. Kushal Gehlot (Author), Lalit Agarwal (Author)

## OTHER LEARNING RESOURCES:

 $\underline{https://radiopaedia.org/articles/abdominal-radiography}$ 

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Programme Outcome						
1	Understand the contrast media and its types.	1,2,3,5,6,7						
2	Demonstrate the various radiographic techniques and procedures for gastrointestinal tract.	1,2,3,6						
3	Discuss the various radiographic techniques and procedures of salivary glands and biliary system.	1,2,3,6						
4	Utilize various radiographic techniques of urinary system and female reproductive system.	1,2,3						
5	Explain the impact of high kV techniques on image quality, and management of soft tissue radiography.	1,2,3,5,6						

SEMESTER – IV											
Course '	Title	I	ENHANCE PROFE				,	1	T T		
Course	code	24UBPD2201 R	Total credits: 1	L	T	P	S	R	O/F		C
D	_•.•.	N7:1	Total hours: 30P	0	0	2	0	0	0		1
Pre-requ		Nil BACHELOR OF RAI	Co-requisite	DYANI	CED	TNA	CINC		CIINIC	\T (	)CV
Program Semes										)L(	Жĭ
Semes	ter		Autumn/ IV semester of second year of the Programme  To enable the students for effective presentation.								
Cours Objecti		<ul><li>2. To presentations to fin</li><li>3. To boost their confident</li></ul>	d new, innovative wa	ays of o				_		_	
CO1	l	It will prepare the learner	rs to speak with great	ter cont	trol a	nd ch	arisma	a in fr	ont of	oth	iers.
CO2	2	It will have a positive im	pact in their thought	process	s and	prob	lem-so	olving	g skills	S.	
CO3	3	It will enable students to effective manner.	• •								
CO4	ı	It will be able the student apply various leadership	styles.		•	•			•		1
COS	5	It will prepare the studen effectively, and present to and feedback skills						-	•		age,
Unit- No.		Content		Contac Hour		Lear	ning (	Outco	ome		KL
I	i. Inti	entation Skills roduction sential characteristics of a reparation of a good presen		8		Get knowledge on presentation skills					1,2,3
п	Public Skills  i. Fear of Public Speaking,  ii. Understanding and Overcoming Fear of Public Speaking,			8 Get knowledge on Public Skills						1,2,3	
Ш	Writi i. Pre Resu ii. Pr sessi	actical session on cover le on reating profile in LinkedI	In Profile creening of etter screening	8	k	_	actical edge o etter.		ıme,		2,3,4

IV	Leadership & Management Skills i. Concepts of Leadership ii. Leadership Styles iii. Manager VS Leader iv. How to be an Effective Leader v. Doubt Clearing Session	10	Get knowledge on leadership & management	1,2,3,4
V	Interview Skills & Dress code Ethics i. Types of interview- telephonic, virtual & face to face ii. Online interview, personal interview iii. Panel interview iv. Group interview v. Types of interview questions- traditional / common interview question vi. General Strategies for answering questions, vii. Preparation before the interview, viii. How to dress up for an interview, ix. How to maintain eye contact and positive body language x. Interview do's and don'ts, xi. Introduction to Dress Code Ethics, xii. Purpose and Importance What to Wear During Interviews or Any Other Formal Meetings –Male & Female	10	Get knowledge on Interview Skills & Dress code Ethics	1,2,3,4
VI	Mock Interview  i. Practical Mock Interview  ii. Feedback – Receiving Feedback  iii. Giving Feedback  iv. Advantages of Effective Feedback, How to deal with negative feedback	6	Get knowledge on Mock Interview	

T1: 1995. High School English Grammar and Composition Wren, P. C and Martin, H. S Chand Publishing

T2: 2016. Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speaking Barrett, Grant. Zephyros Press.

#### **REFERENCE BOOKS:**

R1: Handbook on Public Speaking, Presentation & Communication Skills: Principles & Practices to create high impact presentations & meaningful conversations Patil, Shailesh

R2: Winning Interview: An Ultimate Guidebook of Tricks, Strategies and Tips on Interview Preparations and Answering Questions to

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Programme Outcome					
1	It will prepare the learners to speak with greater control and charisma in front of others.	6,8					
2	It will have a positive impact in their thought process and problem-solving skills.	6,8					
3	It will enable students to prepare a professional resume and present themselves in an effective manner.	6,8					
4	It will be able the students to understand key leadership concepts and to identify and apply various leadership styles.	6,8					
5	It will prepare the students to handle different interview formats, answer questions effectively, and present themselves professionally, dress codes, positive body language, and feedback skills	6,8					

			SEMESTER – I	[ <b>V</b>							
Course	e Title		Techno Profes	ssional Sk	ills II	I					
Course	code	24BRIT2206R	Total credits:1 Total hours: 15P	L	T	P	S	R	0/	-	C
Prerec	misite	Nil	Co-requisite	0	0	2	0 Nil	0	0	'	1
Progra			helor of Radiography &	Advance	d Ima	ging			v		
Semo			tumn/ IV semester of se						<u> </u>		
Cou Objec		<ol> <li>To understand the basics of emergency care and life support skills.</li> <li>To Manage an emergency including moving a patient.</li> <li>To help prevent harm to workers, property, the environment and the general public.</li> </ol>									
CC	)1		lge on healthcare quality thods at the micro-, meso						prii	ncip	les,
CO	2	Understanding th	e concept of infection cor	ntrol .							
СО	)3	Understanding th	e concept of control and p	prevention	of bio	o med	dical v	vaste			
СО	)4	Understanding th	e knowledge of life savin	g drugs.							
CO	5	Understanding th	e concept of different nor	ms and gu	iidelin	es of	patie	nt safe	ety.		
Unit No.		Cont	tent	Contact Hour	Le	arni	ng Ou	ıtcom	e	]	KL
I	Quali Appr			6	6 Learn about the patient safety & management					1	,2,3
П	- Bas prima first s of bas	sic life support ( ary assessment, Ba aid and triage, Ver g-valve masks (BV	re and life support skills BLS), Vital signs and asic emergency care — ntilations including use VMs), Choking, rescue and Two-rescuer CPR.	8	Lea life use	su	oout th	ne bas skil		1,	,2,3
III	Bio envir Waste Segre treatr codin Radio waste disint BMW Perso Moni	breathing methods, One and Two-rescuer CPR.				wled me	cquire Ige ab edical nent.			1,2	2,3,4
IV	Infectors based practice effectors protection contractions and the contraction of the con	tion prevention a  I infection contices [such as stertive hand hygiend ctive equipment of common	nd control - Evidence atrol principles and dilization, disinfection, and use of Personal (PPE)], Prevention & healthcare associated ants of an effective	8	Learn about the infection and it's control.					1,2	2,3,4

	infection control Programme, Guidelines (NABH and JCI) for Hospital Infection control.			
V	Antibiotic Resistance- History of Antibiotics, How Resistance Happens and Spreads, Types of resistance Intrinsic, Acquired, Passive, Trends in Drug Resistance, Actions to Fight Resistance, Bacterial persistence, Antibiotic sensitivity, Consequences of antibiotic resistance Disaster preparedness and management - Fundamentals of emergency management, psychological impact management, Resource management, Preparedness and risk reduction, information management, incident command and institutional mechanisms.	12	To acquire the knowledge about the history of antibiotics, types of resistance and bacteria control	1,2,3,4

- 1. Understanding Patient Safety, Second Edition by Robert Wachter
- 2. Handbook of Healthcare Quality & Patient Safety Author: Girdhar J Gyani, Alexander Thomas

#### **REFERENCE BOOKS:**

- 1. Washington Manual of Patient Safety and Quality Improvement Paperback by Fondahn, 2016
- 2. Researching Patient Safety and Quality in Healthcare: A Nordic Perspective Karina Aase, Lene Schibevaag
- 3. Old Handbook of Healthcare Quality & Patient Safety by Gyani Girdhar J

	CO PO Mapping						
S.N	Course Outcome (CO)	Mapped Programme Outcome					
1	Acquire knowledge on healthcare quality improvement and patient safety principles, concepts, and methods at the micro-, meso-, and macro-system levels.	1,2					
2	Understanding the concept of infection control	1					
3	Understanding the concept of control and prevention of bio medical waste	1,8					
4	Understanding the knowledge of life saving drugs.	1,2					
5	Understanding the concept of different norms and guidelines of patient safety.	2,5					

			SEMESTER	R – IV	7							
Course	e Title		BASIC LIF	E SA	VIN	NG SK	ILLS					
Cours	e code	24UULS2201R	Total credits:		L	T	P	S	R	O/F		C
			Total hours: 3		0	0	2	0	0	0		1
Pre-re-		Nil BACHELOR OF R	Co-requisite		DIA	NCE	D IM	N		СПЛО	ΙΩ	CV
Semo			n/ IV semester o								LU	JI
being	CSTCI					-					1	
Cou	ırse	1.To provide the learners with basic knowledge and practical skills needed in an emergency fire situation										
Objec	ctives	2. To provide appropriate basic management and treatment for injuries										
		3. Develop the ability					•					
CO	<b>D1</b>	The students will be a	_	_		arrest	t/cardi	ac arr	est, an	d provi	ide	
		oxygen to the patients				of			n Adv	انطہ عل	don	
CO	)2	The students will be a infants' victims.	ore to perform the	з шро	ortai	ice of	еагіу (	UK (	m Aat	ııı, chil	u an	u
		The students will be a	ble to perform the	e basic	c ste	ps to 1	elive	chokii	ng for	respon	sive	and
CO	)3	unresponsive victims				•				1 -		
CO	)4	The students will be a	-	-		-	worse	e, aid	in reco	overy, 1	eliev	ving
		pain and protecting th						•		.1	1 0	
CO	<b>D</b> 5	The students will be a operation and getting		the fi	ire e	quıpm	ent re	quirei	nents,	method	ıs of	
Unit-			out anve.	Con	tact							
No.		Content		Ho			Learr	ing (	Outcor	ne	K	KL
I	Basic Life Support (BLS):  i. Introduction of BLS  ii. Chain of survival			4	ı		t know e Supp	_	on Ba	asic	1,2	2,3,4
II	First A Golden	id: rules of First aid First a	id Kits	4	1	Get Aid		ledge	on Fi	rst	1,2	2,3,4
Ш	Trauma emergencies:  Introduction  Priorities of Initial approach in pre-hospital care  a. Scene safety b. Primary assessment c. Bleeding control d. Extrication of victims and safe transfer e. Cervical spine stabilization and C-collar application f Splinting of broken Limbs			4			_		nowlee	-	1,2	2,3,4
IV	<ul><li>Intro</li><li>Flow</li><li>Triag</li></ul>	e system: duction chart approach of Tria ge of Single and Multip ospital setting	-	4	1		t know tem	ledge	on Tr	i age	1,2	2,3,4

V	Medical emergencies:  • Introduction  • Victim centered approach and Management of:- a. Seizures  b. Heart attack	4	Get knowledge on medical	1,2,3,4
	c. asthma d. diabetic emergencies e. emergency childbirth f. Respiratory distress and failure		emergencies	
VI	Environmental Emergency:  • Recognizing and caring for heat related illness such as: Heat stroke, heat cramps, heat exhaustion, dehydration.  • Recognizing and caring for cold related illness such as frostbite, hypothermia. Poisoning, Snakebite.	2	Get knowledge on Environmental Emergency	1,2,3,4
VII	Safety of people in the event of fire:  Recognition of possible fire sources and emergency procedures, construction techniques for eliminating fire.  Types of detecting devices and extinguishing agents and systems Devising procedures in the event of fire and react to fire danger.	2	Get knowledge on Safety of people in the event of fire	1,2,3,4

T1: Nancy Caroline's Emergency Care in the streetsJones and Bartlett 8th Edition

T2: First Aid book LC Gupta 7th Edition

#### **REFERENCE BOOKS:**

R1: Advance Cardio vascular life support and Basic life support provider manual American Heart Association (AHA)

## OTHER LEARNING RESOURCES:

 $\underline{https://www.redcross.org/take-a-class/lp/7-lifesaving-skills-everyone-should-know}$ 

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Programme Outcome					
1	The students will be able to recognize respiratory arrest/cardiac arrest, and provide oxygen to the patients to sustain tissue viability.	5					
2	The students will be able to perform the importance of early CPR on Adult, child and infants' victims.	2					
3	The students will be able to perform the basic steps to relive choking for responsive and unresponsive victims	2					
4	The students will be able to prevent injury from getting worse, aid in recovery, relieving pain and protecting the victims from deterioration.	2					
5	The students will be able to learn about the fire equipment requirements, methods of operation and getting out alive.	2					

			SEMESTER	R – IV							
Course	Title		FINANC	CIAL LITI	ERACY	Y					
Course	code	24UUFL2201R	Total credit			ГР	S	R	O/F	C	
			Total hours:		0	0 2	0	0	0	1	
Pre-requ		Nil	Co-requisi		NGED	T) ( ) ( )	Ni		NIOT O	OT.	
Prograi		BACHELOR OF RADIOGRAPHY & ADVANCED IMAGING TECHNOLOGY									
Semes	ter		Autumn/ IV semester of second year of the Programme								
C		1. To create awareness among students about the need for possessing financial literacy									
Cour		education.  2 Identification of money as a working asset									
Object	ives	2. Identification of money as a working asset.									
			3.Impart the ability to make better financial decisions.  The students would be able to understand the importance of financial Knowledge and								
CO	1	prepare financial pla		_					euge an	ıu	
		The students would		_		_			'nσ		
CO2		institutions' instrum			ana va	iiious Ki	iiu oi	Uanki	mg		
					nce of i	nsuranc	e serv	ices a	is social	Ī.	
		The student would be able to describe the importance of insurance services as social security measures.									
CO	4	The student would be	ne able to manage th	ie monev a	nd debt	more e	ffectiv	velv			
CO		The Student will ga							et		
Unit-			_	Contact							
No.		Conten	t	Hour	Lea	arning	Outco	ome	K	L	
	Intro	duction:									
		aning, need and impo	rtance of								
		ancial Literacy	F: 1								
		ferent components of eracy;	Financiai								
_		requisites of financial		Get ki	nowledg	ge on		1.0	2 4 5		
I		rings – Meaning and l	6	Finan	cial Lite	eracy		1,2,	3,4,5		
		ween savings and inv									
		pes of Financial Instit									
		vices provided - Bank iking;	ing and Non-								
		ferent investment ave	nues								
		icial Planning:									
	• Me	aning, need and impor	rtance for financial								
		nning.	1								
		nomic needs, balancing nomic need and resou									
		ree pillars of investmen									
		iidity.	,,								
II		dgeting and its importa	ance in financial	6		nowledg			1.2.	3,4,5	
		nning;	1 DI '	-	Finan	cial Pla	nning		, ,	- , ,-	
	-	ps involved in Financi cess.	ai Pianning								
		paration of personal b	udgets, budget								
		plus and budget defici									
	sav	ings from surplus, sou									
	defi		d ana1 C 1'								
	• Info	ormal Society funds a	na crowa funding								

III	<ul> <li>Banks &amp; Post Office - As financial service provider:</li> <li>Meaning and evolution of money • Banks – meaning, types &amp; functions; types of accounts; Formalities to open various accounts.</li> <li>Different types of Post Office saving schemes: Recurring deposit, savings, term deposit; NSC; Kisan Vikas Patra; Monthly Income scheme (MIS) Account</li> <li>Public Provident Funds (PPF), Senior citizen savings</li> <li>scheme (SCSS), Sukanya Samriddhi Accounts,</li> <li>Indian Postal Order; International Money transfer service; Forex Services;</li> <li>Money remittance services;</li> <li>Jan Suraksha Scheme.</li> </ul>	6	Get knowledge Banks & Post Office - As financial service provider	1,2,3,4,5
IV	Insurance - As financial service provider: i. Different types of Risks and their Management, Diversification of risk; ii. Meaning, need and importance of Insurance; Types of Insurance — Life Insurance, Health Insurance, General Insurance, Term Insurance, iii. Pension and retirement policies; iv. Post office life insurance schemes, Postal life insurance and rural postal life insurance	6	Get knowledge on Insurance - As financial service provider	1,2,3,4,5
V	Transformations in Digital Money market: i. Various functions & innovative services of Banks; Mobile Banking, NEFT, IMPS, RTGS, ii. Money transfer, Different types of cards- Debit & Credit, E- Banking, Unified payment interface (UPI), iii. Credit Scoring - CIBIL, Digital Banking, crypto currency and related transactions, Fintech, Block chain; Understanding Digital Payment	6	Get knowledge on Transformations in Digital Money market	1,2,3,4,5

- T1: The Young Adult's Guide to Financial Success- How to Manage Your Money & Live Better on Less Edward M. Wolpert
- T2: Financial Freedom with Financial Control Jagmohan Singh Pendown Press
- T3: The Richest Man in Babylon (Deluxe Hardbound Edition) George S. Clason ixia Press Garden City, New York

#### **REFERENCE BOOKS:**

- R1: Financial literacy to financial planning Dr.Purvi Kothari and Mr. Keyur Meht
- R2: Ernst & Young's Personal Financial Planning Guide: Take Control of Your Future and Unlock the Door to Financial Security Young, Robert J. Garner, Robert B. Coplan, Barbara J

## OTHER LEARNING RESOURCES:

https://in.search.yahoo.com/search?fr=mcafee&type=E210IN714G0&p=financial+literacy

	CO PO Mapping	
S.N.	Course Outcome (CO)	Mapped Programme Outcome
1	The students would be able to understand the importance of financial Knowledge and prepare financial plans and budgets and plan and manage personal finances.	6,7
2	The students would be able to understand the need and various kind of banking institutions' instrument and their utilities.	7
3	The student would be able to describe the importance of insurance services as social security measures.	5
4	The student would be able to manage the money and debt more effectively.	8
5	The Student will gain knowledge on Transformations in Digital Money market	7,8

			SEMESTE	R - V								
Course	e Title		CLINICA	L OBSER	VATIO	NI						
Course	Code	24BRIT3101R	Total C	redit: 5	L	T P			0	C		
Pre-Re	anisita		Co-rec	quisite	0	0 0	20	0	0	5		
Anti-re			C0-160	Nil								
Progra		BACHELOR OF RAI	DIOGRAPHY		NCED II	MAGIN	G TEC	HNO	)LO	GY		
Seme			/ V semester of									
				in radiographic images of the musculoskeletal								
		system, chest, and gastrointestinal tract for accurate diagnosis.										
Cou		2. Develop skills in performing and analyzing imaging studies to identify										
Objec	ctives	abnormalities and pathologies effectively.										
		-	3. Develop fundamental skills for interacting with patients respectfully, addressing									
		patient concerns, an			11							
CC	)1	Demonstrate the ability		•	0 1	•		arıou	.S			
		anatomical regions, ap					-	oron	hio			
CC	)2	Execute proper position procedures, integrating	-				ng rauic	ograp	IIIC			
		Evaluate radiographic		•			formula	ate ac	cura	te		
CC	)3	diagnoses and treatme	_	Ciution wi	ar chinea	i data to	Tormun	iic ac	curu			
~		Differentiate between normal and abnormal radiographic results, utilizing critical										
CC	)4	thinking skills to guide patient care.										
CC	) <i>5</i>	Utilize knowledge of i	maging modalit	ties and tec	chniques	to optim	ize visu	aliza	tion	and		
CC	)5 	assessment of anatomi	cal structures a	nd patholo	gies.							
Unit		Content		Contact	t Learning outcome F							
No.	<b>5</b> 11			Hour		<b>8</b>						
	_	raphy – plain views of t	the upper limb.									
	• Hand											
	<ul><li>Finge</li><li>Thun</li></ul>				Evaluate radiographic				1	2 2		
1	• Wris			9 findings on upper extremit					1	,2,3		
	• Forea				x-rays							
	• Elbo				,							
	LIOU	X/										
	• Hum											
	Hum Radiog	erus	the shoulder:									
	Radiog		the shoulder:			e radiogr	raphic		1.	,2,3,		
2	Radiog • Shou	erus raphy – plain views of t		10	Evaluat	e radiogr	_		1.	,2,3,		
2	Radiog • Shou • Acro	erus raphy – plain views of t lder Joint	capula	10	Evaluat	s on shou	_	d	1,			
2	• Shou • Acro Vario	erus raphy – plain views of t lder Joint mio – clavicular joint So	capula	10	Evaluate findings	s on shou	_	d	1.			
2	<ul><li>Radiog</li><li>Shou</li><li>Acro</li><li>Vario</li><li>Stern</li></ul>	erus graphy – plain views of t lder Joint mio – clavicular joint So ous Views and Projectio	capula ns. Clavicle	10	Evaluate findings	s on shou	_	d	1.			
2	<ul><li>Radiog</li><li>Shou</li><li>Acro</li><li>Vario</li><li>Stern</li></ul>	erus raphy – plain views of t lder Joint mio – clavicular joint So ous Views and Projectio o – Clavicular joint.	capula ns. Clavicle	10	Evaluate findings clavicle	s on shou	lder and	d		4		
3	Radiog Shou Acro Vario Stern Radiog Foot	erus raphy – plain views of t lder Joint mio – clavicular joint So ous Views and Projectio o – Clavicular joint.	capula ns. Clavicle	10	Evaluate findings clavicle  Evaluate findings	s on shou x-rays e radiogr	raphic er extrem					
	Radiog Shou Acro Vario Stern Radiog Foot Toes Ankl	erus  graphy – plain views of to the standard plain views of to the standard plain views of the standard plain vie	capula ns. Clavicle Lower Limb:		Evaluate findings clavicle  Evaluate findings	s on shou x-rays e radiogr	raphic er extrem			4		
	Radiog Shou Acro Vario Stern Radiog Foot Toes Ankl	erus  graphy – plain views of the plain views of the plain views of the plain of the plain views and Projection of Clavicular joint.  graphy – plain views of the pla	capula ns. Clavicle Lower Limb:		Evaluate findings clavicle  Evaluate findings	s on shou x-rays e radiogr	raphic er extrem			4		
	Radiog Shou Acro Vario Stern Radiog Foot Toes Ankl Knee	erus  graphy – plain views of the plain views of the plain views of the plain views and Projection of Clavicular joint.  graphy – plain views of Decrease and Projection of Clavicular joint.  Tarsus & oscalcis of The plain views of Decrease and Projection of Decrea	capula ns. Clavicle  Lower Limb:  a iac joint		Evaluate findings clavicle  Evaluate findings	s on shou x-rays e radiogr	raphic er extrem		1	,2,3		
	Radiog Shou Acro Vario Stern Radiog Foot Toes Ankl Knee Radiog	erus  graphy – plain views of the later Joint mio – clavicular joint Servicular joint. graphy – plain views of later Joint Servicular joint. Tarsus & oscalcis e Tibia, fibula & Patella joint Pelvis & Sacro-ilia graphy of Vertebrae: ical spine upper, cervica	capula ns. Clavicle  Lower Limb:  a iac joint	9	Evaluate findings clavicle  Evaluate findings and pelvi	s on shou x-rays e radiogr s on lowe vis x-rays	raphic er extrei		1	,2,3		
	Radiog Shou Acro Vario Stern Radiog Foot Toes Ankl Knee Radiog Cerv	erus  praphy – plain views of the plain views of the plain views of the plain views and Projection o – Clavicular joint.  Praphy – plain views of the plain views of	capula ns. Clavicle  Lower Limb:  a iac joint		Evaluate findings clavicle  Evaluate findings and pelve	e radiogr s on lowers on lowers are radiogr	raphic er extrems	nity	1	,2,3		
	Radiog Shou Acro Vario Stern Radiog Foot Toes Ankl Knee Radiog Cerv Cerv	erus  graphy – plain views of the later Joint mio – clavicular joint Servicular joint. graphy – plain views of later Joint Servicular joint. Tarsus & oscalcis e Tibia, fibula & Patella joint Pelvis & Sacro-ilia graphy of Vertebrae: ical spine upper, cervica	capula ns. Clavicle  Lower Limb:  a iac joint	9	Evaluate findings clavicle  Evaluate findings and pelve	s on shou x-rays e radiogr s on lowe vis x-rays	raphic er extrems	nity	1	,2,3		

	Sacrum & Coccyx			
	• Ribs Upper & Lower			
	• Sternum			
	Radiography of skull plain views:			
	• AP, Lateral & Towns			
	• Sinuses, Mandible, Teeth.			
	Mastoids.		Evaluate radiographic	4,5,6
5	• Radiography of Chest:	7	findings on skull, chest and	4,5,0
	• Lungs & Trachea; Heart-Diaphragm		abdomen x-rays	
	Radiography of G.I. Tract			
	• Plain X-rays Abdomen-Erect; Liver,			
	Spleen.			

T1: John Lampignano and Leslie E. Kendrick 'Radiographic Positioning and Related Anatomy'

## **REFERENCE BOOKS:**

R1: Joseph Selman 'The fundamentals of X-ray and Radium Physics" 5th Edition

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Programme Outcome
1	Demonstrate the ability to analyze and interpret radiographic images of various anatomical regions, applying knowledge of anatomy and pathology.	1,2,3
2	Execute proper positioning techniques and safety procedures during radiographic procedures, integrating understanding of procedural protocols.	1,2,3
3	Evaluate radiographic findings in correlation with clinical data to formulate accurate diagnoses and treatment plans.	1,2,3
4	Differentiate between normal and abnormal radiographic results, utilizing critical thinking skills to guide patient care.	1,2,3
5	Utilize knowledge of imaging modalities and techniques to optimize visualization and assessment of anatomical structures and pathologies.	1,2,3

SEMESTER – V												
Course	Title		CLINICAL		ATION	II						
Course	Code	24BRIT3102R	Total Cre	edit = 5	L 0	T 0	P 0	S 20	R 0	O 0	<b>C</b> 5	
Pre- Re	quisite		Co- Req		· ·			Ů	U			
Anti -Re	_		Nil									
Progra	amme	BACHELOR OF RADIOGRAPHY & ADVANCED IMAGING TECHNOLOGY										
Seme	ester	Fall / V semester of third year of the Programme										
Cou	rse	1. To provide students h										
Objec		2. To provide students the understanding of contrast examination.										
		3. Differentiation and ea							proc	edur	es.	
CC		To comprehend knowle					raphy	· .				
CC		Perform case study on p										
CC		Perform case study on g					•					
CC	)4	Perform case study on sal		• •		•			_			
CC	)5	Perform case study on uexamination.	arınary system ar	ia temale re	eproauci	ive sy	stem	x-ray	/			
Unit			Contact									
No.		Content		Hour	Le	earnin	g ou	tcom	e		KL	
	Introd	uction to equipment an	d it's									
	accesso	ories:		Learn a	about	the h	andlii	ng of	f			
1	• CR	• CR			CR, DR and fluoroscopic					1	1,2,5	
	• DR				equipment							
		roscopy										
		ric and Geriatric X-ray										
	case st	_										
		nt information/history			Description about pediatrics and geriatric radiography such as radiation safety, diagnostic challenges							
		med consent										
		nt preparation: atory investigation										
		& Creatinine)										
	- Fastir	· ·										
2		gy protocol (Medication)	12	and par					1	1,2,5		
	_	rast media and equipmen	t used		respon							
		nt positioning			radiog	•		_		.		
		edure & techniques			radiological procedure us or guided during Operation							
	• Expo	sure factors			Theatre		ring (	)pera	ttion			
	• Evalı	uation criteria of radiogra	phic images		Theatre	3						
		care and radiation protec	-									
	• Clini	ical findings										
	Gastro	ointestinal tract X-ray e	xamination;		Unders	standir	ng the	cond	cept			
	case st	•			of radi	-				ı		
		nt information/history			investi	-		-	ive			
		med consent			system		la and	1				
3		nt preparation:		10	sonogr	am.				2	2,3,5	
		atory investigation										
		& Creatinine)			Describe and explain							
	- Fastir					l indications , contra-						
	-Allerg	<u>y</u>			indicat	ion,						

	protocol (Medication)  • Contrast media and equipment used  • Patient positioning  • Procedure & techniques  • Exposure factors  • Evaluation criteria of radiographic images  • Aftercare and radiation protection		patient preparation, exposure factors, contrast media ,technique, filming, after care and radiation protection	
4	<ul> <li>Clinical findings</li> <li>Salivary glands and Biliary system X-ray examination; case study:</li> <li>Patient information/history</li> <li>Informed consent</li> <li>Patient preparation: -Laboratory investigation (Urea &amp; Creatinine)</li> <li>Fasting -Allergy protocol (Medication)</li> <li>Contrast media and equipment used</li> <li>Patient positioning</li> <li>Procedure &amp; techniques</li> <li>Exposure factors</li> <li>Evaluation criteria of radiographic images</li> <li>Aftercare and radiation protection</li> <li>Clinical findings</li> </ul>	8	Understanding the concept of radiological anatomy and investigations of salivary glands and hepato billiary system.  Describe and explain clinical indications, contraindication, patient preparation, exposure factors, contrast media, technique, filming, after care and radiation protection	2,3,5
5	Urinary system and Female reproductive system X-ray examination; case study:  • Patient information/history  • Informed consent  • Patient preparation: -Laboratory investigation (Urea & Creatinine)  - Fasting -Allergy protocol (Medication)  • Contrast media and equipment used  • Patient positioning  • Procedure & techniques  • Exposure factors  • Evaluation criteria of radiographic images  • Aftercare and radiation protection Clinical findings	8	Understanding the concept of radiological anatomy and investigations of both male and female urinary system and reproductive organs.  Describe and explain clinical indications, contraindication, patient preparation, exposure factors, contrast media, technique, filming, after care and radiation protection	2,3,5

 $T1: Radiological\ Procedures - A\ Guideline\ by\ Bhushan\ N.\ Lakhar$ 

T2: Guide to Radiological Procedures by Chapman & Nakielny'

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Programme Outcome
1	To comprehend knowledge on equipment used in contrast radiography.	1,2,3,5,6,7
2	Perform case study on pediatric and geriatric x-ray examination.	1,2,3,6
3	Perform case study on gastrointestinal tract x-ray examination.	1,2,3,6
4	Perform case study on salivary glands and biliary system x-ray examination.	1,2,3
5	Perform case study on urinary system and female reproductive system x-ray examination.	1,2,3,5,6

			SEMESTER	- <b>V</b>								
Cours	se Title		CLINICAL (	<b>DBSERVA</b>	TION I	II						
Cours	se Code	24BRIT3103R	Total Cr	edit : 6	L 0	T 0	P 0	S 24	R 0	0	6	
Pre- R	equisite		Co- Requisite			U	U	Nil	U	U	0	
	equisite		Nil									
	ramme	BACHELOR OF RA	DIOGRAPHY &		CED IM	AGT	NG T	TECH	INO	LOC	Ϋ́	
	ester								1110			
		Fall / V semester of third year of the Programme  1. Understanding and implementing advanced imaging modalities such as computed tomography (CT), magnetic resonance imaging (MRI), and interventional radiography.										
Course		2. Enhancing the ability							_		, .	
	ectives	diagnostic purposes, inc	•	•		_	арти	e ma	505 1	01		
		3. Familiarize with adva		-			ıl ima	oino	svste	ms		
		contrast media administr	0 0	•		_		55	syste	,,,,		
		Students will demonstra						ndvan	ced i	magi	ing	
C	<b>O</b> 1	modalities.	p	-18			8			8-	8	
			anding of evolution	on history o	of mamm	ograi	ohy, o	constr	uctio	on an	ıd	
	0.2	Comprehensive understanding of evolution history of mammography, construction and its safety considerations. Students will be able to effectively assess and manage patient										
C	O2	care during advanced radiographic procedures, including patient positioning,										
		immobilization,										
		Students will develop the ability to interpret and analyze advanced radiographic images										
C	O3	accurately, identifying anatomical structures, pathologies, and abnormalities to assist in										
		diagnosis and treatment planning.										
C	O4	Students will actively pa	rticipate in clinic	al rotation	s and har	nds-oı	n exp	erien	ces			
C	<b>O</b> 5	Students will exhibit pro	ofessionalism in the	heir interac	tions wi	th pat	ients	, and	healt	hcare	e	
		professionals.	T.		ı							
Unit No.		Content		Contact Hour	L	earni	ing o	utcon	ne		KL	
1	Comput Magnet Interver • Image • Contra • Multi • Recon • Patien • Immo	ted Imaging Modalities: ted Tomography (CT) ic Resonance Imaging (Mational Radiography- Acquisition and Processionst Enhancement eplanar Imaging astruction Algorithms at Assessment and Position bilization Techniques oring Vital Signs	ng	10	Knowle radiogr includi techniq used in MRI, fi angiogr interve	raphic ng the lues, a areas luoros raphy	proceed pury and eas such scopy and, and	edure pose, quipn n as C	es, nent T,		1,2,3	
	Introdu	uction –										
2	_	uipment and accessories,		10	Familia	-				]	1,2,3	
		equipment and accessories			radiogr	aphic	equi	pmen	ıt		,4	
		oscopy equipment and acc tes Tomography (CT)-	essories									
	_	t information,			The pro	readii	ral at	ene e	nd			
		y of patient,			patient			•	IIU		1,2,4	
3	• Conce	ent form to be filled, labor	•	10	require	_		-			,5	
	with ma	ation to be checked, checked tel detector, explain the p	rocedure,		advanc			_		es.		
L	• Protoc	cols for various anatomica	i regions and									

	clinical indications  • Multidetector CT (MDCT) and dual-energy CT (DECT),  • CT angiography (CTA) and perfusion imaging,			
4	<ul> <li>Magnetic Resonance Imaging (MRI)-</li> <li>Patient information, history of patient,</li> <li>Consent form to be filled, laboratory investigation to be checked,</li> <li>checking patient with metal detector,</li> <li>explain the procedure,</li> <li>MRI pulse sequences (T1-weighted, T2-weighted, proton density, etc.),</li> <li>Magnetism and superconducting magnets in MRI,</li> </ul>	8	the ability to support patient care with an understanding of the unique needs of patients undergoing advanced or high-stress imaging procedures.	2,3,5
5	<ul> <li>Interventional Radiology (Fluoroscopy)</li> <li>Patient information, history of patient,</li> <li>Consent form to be filled, laboratory investigation to be checked,</li> <li>checking patient with metal detector, explain the procedure,</li> <li>Patient procedure and follow the protocols,</li> <li>Angiography and vascular interventions,</li> <li>Endovascular treatments for arterial and venous disorders,</li> <li>Embolization techniques for hemorrhage control and tumor management</li> </ul>	9	Recognize the functions and applications of contrast media, image post-processing techniques, and image reconstruction methods	4,5,6

T1: Catherine Westbrook, Carolyn Kaut Roth and John Talbot "MRI In Practice" 4th Edition (2011)

T2: Scott W. Atlas, Magnetic Resonance Imaging of the Brain and Spine 5th Edition (2016)

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Programme Outcome
1	Students will demonstrate proficiency in operating and understanding advanced imaging modalities.	1,2,3,6
2	Comprehensive understanding of evolution history of mammography, construction and its safety considerations.  Students will be able to effectively assess and manage patient care during advanced radiographic procedures, including patient positioning, immobilization,	1,2,3
3	Students will develop the ability to interpret and analyze advanced radiographic images accurately, identifying anatomical structures, pathologies, and abnormalities to assist in diagnosis and treatment planning.	1,2,3,6
4	Students will actively participate in clinical rotations and hands-on experiences	1,2,3
5	Students will exhibit professionalism in their interactions with patients, and healthcare professionals.	1,2,3,8

			SEMES'	TER – V								
Course T	itle		CAS	E PRESE	ENTATION							
Course c	ode	24BRIT3104R	TOTAL CREI	DIT: 2		L 0	T 0	P 0	S 0	R 12	O 0	C 2
Pre-requisite		Compulsory	Co- requisite			Ů	Ŭ Į	Ů	Ni		•	
Program	ıme	BACHELOR OF	BACHELOR OF RADIOGRAPHY & ADVANCED IMAGING TECHNOLOGY									
Semest	er	]	Fall / V semester	of third y	ear of the p	orog	ram	me				
Course Objective		abnormalities, ar 2. Through case s applying evidence 3. Students will gar	<ol> <li>Develop Diagnostic Skills to interpret various radiologic images, identify abnormalities, and recognize signs of common conditions across key body systems.</li> <li>Through case studies, learners will practice forming differential diagnoses and applying evidence-based decisions in a clinical context.</li> <li>Students will gain proficiency in specialized imaging techniques, including contrast, paediatric, and oncologic imaging, for handling complex cases.</li> </ol>									
CO1		Understanding of interpretation, and i	recognize normal	anatomy a	across variou	ıs or	ienta	tion	ıs.			
CO2		Interpret system-sp various cases.										
CO3		Apply advanced in complex radiologic		s to enhan	ce diagnosti	ic ac	cura	cy i	n sp	ecial	ized	and
CO4		Develop a systematic approach to differential diagnosis, collaborate across specialties, and enhance interpretive skills through case-based discussions and peer review.										
CO5		Demonstrate diagnostic proficiency in a hands-on assess concepts, and access resources for continued learning and								ey ra	diolo	ogic
Unit No.		Cor	ntent		Contact Hour	Lea	arni	ng o	utco	me	K	L
I	Ove	roduction to Radiology lands and a X-rays, CT, MRI, other imaging types Indications for each ics of Image Interpre Reading image orie axial).  Basic radiologic sig Understanding nor imaging modalities.	es ET, and , coronal, gy.	6	kno rad	acc owle iolog dies	dge		asic out ase	1,2	2,3,4	
П	Neu    Tho  Care	<ul> <li>Recognizing patterns in MRI and CT images of the brain.</li> <li>Ischemic stroke, glioblastoma, subdural hematoma, etc.</li> <li>Thoracic Imaging</li> <li>Common thoracic cases including chest X-ray and CT interpretation.</li> <li>Case studies: COVID-19 pneumonia, lung nodule assessment, etc.</li> <li>Cardiovascular Imaging</li> <li>Heart and vascular imaging, echocardiograms, angiography.</li> <li>Identifying heart conditions: coronary artery disease, cardiomyopathy, aneurysms.</li> </ul>				abo Spo	owle out dies	c S	acqu Syste C		2,	3,4

	Lindargtanding abdominal CT and MDI			
	<ul> <li>Understanding abdominal CT and MRI, ultrasound.</li> </ul>			
	o Case studies.			
	Musculoskeletal Imaging			
	o X-ray, MRI of bones, joints, and soft tissues.			
	o Common cases: fractures, arthritis, tumors,			
	ligament tears.			
	o Case studies.			
	Advanced Imaging Techniques and Specialized			
	Cases:			
	Contrast Imaging Techniques			
	o Understanding contrast agents and when			
	they're used.		To understand the	
	<ul> <li>Special considerations for contrast studies in</li> </ul>		knowledge on	
III	CT and MRI.	6	advanced Imaging	1,3,5
	Paediatric Imaging		techniques and	, ,
	o Differences in imagin paediatric cases.		Specialized Cases	
	o Case studies.		1	
	Oncologic Imaging			
	<ul> <li>Staging and tracking tumours.</li> </ul>			
	<ul> <li>Specialized imaging for cancer Case studies.</li> </ul>			
	Problem-Solving and Diagnostic Challenges:			
	Differential Diagnosis in Radiology			
	Building a systematic approach to differential			
	diagnosis.			
	Steps to narrow down diagnoses based on			
	imaging and patient history.			
	Interdisciplinary Collaboration			
	Working with other specialties: surgery,		To understand	
IV	oncology, internal medicine.	6	problem solving on	3,4,5
1,4	<ul> <li>Understanding the clinical context to improve</li> </ul>	U	various diagnostic	3,4,3
	radiologic interpretation.		challenges.	
	Case Study Review and Group Discussions			
	o Case-based discussions to synthesize knowledge.			
	*			
	interpretations.			
	Practical Assessment and Review:			
	Final Case Study Examination			
	o Hands-on assessment with a mix of new cases			
	from various systems.			
	Review of Key Concepts			
	77 . 1 11:1 : 11: 6			
	o Key takeaways and high-yield information across all systems.		To understand the	
V		6	knowledge on	1224
•	o Recap of major learning points and diagnostic frameworks.	U	Practical ssessment	1,2,3,4
	Feedback and Further Resources		and Review.	
	o Resources for further learning and			
	specialization in radiology.			
	o Tips for approaching complex cases and			
	keeping up-to-date with advances.			

**T1:** Emergency Radiology: Case Studies by David T. Schwartz.

	CO PO Mapping	
S.N	Course Outcome (CO)	Mapped Programme Outcome
1	Understanding of key radiology imaging modalities, their indications, basic image interpretation, and recognize normal anatomy across various orientations.	1,3
2	Interpret system-specific imaging to identify key patterns and common pathologies in various cases.	2
3	Apply advanced imaging techniques to enhance diagnostic accuracy in specialized and complex radiologic cases.	1,2,3
4	Develop a systematic approach to differential diagnosis, collaborate across specialties, and enhance interpretive skills through case-based discussions and peer review.	2
5	Demonstrate diagnostic proficiency in a hands-on assessment, review key radiologic concepts, and access resources for continued learning and specialization.	1,2

			SEMESTER	. – V									
Course	Title		IN	TERNSHIP									
Course	Code	24BRIT3105R	Total C	redit : 4	L	T	P	S	R	0	C		
Pre- Re	anicito	Compulsory	Co- re	0	0	0	16 Nil	0	0	4			
Anti-Re	_	Compuisory	C0-16	Nil				1111					
Progra		BACHELOR OF RAD	IOGRAPHY		ED I	MAG	ING	TEC	HNC	LOC	τΥ		
Seme			semester of										
		Operate radiologic equipment safely and effectively.											
Cou			2. Ensure Patient Safety & Care.										
Objec	ctive	3. Gain Exposure to Specialized Imaging Modalities.											
CC	<b>D</b> 1	Perform basic imaging techniques such as X-ray, CT, and MRI under supervision.											
CC		Ensure proper patient pos											
CC		Communicate effectively		* *									
CC		Adhere to ethical and le											
CC	)5	Utilize protective equipm											
Unit		Content		Contact						K			
No.		Content		Hour		еагп	ıng o	utcon	ie	K	L		
	_	tal staffing and administra	ation										
	1	pital records.			acqu								
1		Sessional ethics.	6					1,2,	,3,4				
		operation with other staff ar	na		functions of hospital and its ethics.				al				
	departi	artmental organizations.			and its calles.								
	_	of the patient											
		nagement of chair and stretch											
	patient												
	_	agement for the unconscio											
	3. Elen	nentary hygiene& personal											
	hygien	e.		To acquire knowledge about									
2	4. Man	nagement for the visually in	6			are a			2,3	,4			
	_	and hearing impaired, mer		_	nage		iiu						
	_	ed, drug addicts and non-En											
	-	ng patients.											
		agement for the seriously i	II and										
		rmed consent											
	First a				+								
		t aids wounds and bleeding	dressing		То	unde	rstan	d the					
3		ndages pressure and splints	•	6				n First		1,3	,5		
		ck, electrical shock, hemori			aid		C			Í			
		xia, fractures, loss of consc	-										
	Patien	t care & implementation	of										
	_	raphers in:		To	unde	rstan	d the						
	• Pedia												
4	• Geria		G T	6	knowledge on both pediatric and geriatric 3.					3,4	,5		
		nt care during Investigation			_			-		, -	-		
		ry tract, Respiratory tract, C			radiography and its patient care.								
		iovascular system, Lympha	uic system,										
	C.N.S. etc.												

5	Principles of asepsis	6	To understand the knowledge on both pediatric and geriatric radiography and its patient care.	1,2,3,4
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T1: Patient Care in Radiography by Ruth Ehrlich.

T2: Patient Care in Radiography with an Introduction to Medical Imaging by Ruth Ann Ehrlich and Dawn M Coakes, Elsevier Science.

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Programme Outcome						
1	Perform basic imaging techniques such as X-ray, CT, and MRI under supervision.	1,2,3,5						
2	Ensure proper patient positioning and technique optimization for quality imaging.	2,3						
3	Communicate effectively with patients to explain procedures and ensure comfort.	2,6						
4	Adhere to ethical and legal guidelines in radiology practice.	5						
5	Utilize protective equipment and shielding techniques effectively.	2,3						

	SEMESTER – VI										
Cours	e Title	INTERVEN	TIONAL RAD	IOLOGY	AND I	NUC	LEA	R M	EDIC	CINE	
Cours	se code	24BRIT3204R	Total credits		L	T	P	S	R	O/F	' <b>C</b>
Cours	- Couc		Total hours:	45T	3	0	0	0	0	0	3
Pre-re	quisite	Nil	Co-requisite					NI	L		
Progr	amme	BACHELOR OF R	BACHELOR OF RADIOGRAPHY & ADVANCED IMAGING TECHNOLOGY								
Sem	ester	Autu	mn/ VI semest	er of first y	ear of	f the l	Prog	ramı	ne		
Course Objectives		<ol> <li>To gain the k procedures in Ra</li> <li>It will give the rather the procedures a</li> <li>To introduce the the body.</li> </ol>	ndiology. nan idea on how re performed ur	v to work w	ith Ste	erility and Ir	in Pa	rocec entio	lures : nal ra	and on	how y.
C	01	Comprehend the unde	erstanding on eq	uipment use	ed in i	nterve	entio	nal p	roced	ures.	
C	02	Discuss the various pradiology.									
C	03	Comprehend the under in nuclear imaging.	erstanding of ba	sic nuclear j	onysic	es and	radı	opna	rmace	euticais	usea
C	04	Explain the different	types of product	tion of radic	nuclio	des.					
C	05	Discuss the instrumer									
Unit-		Content		Contact		Lear	rning	g Out	come	9	KL
No.				Hour							
	I Basic principle and hardware Angiography equipment's history Conventional angiography X-Ray equipment - Equipment construction principle - DSA system basics - digital techniques - subtraction process- procedure for subtraction - care, choice and installation of the equipment - equipment, pitfalls and complications -pressure injectors contrast media -accessories catheters, guide wires uses of serial imaging devices- cine camera video-recorder -film processing radiation			10	To ac about & its in An	t conti types agiogr	rast n , Pro- caphy	nedia cedu	res us		1,2,3
П	II Interventional Radiology: Conventional / DSA studies Abdominal, visceral, peripheral, cerebral and cardiac angiography - arterial/venous anatomy, physiology-clinical indications and contraindications - patient preparation-positioning of the patient - patient care- contrast media - types of contrast - dosage - accessories catheters, guide wires pressure injection-control of radiographic and fluoroscopic equipment - exposure factors for serial programmes-programming injection protocols- outline on each radiological procedure, radiographer's role-patient management before -during and after			12	the	diff logica	erent al ex	amin	ypes ation	about of used //.	2,3

	•		•	
	the procedure - venography interventional angiography in hepatobiliary, GIT, urology and vascular system- coils/stents etc indications and contraindications - role of radiographer-radiation safety.			
III	Nuclear Medicine Equipment Nuclear Physics - basics in Nuclear Medicine- Nuclear medicine equipment's - Gamma Cameras rectilinear scanners- radioisotope generators- SPECT-CT & PET- CT introduction-basic physics and principle involved- equipment's basic structure— differences- fusion techniques- image formation storage devices— advantages limitations.	12	To acquire knowledge about the basic nuclear physics.	3,4
IV	Nuclear Scintiscan procedures: Basics of common clinical Nuclear Medici procedures/techniques. structural imaging studies advantages and limitations.	6	To acquire knowledge about the scintiscan procedures used in PET and SPECT.	4,5
V	Hybrid imaging: PET-CT and PET MRI	5	To acquire knowledge about the PET – CT scan and PET MRI scan	4,5

- T1. Physics in nuclear medicine by Simon R. Cherry, James A. Sorenson
- T2. Interventional procedures in biopsy and drainage by Debra A, Gervais Tarun Sab harwal.
- T3: DebraA,Gervais,Tarun Sabharwal 'Interventional procedures in biopsy and drainage' 1st Edition (2011)

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Programme Outcome						
1	Comprehend the understanding on equipment used in interventional procedures.	1,3						
2	Discuss the various procedures, techniques and guided procedures of interventional radiology.	2						
3	Comprehend the understanding of basic nuclear physics and radiopharmaceuticals used in nuclear imaging.	1,3,8						
4	Explain the different types of production of radionuclides.	1,3,8						
5	Discuss the instrumentation used in nuclear medicine.	1,3						

SEMESTER – VI												
Cours	se Title	PATI	ENT CARE		NOS	ΓIC F	RADI	OLO	GY			
Cours	se code	24BRIT3205R		credits: 3		L	T	P	S	R	O/F	_
			Total	hours: 45T		3	0	0	0	0	0	3
Pre-re	quisite	Hospital Training & Management	Co-requisite						Nil			
Progr	amme	BACHELOR OF RA	DIOGRAP	HY & AD	VAN	CED	IMA	GING	TEC	CHNO	LOG	Y
SEME	ESTER	Autun	nn/ VI semes	ster of thir	d year	r of t	he Pı	ograr	nme			
Obje	urse ctives	<ol> <li>Students will unde settings.</li> <li>Students will learn</li> <li>Students will devel handling.</li> </ol>	specialized c op essential	are techniq	ues fo	or dive	erse a	ınd cri	tical _I	patient	need	s.
	01	Discuss about the hospi										
	02	Demonstrate the approa						nt				
C	03	Apply first aid techniqu		•		•						
C	04	Utilize the various ra	diographic t	techniques	used	for	both	paedi	atric	and g	geriatı	ic
		radiography.										
	05	Explain about the sterili	zation techn	•	during	g radı	ograp	ohic ex	amın	ation.		
Unit- No.		Content		Contact Hour		Le	arniı	ng Ou	tcom	e	F	KL
1	<ul> <li>.H</li> <li>Product</li> <li>Cool</li> <li>dej</li> <li>De</li> <li>Care of</li> <li>Mapat</li> </ul>	tal staffing and administ to spital records. To pressional ethics. The partments of the patient anagement of chair and strictions.	staff and . tretchers to	10	To acquire knowledge about the functions of hospital and its ethics.					2,3,4		
2	• .M impadd pat	anagement for conscious patient. ementary hygiene& anliness hygiene. anagement for the paired, speech and paired, mentally impadicts and non-English tients. anagement for the seriou umatized patients	personal visually hearing ired, drug speaking	12		_		knowl nd mar	-	abou nent	t 2,	3,4
3	First a      .Fi     dre     spl     Sh     bun     con	rst aids wounds and essing and bandages prints supports. ock, electrical shock, harns, Asphyxia, fracture asciousness	essure and emorrhage, s, loss of	12	on l	First a	id.			wledge	1,	3,5
4		t care & implemer raphers in:	itation of	6				ric and		wledge atric	3,	4,5

	Paediatrics		Radiography and its patient	
	• Geriatrics		care.	
	• Patient care during Investigating.			
	Tract			
	, Biliary tract			
	, Respiratory tract, Gynecology,			
	• Cardiovascular system, Lymphatic			
	system, C.N.S. etc.			
	Principles of asepsis		To understand the knowledge	
5	<ul> <li>Sterilization methods.</li> </ul>	5	on patient hygiene.	1,2,3,4
	• Handling of infected patients in the		on patient hygiene.	1,2,5,4
	department and ward.			

**T1**: Patient Care in Radiography by Ruth Ehrlich.

**T2**: Patient Care in Radiography with an Introduction to Medical Imaging by Ruth Ann Ehrlich and Dawn M Coakes, Elsevier Science.

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Programme Outcome
1	Discuss about the hospital ethics.	5
2	Use the approach of reassuring and consoling the patient	2
3	Apply first aid techniques and emergency care to the patient.	2
4	Utilize the various radiographic techniques used for both pediatric and geriatric radiography.	2
5	Explain about the sterilization techniques used during radiographic examination.	2

	SEMESTER – VI										
Course	Title		LAB BASED	RESEAF	RCH I	PROJE	CT				
Course	code	24BRIT3206R	Total credits: 24	L	T	P	S	R	O/F	C	
			G	0	0	0	0	24	0	4	
Pre-req		Nil	Co-requisite	7 0 ADX7	ANICI	ED IM	Nil	TECH	NOT O	CV.	
Progra		BACHELOR OF RADIOGRAPHY & ADVANCED IMAGING TECHNOLOGY									
Seme	ster		Autumn/ VI semester						•		
Cour Object		relevant to rac 2. Provide prace imaging process analysis. 3. Instill knowle security, and coor clinical dat	tical experience in edures, and using adverge of ethical consider obtaining appropriate of a.	handling ranced im rations in consent fo	radio aging reseasor stud	ographic softwar rch, incl lies invo	e equipme for duding policy	oment, j ata acqu vatient pr uman pa	perform isition ivacy, rticipa	ning and data nts	
CO	1		ortance of research in a	advancing	g diagi	nostic in	naging t	echnique	es, pati	ent	
			raphic technology.			. 4-					
CO	2	_	nphic imaging procedu	res with p	precisi	ion, adh	ering to	standard	l proto	cols	
CO	2	and patient safety	tions and importance of	of Hoolth	Inform	notion S	vetome	in radio	oronhy		
	3	_					•				
CO	4		Recognize the significance of case presentations in improving diagnostic accuracy and reatment planning.								
СО	5	Demonstrate a th	norough understanding nformed consent, and		•	-		ch, includ	ding pa	tient	
Unit- No.		Cont	ent	Contac Hour	t	Lear	ning O	ıtcome		KL	
I	Radio Overv Formu hypoth Study and m	design: Experim ixed-methods app collection method	n questions and ental, observational,	10	ab	out rese	arch and	ble to lea d its iical era.	arn	1,2	
II	Radiographic Imaging Techniques: Principles of radiographic imaging and image acquisition. Optimization of imaging parameters for research purposes.				Students will be able to learn about the Imaging techniques used in various case study.				ues	1,2,3	
Ш	Data health	Development: entry and manag record AIS,DICOM,PACS	12	ab	udents wout the ueradiogi	ise of	ble to lea		1,2,3		
IV	Introduction to Case Presentation: Importance and objectives of case presentations in clinical practice.				Stu the pre	arn 2	2,3,4				

	Structuring a Case Presentation- Patient identification, <b>Chief Complains</b> , History of Present Illness (HPI), Past Medical History, Family and Social History, <b>Diagnostic Tests and Imaging</b> , Diagnosis, Treatment Plan.		practice.	
V	Hybrid imaging: PET-CT and PET MRI	5	To acquire knowledge about the PET – CT scan and PET MRI scan	4,5

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Programme Outcome
1	Explain the importance of research in advancing diagnostic imaging techniques, patient care, and radiographic technology.	1, 2,3
2	Perform radiographic imaging procedures with precision, adhering to standard protocols and patient safety guidelines.	2,3
3	Explain the functions and importance of Health Information Systems in radiography.	2,3
4	Recognize the significance of case presentations in improving diagnostic accuracy and treatment planning.	2,3,8
5	Demonstrate a thorough understanding of ethical principles in research, including patient confidentiality, informed consent, and integrity in data reporting.	5,6,8

	SEMESTER – VI									
Course	Title		TECHNO-PRO	OFES	SIONA	L SKII	LLS IV	7		
Course	e code	24BRIT3207R	Total credits: 2	L	T	P	S	R	O/F	C
Course	couc	24DKI13207K	Total hours: 30T	0	0	4	0	0	0	2
Pre-req		Nil	Co-requisite				Nil			
Progra			OF RADIOGRAPHY							LOGY
SEMES	STER		Autumn/ VI semeste							
Course Objectives		_								
Objec	uves	3. To maintain	the various diagnosti	c and	imaging	units a	t their o	optimal	perform	ance
CO1		Describe the Qua	lity Assurance & qua	lity co	ntrol of	diagnos	stic Rac	diology	Equipm	ent.
CO	2	Describe about C	are and Maintenance	of Rac	diology l	Equipm	nent.			
CO	)3	Knowledge of Di	fferent Imaging Moda	alities						
CO	)4	Understanding of	Radiation Safety and	Dose	Manage	ement				
Unit-		Con	tent		Contact	т.	oomin	a Outo	omo	KL
No.		Con	itent		Hour	L	earnin	g Outc	ome	KL
1	Equiji. Cii. Hiii. Tiv. Av. Tiv. No. No. No. No. No. No. No. No. No. No	imers. Assessing the MA stressing the available Measurement of fube, faults and remarkers the light be extical precautions pass, H.T. cables, me	ormance of exposusettings.  le KV.  local spot of an x-radies for X-ray tubes am diaphragm.  lertaining to Brakes a	ay 	15	quality control and quality test on Xray unit both			and	1,2,3,4
2	Mode i. C ii. I iii. I iv. C v. C vi. M vii. I viii. I viii. I	ern Radiological I onventional Radio Fluoroscopy. Digital Radiograph Computed Radiograph Computed Tomogram Magnetic Resonar Ultrasonography (UPicture Archiving System (PACS).	graphy.  y. aphy. aphy (CT). ace Imaging (MF	RI).	15	Qualit fluoro	•	n hecking CT,	onstrate g of MRI,	2,3,4,

- T1: Quality assurance in Diagnostic Radiology" By J.M. Mcolemore (Year book of Medical Publishers)
- T2: Quality Control in diagnostic imagine" By J.E. Gray (University Park Press)
- T3: Processing and Quality Control by William E.J. Mc Kinney (J.B. Lippincott Company)

#### **REFERENCE BOOKS:**

R1: Physical Principles, Clinical Applications and Quality Control by Euclid Seeram.

R2: Diagnostic Imaging: Quality Assurance By: M.M.Rehani (Jaypee Bros Medical Publishers)

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Programme Outcome
1	Describe the Quality Assurance & quality control of diagnostic Radiology Equipment.	1,3
2	Describe about Care and Maintenance of Radiology Equipment.	2
3	Knowledge of Different Imaging Modalities	1,3,8
4	Understanding of Radiation Safety and Dose Management	1,3,8

			SEMEST	ER – VI							
Cours	e Title	QUALITY ASS	URANCE &	-		TROL	IN D	IAGN	OST	IC	
			Total	RADIOL Credit: 2	OGY L	T	P	S	R	0	С
Course	e Code	24BRIT3208R		Iours= 30T			0	0	0	0	2
Pre- Re	equisite			Requisite				Nil			
	equisite			Nil	I						
Progr	amme	BACHELOR OF RA	DIOGRAP	HY & ADV	VANCE	D IMA	GING	TEC	CHNO	DLO	GY
Sem	ester	Autum	n/ VI semes	ter of third	l year of	the Pr	ograi	nme			
	ırse ective	<ol> <li>Improve the quality</li> <li>To reduce radiation</li> <li>To maintain the var</li> </ol>	exposure; R	Reduction of	f film wa	istage a	nd rep	peat ex	xamin		
C	01	Understand the principl									
	02	Implement and evaluate					rtmen	f			
	03	Perform routine quality									
	04	Understanding of Radia									
	05	Apply QA principles to					scopy				
Unit		Content		Contact						Ψ.	KL
No.		Content		Hour	1	earnin	ig out	come		r	XL.
1	_	ection: & QC ectives		4					e of high		1,2
2	<ul><li>radiolog</li><li>Res</li><li>Puro</li><li>Spetest</li></ul>	Purchase Specifications; Acceptance; Rotesting's Evaluation of results of routine		10	Studen interpretand statemedica	et regu ndards	latory relate	guide	elines	1,	2,3
3	Generation     maint week	assurance programme te ral principles and ptenance for routing ly, monthly, quarterly, chine calibration.	preventive e, daily,	9	Studen conduct monthl on radi	t d y, and		we al QC			,3,4
4	• Fac (cor • Eva radi	raphic Image Quality: tors affecting image ntrast, resolution, noise, a luation criteria for h lographs ject contrast and detector	artifacts) igh-quality	9	Students will be able to understand the unique image quality parameters for different imaging modalities.				1,5		
5	Conside  QA Flue  Ima mod Do	Imaging Modalities erations: in CT, MRI, Mammog proscopy age quality parameters in dalities age management in aging systems	raphy, and	9	Students will be able to implement QA/QC measures in CT, MRI, Mammography, and Fluoroscopy.				.5,6		

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Programme Outcome
1	Understand the principles of QA & QC in radiography.	1,3,8
2	Implement and evaluate a QA Programme in a radiology department.	1,3,8
3	Perform routine quality control tests on radiographic equipment.	1,3,8
4	Understanding of Radiation Safety and Dose Management	1,3,8
5	Apply QA principles to CT, MRI, Mammography, and Fluoroscopy.	1,3,8



# **Assam down town University**

# Curriculum and Syllabus

# Bachelor of Critical and Intensive Care Unit Technology

OUTCOME BASED EDUCATION FRAMEWORK
CHOICE BASED CREDIT SYSTEM

Version: 2.2

# **FACULTY OF PARAMEDICAL SCIENCES**

July, 2024

**PREAMBLE** 

Assam down town University is a premier higher educational institution which offers Bachelor,

Master, and Ph.D. degree programmes across various faculties. These programmes, collectively

embodies the vision and mission of the university. In keeping with the vision of evolutionary

changes taking place in the educational landscape of the country, the university has restructured

the course curriculum as per the guidelines of National Education Policy 2020. This document

contains outline of teaching and learning framework and complete detailing of the courses. This

document is a guidebook for the students to choose desired courses for completing the

programme and to be eligible for the degree. This volume also includes the prescribed literature,

study materials, texts, and reference books under different courses as guidance for the students

to follow.

Recommended by the Board of Studies (BOS) meeting of the Faculty of Paramedical Sciences

held on dated 20/06/2024 and approved by the 51st Academic Council (AC) meeting held on

dated 26/07/2024.

Monrollh

Chairperson, Board of Studies

Member Secretary, Academic Council

Downey

#### Vision

To become a Globally Recognized University from North Eastern Region of India, Dedicated to the Holistic Development of Students and Making Society Better

#### Missions

- 1. Creation of curricula that address the local, regional, national, and international needs of graduates, providing them with diverse and well-rounded education.
- 2. Build a diverse student body from various socio-economic backgrounds, provide exceptional value-based education, and foster holistic personal development, strong academic careers, and confidence.
- 3. Achieve high placement success by offering students skill-based, innovative education and strong industry connections.
- 4. Become the premier destination of young people, desirous of becoming future professional leaders through multidisciplinary learning and serving societybetter.
- 5. Create a highly inspiring intellectual environment for exceptional learners, empowering them to aspire to join internationally acclaimed institutions and contribute to global efforts in addressing critical issues, such as sustainable development, Climate mitigation and fostering a conflict-free global society.
- 6. To be renowned for creating new knowledge through high quality interdisciplinary research for betterment of society.
- 7. Become a key hub for the growth and excellence of AdtU's stakeholders including educators, researchers and innovators
- 8. Adapt to the evolving needs and changing realities of our students and community by incorporating national and global perspectives, while ensuring our actions are in harmony with our foundational values and objectives of serving the community.

## **Programme Details**

#### **Programme Overview**

The Bachelor of Critical and Intensive Care Unit Technology is a three-year program focused on training students to manage critically ill patients in ICU settings. The curriculum covers disease processes, patient monitoring, ICU procedures, medication management, and technical skills with specialized equipment. Students gain hands-on experience through clinical rotations in ICUs, learning to perform essential tasks like intubation, ventilation, and resuscitation. Upon completion, graduates are prepared for careers as Critical Care Technologists in hospitals, emergency departments, and critical care transport services, providing vital support in managing life-threatening conditions.

#### I. Specific Features of the Curriculum:

The curriculum provides skill enhancement and value-added courses which helps in understanding patient monitoring systems, different lifesaving skills and medical imaging. Develops professional ethics and helps in developing personality

#### II. Eligibility Criteria:

Minimum 45% in 10+2 with English, Biology & Chemistry. 5% relaxation for SC/ST, EWS, and Specially abled candidates.

#### **III. Program Educational Objectives (PEOs):**

**PEO-1:** Graduates will be well prepared for successful careers in healthcare settings both government and private sector in areas like critical care units (NICU, PICU & ICU) and emergency departments.

**PEO-2:** The graduates will be engaged in professional activities to enhance their own stature and simultaneously contribute to the profession and society at large.

**PEO-3:** Graduates will be successful in higher education in inter-disciplines of intensive care technology if pursued.

#### **IV.** Program Specific Outcomes (PSOs):

**PSO1: Research and Reasoning:** Identify, formulate, review literature, and analyze complex Biotechnological problems reaching substantial conclusions using logical and critical thinking, and scientific principles.

**PSO2: Techno-Professional Efficiency Professional Efficiency:** Apply comprehensive knowledge to perform life-saving procedures in emergency and critical care settings.

**PSO3: Global Competency:** Demonstrate global competency to excel in the profession through international interdisciplinary certification courses.

#### V. Program Outcome (PO):

**PO1: Human Health Knowledge:** Apply the knowledge of human anatomy, physiology, biochemistry, nutrition science, drug intervention and pathophysiology of the diseases.

**PO2**: **Patient Care:** Demonstrate hospital practices in ICU settings including critical care procedures and sterile practices for intensive care of critically ill patients.

**PO3: Procedures and Techniques: Demonstrate** efficiency in handling emergencies using life-saving techniques and able to prepare the patients for general medical procedures.

**PO4**: **Equipment Proficiency:** Operate modern patient monitoring systems and devices including ventilators and defibrillators etc.

**PO5: Professional and Ethical Practices:** Prepare and maintain patient information, and apply ethical principles in the profession.

**PO6: Teamwork:** Perform efficiently as a member or leader in diverse teams/multidisciplinary settings.

**PO7: Communication:** Use effective communication within the healthcare team rendering seamless collaboration and timely sharing of critical information.

**PO8: Sustainable and Lifelong Learning:** Able to engage in independent and lifelong learning in the broadest sense to benefit the environment and humankind.

#### VI. Total Credits to be Earned: 133

#### **VII.** Career Prospects:

Graduates of the Bachelor of Critical and Intensive Care Unit Technology program have strong career prospects in healthcare. They can work as Critical Care Technologists in intensive care units (ICUs), emergency departments, and critical care transport services. Their expertise in managing critically ill patients, using advanced monitoring equipment, and performing specialized procedures makes them valuable in hospitals and specialized healthcare settings. Additionally, they can pursue roles in critical care research, education, or equipment management, or advance their careers by specializing further in areas like neonatal or cardiac critical care.

## **EVALUATION METHODS**

The student performance shall be evaluated through In-semester (Sessional) and semester-end examinations. A weightage of 40% or as prescribed by the programme shall be added to the score of the end-semester examination.

#### A. INTERNAL ASSESSMENT:

The teacher who offers the course shall be responsible for internal assessment by conducting insemester (sessional) examination and evaluating the performance of the students pursuing that course. The components for internal assessment are illustrated in the table given below.

SN	Components/ Examinations	Marks
		Allotted
1.	In-Sem Exam – I (ISE-I) (Written Examination)*	30
2.	In-Sem Exam – II (ISE-II) (Written Examination)*	30
3.	Assignment	10
4.	Presentation (SP)	10
5.	Quiz	5
6.	Class Performance based score*	5

^{*}are compulsory

Note: Total Internal assessment should be out of 40

#### **INSTRUCTION**

- 1. If a student fails to appear in the any of the component without any valid reason he/she shall be marked zero in that component. However, the course teacher at his discretion may arrange for the missed test on an alternate date for the absentee students after determining ground with genuine/valid reasons for the absent.
- 2. The report of evaluation of an activity towards the in-semester (sessional) component of a course shall be duly notified by the concerned course teacher within a week of completion.
- 3. The program coordinators should upload the in-semester marks to the ERP and forward acknowledgement of all the courses of the program to the Controller of Examinations before the start of the End-semester examination.

#### **B. SEMESTER END EXAMINATION:**

Time table for end semester examination is published at least 25 days prior to the start of Examination.

#### I. Pre-Examination:

#### Eligibility Criteria for a student to appear in University Examinations:

The student shall only be allowed to appear in a University Examination, if:

- i) He/ She is a registered student of the University;
- ii) He/ She is of good conduct and character;
- iii) He/ She has completed the prescribed Programme of study with minimum percentage of attendance as laid down in the Regulations of the Programme concerned.

Under special cases, a student may be allowed to appear for an examination without being registered in the University but the result of the said student will be kept on hold till the registration of the concerned student is completed.

#### II. Admit Card:

Admit card for the examination may be downloaded through ERP where the system will generate a Unique ID Cards through online.

The University shall have the right to cancel admission for examination of any candidate on valid grounds.

## **III. Pattern of Question Papers**:

The question paper shall follow the principles of Bloom's Taxonomy.

Table

SN	Level	Questions /verbs for test
1	Remember	List, Define, tell, describe, recite, recall, identify, show who, when, where,
1	Kemember	etc.
2	Understand	Describe, explain, contrast, summarize, differentiate, discuss etc.
3	Apply	Predict, apply, solve, illustrate, determine, examine, modify
4	Analyze	Classify, outline, categorize, analyze, diagrams, illustrate, infer, etc.
5	Evaluate	Assess, summarize, choose, evaluate, recommend, justify, compare etc.
6	Create	Design, Formulate, Modify, Develop, integrate, etc.

Note: No course is to be evaluated on basis of all 6 knowledge levels.

The format of the question paper across all the program follow a unique pattern and the total marks is 60

**Table 1: Question paper pattern for End semester examination** 

SN	Question pattern	Total marks
1	MCQs (10 Questions)	10
2	2 Marks questions (10 Questions)	20
3	4 Marks questions (5 Questions)	20
4	10 Marks questions (1 Question)	10

#### **IV. Examination Duration:**

Each paper of 60 marks shall ordinarily be of two hours duration.

#### V. Practical Examinations, Viva-Voce etc.:

- i) Practical examination shall be conducted in the presence of one external expert and one or more internal examiners.
- ii) Viva-Voce, Oral examinations of the Project report, Dissertation etc. shall be undertaken by a Board of Examiners constituted by the respective Dean of Program with the advice of Supervisor(s).

## VI. Procedure of Expulsion:

If any candidate is found to be using any unfair-means during the examination, the invigilator may cease his/her answer sheet and report it directly to the Officer-in-Charge. The Office-in-Charge of the center may take appropriate decisions as per the rules and procedure of the examination. The Officer-in- Charge may allow the students to write the exam with new answer sheet or may expel the student from appearing the paper depending on the nature of unfair- means. In case of Computer based test, the students may be directed to write an apology letter and sign in the prescribe expulsion form. The student may not be allowed to write that examination.

#### VII. Instruction to the Students:

- (i) The students shall not bring to the Examination Hall, any electronic gadget used as a means of communication or record except electronic calculator, if required.
- (ii) The students shall not receive any book or printed or hand written or photo copy (Xerox) or blank-paper from any other person while he/she is in the examination-room or in laboratory or in any other place to which he/she is allowed to have access during course of examination.
- (iii) The students shall not communicate with any other candidate in the examination room or with any other person in and outside the examination-room.

- (iv) The students shall not see, read or copy anything written by any other candidate, nor shall he/she knowingly or negligently permit any other candidate to see, read or copy anything written by him/her or conveyed by him/her.
- (v) The students shall not write anything on the Question Paper or in other paper or materials during the examination, or pass any kind of paper to any other candidate in the examination-room, or to any person outside the room.
- (vi) The students shall not disclose his/her identity to the examiner by writing his/her name or putting any sign / symbol in any part of his answer-script.
- (vii) The students shall not use any abusive language or write any objectionable remark or make any appeal to examiner by writing in any part of his answer-script.
- (viii) The students shall not detach any page from the answer-script or insert any authorized or unauthorized loose sheet into it. He /she shall also not insert any other answer-script / loose sheet by removing the pins of the origin answer-scripts and re-fixing it.
- (ix) The students shall not resort to any disorderly conduct inside the examination-room or misbehave with the invigilator or any other examination official.

#### **VIII. Provision for an Amanuensis (writer):**

- (i) A candidate may be provided with an Amanuensis (writer) to write down on dictation on his / her behalf on ground of his / her physical disability to write down by himself / herself due to accident or any other reason. The amanuensis may be provided till he / she recovers from the physical disability. The physical disability to write down by himself / herself must be supported by Medical Certificate from a competent Medical Officer.
- (ii) The qualifications of the amanuensis so provided must not be equal or higher than that of the candidate. This is also to be supported by Certificate from the Faculty of Study where the Amanuensis is provided.
- (iii) Such candidates are to be accommodated in a separate room under the supervision of an invigilator so that the fellow candidates are not disturbed in the process.

#### C. Credit Point:

It is the product of grade point and number of credits for a course, thus,  $CP = GP \times CR$ 

#### i. Credit:

A unit by which the course work is measured. It determines the number of hours of instructions required per week. 'Credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. Credits assigned for a single course always pay attention to how many hours it would take for an average learner to complete a single course successfully.

#### ii. Grade Point:

Grade Point is a numerical weight allotted to each Grade Letter on a 10-point scale.

#### iii. Letter Grade:

Letter Grade is an index of the performance of students in a said paper of a particular course. Grades are denoted by letters O, A+, A, B+, B, C, P, F and Abs. Student obtaining Grade F / Grade Abs shall be considered failed/ absent and, will be required to appear in the subsequent ESE. The UGC recommends a 10-point grading system with the following (Table: 1) Letter Grades:

- (i) A Letter Grade shall signify the level of qualitative/quantitative academic achievement of a student in a Course, while the Grade Point shall indicate the numerical weight of the Letter Grade on a 10-point scale.
- (ii) There shall be 08 (eight) Letter Grades bearing specific Grade Points as listed in Table 1, where the Letter Grades 'O' to 'P' shall indicate successful completion of a course.
- (iii) Apart from the 08 (eight) regular Letter Grades listed in Table 1, there shall be 03 (three) additional Letter Grades, which shall be awarded if a Course is withdrawn or spanned over the next Semester or remains incomplete as stated in Table 2.

**Grade Points Letter Grade Description** 0 Outstanding 10 A+9 Excellent 8 Α Verv Good 7 B+Good Above Average В 6  $\mathbf{C}$ 5 Average P 4 Pass F 0 Fail Abs 0 Absent UFM 0 **Unfair Means** 

**Table 2: Letter Grades and Grade Points** 

## iv. Grade Point Average:

#### a. SGPA (Semester Grade Point Average)

The SGPA of a student in a Semester shall be the weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered in that Semester, irrespective of whether he/she could or could not complete the Courses. More specifically, the calculation of SGPA shall take into account the Courses graded with Letter Grades 'O' to 'F' as given in Table 1.

$$SGPA = \frac{\sum_{i=1}^{n} C_{i}G_{i}}{\sum_{i=1}^{n} C_{i}}$$
 (1.1)

The SGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.1) up to two decimal places, where n is the total number of Credit Courses registered by the student in that Semester, Gi is the Grade Point secured in the ith registered Course and Ci is the Credit (weight) of that Course.

#### b. CGPA (Cumulative Grade Point Average)

- (i) The CGPA of a student in a Semester of a Programme shall be the accumulated weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered and successfully completed so far starting from the enrollment in the Programme. In other words, taking into account all the Courses graded with 'O' to 'P' as given in Table 1.1, generally the CGPA of a student shall be calculated starting from the first Semester of his/her enrolled Programme, while the CGPA of a lateral-entry student shall be calculated starting from the Semester of his/her enrollment.
- (ii) The CGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.2) up to two decimal places, where N is the total number of Credit Courses registered and successfully completed so far by the student, Gi is the Grade Point secured in the ith completed Course and Ci is the Credit (weight)of that Course.

$$CGPA = \frac{\sum_{i=1}^{N} c_{i}G_{i}}{\sum_{i=1}^{N} c_{i}}$$
 (1.2)

(iii) The CGPA shall be convertible into equivalent percentage of marks using Equation Conversion of CGPA to percentage marks: = CGPA*10

#### **D.** Post-Examination

#### i. Transcript or Grade Card or Certificate:

A marking certificate shall be issued to all the registered students after every Semester. The Semester mark sheet will display the course details (code, title, number of credits, grade secured) along with total credit earned in that Semester.

#### ii. Grievance Readdress Mechanism:

Students with any dissatisfaction or grievance regarding the marks awarded in any of the Papers / Courses may appeal to the Controller of Examinations for remedial action such as Re-evaluation within 10 days of the declaration of result.

- (i) A student has options to appeal for re-evaluation of his /her answer script to the Controller of Examination.
- (ii) Application for re-evaluation / re-scrutiny of answer scripts shall be made in the definite proforma available with the Examination Office through the head of the respective departments within 10 days of declaration of the results of the respective examinations.
- (iii) The Controller of Examination may appoint an examiner for re-evaluation and will consider and recognize the evaluation done by a University appointed examiner.
- (iv) There shall be no provision for re-evaluation of the Practical Papers, Project Work, and Dissertation etc. However, the students fail in practical examination or viva voce and wish to appear again may apply to be evaluated can do so with the next schedule.
- (v) After screening the application for re-evaluation, the CoE may send the answer scripts of the student to the examiners appointed by the CoE with the approval of Vice Chancellor.
- (vi) The marks/grades achieved by the students after the re-evaluation shall be final and binding.
- (vii) Fresh Marks sheets / Grade Card shall be issued only if the candidate secures pass marks / passing grade in the re-evaluated paper.
- (viii)Revaluation of answer scripts shall be deemed to be an additional facility provided to the students with a view to improving upon their results at the preceding examination result for any reason whatsoever shall not confer any right upon them for admission to next higher class which matters always be regulated in accordance with the relevant rules or regulations framed by the University.
- (ix) If as a result of revaluation of the candidate attracts the provision of condonation of deficiency, the same may be applied to his/her only for fresh attempt.

## INSTRUCTION TO TEACHERS AND STUDENTS

#### (Teaching and Learning Methods)

In all the courses the teacher has to select topics for teacher-method which should not be less than 20 percent. The approach will be direct classroom teaching through a series of lectures delivering concepts using ITC facilities, white or blackboard. Notes may also be circulated to the students; however, the students are to be involved in the preparation of the notes. The teacher will be responsible for selecting the best note for circulation. The teacher-centric methodology has recently fallen out of favour because this strategy for teaching is seen to favour passive students.

#### 1. Student- centric / Constructivist Approach:

The topics of the courses may be selected at the start of the class and assigned one topic to each of the students for studying by themselves, prepare presentations, notes, etc., and present at respective class time after consultation and discussion with the course teachers. The teacher facilitates the learning of the students by guiding and providing input and explaining concepts. 60 percent of the course contents may be selected for this purpose. To avoid behaviour problems, teachers must lay a lot of groundwork in student-centric classrooms. Typically, it involves instilling a sense of responsibility in students. In addition, students must learn internal motivation.

- **a. Project-Based Learning:** The teacher may select 5 percent of topics for the purpose and may conduct visits to the laboratory for experiments or field surveys. The selection of the topic may be done considering the available facility for the purpose. However, in the final semester of each of the programme the student has to undergo project-based learning at least 4 months duration. This approach will help the student to think critically, evaluate, analyze, make decisions, collaborate, and more.
- **b. Inquiry-Based Learning:** The teacher/ students are supposed to list at least five questions in each contact hour and student solve these question or search for answer which becomes the home work for the students "question-driven" learning approach. The teacher may look for the correctness of the solution or the best possible answer and discuss in the successive class. This will help in the preparation for various competitive examination and develop a habit for search for solutions.

- **c. Flipped Classroom:** About 10 percent of the course content has to be completed by this method. In this approach the students are asked to watch video or lecture prepared by the teacher or any video available (relevant to the course). A set of questions may be given to the students for searching answers by the students. The idea is that students should have more time in-classroom focusing on achieving these higher levels of thinking and learning. The Flipped classroom is also an acronym. The letters FLIP represent the four pillars included in this type of learning: Flexible environment, Learning culture shift, Intentional content, and Professional educator. As you can see, the second pillar refers to a culture shift from the traditional approach where students are more passive to an approach where students are active participants. As a result, this approach is also a student-centric teaching method.
- **d. Cooperative Learning:** The remaining five percent has to be completed by cooperative learning approach. In this approach, the students are allotted problems. During library hours the students along with the teacher visit the library and search for probable solutions for the assigned problem. The same has to be done in groups so that the students discuss among themselves for the appropriate answers. Essentially, cooperative learning believes that social interactions can improve learning. In addition, the approach recreates real-world work situations in which collaboration and cooperation are required.

#### The percentage categorization for the completion of a theory course

Teacher- centric or Direct Classroom Teaching: Delivery by series of lectures	20%
Student- centric Approach, Student present and deliver lectures in presence of	
teacher and supervised by teacher	60%
Student visit fields or perform experiments or teacher perform demonstration	05%
Flipped Classroom approach	10%
Cooperative learning approach	05%

#### Inquiry-based approach has to be followed in all of the classes

Teacher has to distribute the topics to be considered for teaching by the above-mentioned approaches and prepare a lesson plan for execution and maintain a file.

## **Breakdown of Credits**

S. N.	Category	Total number of Credits
1	DSC (Major)	70
2	DSC (Minor)	18
3	Multidisciplinary Course (MDC)	9
4	Ability Enhancement (AEC)	8
5	Skill Enhancement Course(SEC)	9
6	Value Added Course (VAC)	6
7	Internship	4
8	Research/Industry Internship	6
9	Field Training	1
10	Co & Extra-Curricular	2
	Total:	133

## Breakdown by categories of courses

S.N.	Category	Credits	%
1	Paramedical Sciences	119	89.47%
2	Science	2	1.50%
3	Engineering	1	0.75%
4	Commerce and Management	2	1.50%
5	CLPPD	6	4.51%
6	Humanities and Social Science	3	2.25%
	Total:	133	100%

## SEMESTER WISE COURSE DISTRIBUTION

	SN	Course Code	Course Title	Course	Engagement							Maximum Marks for				
	511	Course Code	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total	
	1.	24BCIC1101R	Human Anatomy & Physiology I	DSC (Major)	4	0	4	0	0	0	6	40	60	100	200	
	2	24BCIC1102R	General Biochemistry	DSC (Minor)	3	0	2	0	0	0	4	40	60	100	200	
	3	24BCIC1103R	Basic principles of Hospital practice and patient care	DSE (Minor)	2	0	0	0	0	0	2	40	60	00	100	
Semester I	4	24UBPD1101R	Basic Communicative English	AEC	0	0	2	0	0	0	1	0	0	100	100	
Sen	5	24BCIC1101M	The Social Psychology	VAC	2	0	0	0	0	0	2	0	100	0	100	
	6	24BCIC1104R	Medical Psychology	MDC	3	0	0	0	0	0	3	40	60	0	100	
	7	24BCIC1105R	Basic Clinical Examination Skills (TPS)	SEC	0	0	2	0	0	0	1	0	0	100	100	
	8	24UBEC1101	Extra-curricular	VAC	0	0	0	4	0	0	1	0	0	100	100	
	Total						10	4	0	0	20	160	340	500	1000	
			Course		Eı	ngag	eme	nt			Max					
	SN	Course Code	Course Title	Category	L	Т	P	S	R	0	C	IA*	for SEE*	PE*	Total	
	1.	24BCIC1201R Human Anatomy & Physiology II		DSC (Major)	4	0	4	0	0	0	6	40	60	100	200	
	2	24BCIC1202R	Biochemistry: biomolecules and their metabolism	DSC (Minor)	3	0	2	0	0	0	4	40	60	100	200	
п.	3	24BCIC1203R	Fundamentals of patient care and safety	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	100	
Semester II	4	24UBPD1201R	Functional English	AEC	0	0	2	0	0	0	1	0	0	100	100	
Sem	5	24UPSD1201R	Fundamentals of Patient Safety in Dialysis		3	0	0	0	0	0	3	40	60	0	100	
	6	24UBES1201R	Environmental Studies	MDC	2	0	0	0	0	0	2	40	60	0	100	
	7	24BCIC1204R	Self-Study/ Seminar/ Presentation	SEC	0	0	2	0	0	0	1	0	0	100	100	
	8	24UBCC1201	Co-curricular	VAC	0	0	0	4	0	0	1	0	0	100	100	
	Total					0	10	4	0	0	20	200	300	500	1000	

	CINI	Commo Codo	Corres Title	Course	Engagement							Maximum Marks fo				
	SN	Course Code	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total	
	1.	24BCIC2101R	Airway management and respiratory emergencies	DSC (Major)	3	0	4	0	0	0	5	40	60	100	200	
	2	24BCIC2102R	Patient assessment and drug administration	DSC (Major)	3	0	4	0	0	0	5	40	60	100	200	
	3	24BCIC2103R	Nutrition	DSC (Minor)	3	0	0	0	0	0	3	40	60	0	100	
	4	24BCIC2104R	Pharmacology	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	100	
Semester III	5	24BCIC2105R	Biomedical Waste	DSC (Minor)	0	0	0	0	0	0	1	40	60	0	100	
Seme	6		Fundamentals of Haemodialysis Machine	MDC	1	0	0	0	0	0	1	40	60	0	100	
	7		DISA	SEC	0	0	2	0	0	0	1	0	0	100	100	
	8	24UBPD2101R	Executive English	AEC	0	0	2	0	0	0	1	0	0	100	100	
	9	24BCIC2106R	First Aid (TPS)	SEC	0	0	2	0	0	0	1	0	0	100	100	
	10	24UDLS2101R	Digital Literacy	VAC	0	0	2	0	0	0	1	0	0	100	100	
	11	24UULS2101R	Basic Acclimatizing Skills	MDC	0	0	2	0	0	0	1	0	0	100	100	
	12	24BCIC2107R	Field Training	FT	0	0	0	0	0	8	1	0	0	0	100	
		Tota		12	0	18	0	0	8	23	240	360	700	1400		
				Course	Engagement							Maxir				
	SN.	Course Code	Course Title	Category	L	Т	P	S	R	0	C	IA*	for SEE*	PE*	Total	
	1	24BCIC2201R	Cardiovascular and neurological emergencies	DSC (Major)	3	0	4	0	0	0	5	40	60	100	200	
	2	24BCIC2202R	Mechanical Ventilation	DSC (Major)	2	0	2	0	0	0	3	40	60	100	200	
	3	24BCIC2023R	Microbiology	DSC (Major)	2	0	0	0	0	0	2	40	60	0	100	
	١															
_	4	24BC IC2204R	Pathology	DSC (Major)	2	0	0	0	0	0	2	40	60	0	100	
ter IV	5	24BC IC2204R 24BCIC2205R	Palliative care	(Major)  DSE (Major)	2	0	0	0	0	0	2	40	60	0	100	
Semester IV			Palliative care Patient Safety And Quality Care	(Major)  DSE (Major)												
Semester IV	5	24BCIC2205R 24BCIC2206R 24UBPD2201R	Palliative care Patient Safety And	(Major) DSE (Major) DSC (Major) AEC	2 2 0	0 0 0	0 0 2	0 0	0 0	0 0 0	2	40 40 0	60 60 0	0 0 100	100 100 100	
Semester IV	5	24BCIC2205R 24BCIC2206R	Palliative care Patient Safety And Quality Care Enhanced Professional Skills Financial Literacy	(Major) DSE (Major) DSC (Major)	2	0	0	0	0	0	2	40	60	0	100	
Semester IV	5 6 7	24BCIC2205R 24BCIC2206R 24UBPD2201R	Palliative care  Patient Safety And Quality Care Enhanced Professional Skills Financial Literacy Advanced Cardiac Life Support (TPS)	(Major) DSE (Major) DSC (Major) AEC	2 2 0	0 0 0	0 0 2	0 0	0 0	0 0 0	2 2 1	40 40 0	60 60 0	0 0 100	100 100 100	
Semester IV	5 6 7 8	24BCIC2205R 24BCIC2206R 24UBPD2201R 24UUFL2202R	Palliative care  Patient Safety And Quality Care Enhanced Professional Skills Financial Literacy Advanced Cardiac Life Support (TPS) Basic Life Saving Skills	(Major) DSE (Major) DSC (Major) AEC MDC	2 0 0	0 0 0	0 0 2 2	0 0 0	0 0 0	0 0 0	2 2 1 1	40 40 0 0	60 60 0	0 0 100 100	100 100 100 100	
Semester IV	5 6 7 8 9	24BCIC2205R 24BCIC2206R 24UBPD2201R 24UUFL2202R 24BCIC2207R	Palliative care  Patient Safety And Quality Care Enhanced Professional Skills Financial Literacy Advanced Cardiac Life Support (TPS) Basic Life Saving	(Major) DSE (Major) DSC (Major) AEC MDC SEC	2 2 0 0	0 0 0 0	0 0 2 2 4	0 0 0 0	0 0 0 0	0 0 0 0	2 2 1 1 2	40 40 0 0	60 60 0 0	0 0 100 100 100	100 100 100 100 100	

	CNI	C C-1-	C T'41-	Course	Engagement								Maximum Marks for				
	SN.	Course Code	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total		
	1	24BCIC3101R	Clinical Observation I (ICU procedure & Patient care)	DSC (Major)	0	0	0	16	0	0	4	0	0	100	100		
ΓV	2	24BCIC3102R	Clinical Observation II (ICU monitoring Devices)	DSC (Major)	0	0	0	16	0	0	4	0	0	100	100		
Semester V	3	24BCIC3103R	Clinical Observation III (ICU care medication)	DSC (Major)	0	0	0	16	0	0	4	0	0	100	100		
	4	24BCIC3104R	Case Study Report	DSC (Major)	0	0	0	16	0	0	4	0	0	100	100		
	5	24BCIC3105R	Summer Internship	Internship	0	0	0	0	0	24	4	0	0	100	100		
	6	24BCIC3106R	Research	Research	0	0	0	0	18	0	2	0	0	100	100		
		To		0	0	0	64	18	24	22	0	0	600	600			
	SN.	<b>Course Code</b>	Course Title	Course	-			gage					imum				
	D1 (10		Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total		
	1	24BCIC3201R	Trauma Emergencies Management	DSC (Major)	3	0	4	0	0	0	5	40	60	100	200		
	2	24BCIC3202R	Medical And Surgical Emergencies Care	DSC (Major)	3	0	4	0	0	0	5	40	60	100	200		
M	3	24BCIC3203R	Dialysis	DSC (Major)	4	0	0	0	0	0	4	40	60	0	100		
Semester	4	24BCIC3204R	Introduction To Research Methodology	DSC (Major)	2	0	0	0	0	0	2	40	60	0	100		
	5	24BCIC3205R	Research/ Industry Internship	Research	0	0	0	0	24	0	4	0	0	100	100		
	6	24BCIC3206R	Techno Professional Skills	SEC	0	0	8	0	0	0	4	0	0	100	100		
	7		Finishing School	AEC	0	0	4	0	0	0	2	0	0	100	100		
			Total:		12	0	20	0	24	0	26	160	240	500	900		

*IA: Internal Assessment, SEE: Semester End Examination, PE: Practical Examination

			SEMESTER	R – I								
Course T	itle		Human Ana	tomy	&Ph	ysiol	ogy I					
Course co	ode	24BCIC1101R	<b>Total credits: 4</b>		L	T	P	S	R	O/F		С
			Total hours: 45T+3	<b>0P</b>	3	0	2	0	0	0		4
Pre-requi	site	Nil	Co-requisite					N	Vil			
Programi	ne	Bachelor of Critical and Intensive Care Unit Technology										
Semester		I semester of first year of the programme										
Course			rith anatomical position		nd unc	lersta	nd the	e mic	roscoj	pic struc	tur	e of
Objective	es		eton in the human bod									
			eeper comprehension		atomi	cal st	ructui	re and	l basic	physiol	log	ical
			different body region		_			_	_			
			ents to apply this kn	owle	dge p	ractic	ally	in va	rious	healthca	are	and
001		scientific contex			1.0		C	11				
CO1			cal terms and basic stru						.1 .		C	
CO2		and functions.	of Musculo skeletal s	ysten	n and	bones	alon	g with	i their	special	tea	tures
CO3			vition of the human dia	aatirra	arrata	m and	المناه ا	~ <b>~</b> ~~	fo fu	actions		
CO3			Describe the composition of the human digestive system and their specific functions.									
CO5		Explain respiratory system and classify various respiratory disorders.  Describe the anatomy and physiology of the cardiovascular system, fluid composition										
COS		and distribution in the body							ition			
		Content			ntact		Le	arnir	ισ <b>Ω</b> 11	tcome		KL
Unit-No.		Conte		Ho			LC		.g Ou	teome		
	Intro	oduction To Anator	nical Terms, Basic			Des	scribe	, illus	strate	and		
		ecture and Function of Cell							fferen			
	• Le	vel of Organization -			ana	tomic	cal ter	ms, b	asic			
I	Ar	eas, Planes and Secti	,	7	stru	cture	and f	unctio	on of cel	1.	1,2	
	ana	anatomical terminology										
	• Str	ructure and Function										
	Ce	llular Transport										
	Mus	cle – Skeletal-Syste	m and Bones						strate	and		
		nes: Classification &	types according to				ssify t					
		orphology.							al sys	stem		
		ssue and its types				alo	ng wi	th bo	nes.			
		rtilage										
II		nts: definition, classi	fication, and	1	.0							1,2
		ovements of joints.										
		uscle and its types										
		r Specific programs										
		diology: Importance										
		human body.				_						
		igestive System-							strate			
		natomy of gastrointes			10	_			uctur			1.0
III		cessory organs of dig	•		10	org	ans of	aige	stive s	system.		1,2
		mposition and funct	•									
	pai	ncreatic, intestinal, a										

1,2
1,2
1,2,3,
4,5

- T1: Fundamentals of Anatomy by Pamela K Levangie, Cynthia C Norkin: JP Bros Medical Publishers, New Delhi
- T2: Fundamentals of Medical Anatomy by Duane nudson: 2nd ed. 2007 Publisher Springer.
- T3: Ross and Wilson Anatomy and Physiology by Ross and Wilson: JP Bros Medical Publishers, New Delhi

#### **REFERENCE BOOKS:**

R1: Medical anatomy by JP Bros Medical Publishers, Bangalore, 1st Indian Ed1997: JP Bros Medical Publishers, Bangalore, 1st Indian Ed1997

**R2:** Clinical Anatomy: JP Bros Medical Publishers, Bangalore, 5th Ed 1996, 1st Indian Ed1998

CO PO Mapping									
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Discuss the anatomical terms and basic structure and function	1,3,8							
1	of cells	1,5,6							
2	Explore knowledge of Musculo skeletal system and bones	1,3,8							
4	along with their special features and functions.	1,3,6							
3	Describe the composition of the human digestive system and	1 2 9							
3	their specific functions.	1,3,8							
4	Explain respiratory system and classify various respiratory	1 2 0							
4	disorders.	1,3,8							
	Describe the anatomy and physiology of the cardiovascular	1 2 0							
5	system, fluid composition and distribution in the body	1,3,8							

SEMESTER – I													
Course T		A AD OF STATE	General Biocher		F	<del></del>	. ~			· ~			
Course co	ode	24BCIC1102R	Total credits: 4	L	T	P	S	R	0/F 0	C			
	• • •		Total hours: 45T+30P 3 0 2 0 0							4			
Pre-requi		Nil Co-requisite Nil Bachelor of Critical and Intensive Care Unit Technology											
Program: Semester		В						ology	<b>y</b>				
Course		I semester of first year of the programme  1. To impart the knowledge in the technical aspects of biochemical studies								ios			
Objective	96	_		ndings in various body metabolites.									
Objective	Co		_	_			-						
		_	the energy flow in the fo	orm on .	AII	'in th	e nui	nan	body an	a			
		cells.											
			trate a practical knowled	ge for t	he o	qualita	itive	deter	mınatıo	n of			
			e, proteins and lipids.										
CO1			ces, functions and metaboli										
CO2	]		classification of amino-acid				signi	ficand	ce of Prot	ein.			
CO3		Describe the sig	nificance, classification and	function	s of	lipids.							
CO4		Comprehend the	e structure and functions of l	Nucleic A	Acids	S.							
CO5		Explain the fund	lamentals and importance of	f acid, ba	se ar	nd buff	ers						
<b>T</b> 7 • 4 <b>N</b> 7		Content			et	I	Learn	ing C	Outcome	KL			
Unit-No.			Hour				Ü						
	CA	RBOHYDRATE		]	Define	, class	sify ar	nd					
	• D	efinition and clas		(	describ	e the	sourc	es and					
	ca	arbohydrates		1	types o	of cart	ohyd	lrates					
I		xample of some			along v		-						
1		Glucose, Fructose	10		functio			odv.					
		tarch), their source						) -	1,2				
		•							1,2				
		iological signific			D C'		• • •	1					
		OTEINS:			Define		-						
			teins along with the			explain the mechanism of proteins along with							
II		ological significa	9		_		_		1,2				
			s, classification: Essential			their fu	inctio	ns in	the	1,2			
		nd Non-essential	amino acids			body.							
		PIDS:							y types				
			sification of lipids			_		-	th their				
III	• C	lassification of Fa	atty Acids		1	functio	ns in	the b	ody.				
	• Ex	xamples and func	tions of some common	8						1,2			
			ds, Glycolipids, Steroids)							,			
		CLEIC ACIDS:	0.534	8		Descril	-			1,2			
IV			icture of DNA and RNA	0					structure	1,2			
	• F	unction of DNA a						ucleic					
	A C	ID DACE DIEE	EDC.			acids in							
		ID-BASE BUFF				Define			ına e buffers.				
v			ls, bases, pH, pOH, pKa			ucsciii	ic aci	ม-บลร(	bullers.				
		nd Buffer		10									
	• A	Acid base balance											

	To identification and demonstration of biochemistry laboratory glassware's and apparatus.	6	laboratory test	1,2,3, 4,5
	<ul><li>2. To identification and demonstration of biochemistry laboratory instruments (Principle and Applications)</li><li>3. To perform Fehling's test for determination</li></ul>	6	like Fehling test, Benedict's test and molest text	
Practio	of reducing and non-reducing sugar in an unknown sample. 4. To perform Benedict's test for	6		
	determination of reducing and non-reducing sugar in an unknown sample.  5. To perform Molisch's for test determination of sugar in an unknown	6		
	sample.	6		

- T1: Text Book of biochemistry by U Satyanaryana and U Chakrapani: Sixth Ed
- T2: Text book of Biochemistry for medical students by DM Vasudevan (Author), Sreekumari S (Author), Kannan Vaidyanathan (Author): 7th Edition

### **REFERENCE BOOKS:**

- R1: Lehninger Principles of Biochemistry by David L Nelson and Michael M Cox: Eighth Edition ©2021 David L.
- R2: Text book of Biochemistry by Lubert Stryer, Jeremy M Berg, WH Freeman: 9th ed. 2019

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Explain the sources, functions and metabolism process	1,2,3,8						
1	of Carbohydrates							
2	Identify various classification of amino-acids and	1,2,8						
4	recognize the significance of Protein.							
3	Describe the significance, classification and functions of lipids.	1,2,8						
4	Comprehend the structure and functions of Nucleic Acids.	1,2,3,8						
5	Explain the fundamentals and importance of acid, base and	1,2,3,8						
5	buffers							

SEMESTER – I												
Course '	Title		sic principles of l							_		
Course	code	24BCIC1103R	Total credits: 2	<u> </u>	L T	P	S	R	O/F	C		
_			Total hours: 30		2 0	0	0	0	0	2		
Pre-requ		Nil	Co-requisite	17.4	• •	<b>T</b> T •4 7		Vil				
Progran Semeste		Bach		and Intensive Care Unit Technology								
Course	I.	1 To impart the kno		f first year of the programme								
Objectiv	ves.	1. To impart the knowledge in patient in a holistic approach for the overall wellbeing of the patient.										
o ajecti.		•										
		2. To impart a comprehensive knowledge on medical ethics and the quality and functions of medical professionals.										
		3. To provide a gros		he legal ha	zardous d	of med	lical :	nrofess	sion			
CO	1	Discuss different fur								onents		
CO.	•	of hospital managen	-	n record ke	cping, ic	portin	ganc	CSSCII	tiai comp	onents		
CO2	•	Explain the basic pr		ulos of Fire	at Aid one	Loffoo	tivol	ı, impl	omont the	o elzille		
CO2	•	in certain medical en		uies of This	st Aiu aiic	i ciicc	uvei	y mipi	emem me	SKIIIS		
CO3	1	Understand and imp		ocurae and	hygiana i	n noti	ont o	oro				
CO ₄		Describe different be							COLION			
COS		Identify various site	• •				_					
COS	,	<u> </u>	s to measure puise							177		
Unit-No.		Content		Contact Hour	L	earni	ng O	utcom	e	KL		
	Hos	Hospital & Records & Reports:			Describ	e, illu	strate	and e	xplain			
	_	finition and functions	=		the diff				-			
		assification, organiza	-		reports maintained in the							
		partments of hospitals			hospital.							
		hospitals			1							
I		finition of record	ls and reports	5						1,2		
•		fferent types of record	_							-,-		
		lues objectives and n	_									
		cords										
		nciple of good record	l writing									
	-	ifference of records &	•									
		STAID:	z reports		Explain	the ol	hiecti	ves of	first aid			
		st aid Aims & objecti	ives of first aid		_		-		agement			
		•	ives of first aid						gencies.			
		orities of first aid			or varie	us IIIc	area	CITICI	Serieres			
		lden rules of first aid										
II	• Qu	alities & responsibili	ties of first aider	5						1,2,3		
	• Sir	nple first aid measure	es in selected									
	COI	nditions like–food po	oisoning Snake									
	bit	e Scorpion bite Dog l	bite foreign									
	boo	dies in various organ	s Burns & scald									
	• Ha	emorrhage										

Ш	<ul> <li>HYGIENE AND BASIC CARE NEEDS         OF PATIENTS:         <ul> <li>Personal Hygiene and Maintenance of</li></ul></li></ul>	5	Describe, illustrate and explain the significance of maintaining safety and hygiene in patient care.	2,3,4
IV	<ul> <li>SAFETY IN THE LABORATORY:</li> <li>Common laboratory accidents from physical injuries</li> <li>Electrical shock</li> <li>Chemical injury</li> <li>Bleeding</li> <li>Burn</li> <li>Eye accidents</li> <li>Biological hazards</li> </ul>	5	Describe, define and explain the different positions of the body along with the management of temperature for patients.	2.3,4
V	<ul> <li>VITAL SIGNS OF PATIENTS:</li> <li>Body temperature</li> <li>Maintenance of body temperature</li> <li>Factors influencing body temperature</li> <li>Different types of fever</li> <li>Stages of rigor</li> <li>Management of pyrexia</li> <li>Pulse</li> <li>Common pulse sites</li> <li>Factors influencing pulse rate</li> <li>Characteristics of Pulse Abnormal pulses</li> <li>Reading of pulse Blood Pressure</li> <li>Definition Factors influencing B.P. Abnormalities of B.P.</li> <li>Recording of B.P.</li> <li>Respiration</li> <li>Regulation of respirations</li> <li>Factors causing variations in respiration</li> <li>Abnormal respiratory rate.</li> <li>Different methods of Artificial Respiration</li> </ul>	10	Describe, explain and demonstrate the assessment of pulse and respiration along with the factors affecting them.	1,2,3, 4,5

- T1: Principles of Hospital Practice and Patient Care by Srinivasulu Reddy: Paras, New Delhi, India,13thEdition (2020).
- T2: Hospital and Patient Care Management by Dr. Vidhya Srinivasan, Dr. Akshay Ch. Deka: Asian Humanities Press, New Delhi, India, 4th Edition (2019).

### **REFERENCE BOOKS:**

R1:Principles and Practice of Hospital Medicine by Sylvia McKean: McGraw-Hill Education, USA, 4th Edition (2019).

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Discuss different functions, process of record keeping, reporting and essential components of hospital management.	5,6,7,8							
2	Explain the basic principles, golden rules of First Aid and effectively implement the skills in certain medical emergencies.	1,2,3,4							
3	Apply fundamental knowledge of patient safety and care to ensure basic care needs of patients.	2,3,7							
4	Assessment of common laboratory accidents and its effective management.	2,3,5							
5	Describe vital signs and effectively manage the abnormalities	1,2,3							

	SEMESTER – I										
<b>Course Title</b>		MOOCS									
Course code	24BCICM1001 Total credits: 1 L T P S R O/F C										
		Total hours: 15T	1	0	0	0	0	0	1		
Pre-requisite	Nil	Co-requisite				1	Vil				
Programme	Bachelor of	Critical and Intensive Care	e Un	it Tec	chnolo	ogy					
Semester		I semester of first year	of t	he pr	ogran	nme					
Course	1.Equip students	with a thorough understand	ling	of th	e cou	rse m	ateria	l through	ı		
Objectives	engaging online	content.									
	2. Provide hands-on experience through interactive exercises and real-world projects.										
	3. Promote effecti	ve communication and team	nwoi	k thr	ough	onlin	e disc	cussions	and		
	group activities.										
CO1	Demonstrate a stro	ong grasp of key principles ar	nd th	eorie	s cove	red in	the c	ourse.			
CO2	Apply learned co	oncepts to solve real-worl	d pr	obler	ns th	rough	prac	tical pro	ojects		
CO2	and exercises.										
CO2	Analyze and eval	uate information, improving	g the	ir pro	oblem	-solvi	ing an	d decision	on-		
CO3	making abilities.										
CO4	Develop their idea	s clearly and effectively in b	oth v	vrittei	n and	verba	l form	s.			
CO5	Demonstrating stre	ong collaboration and teamw	ork s	kills.							

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Demonstrate a strong grasp of key principles and theories covered in the course.	7,8
2	Apply learned concepts to solve real-world problems through practical projects and exercises.	7,8
3	Analyze and evaluate information, improving their problem-solving and decision-making abilities.	7,8
4	Develop their ideas clearly and effectively in both written and verbal forms.	7,8
5	Demonstrating strong collaboration and teamwork skills.	7,8

	SEMESTER – I											
<b>Course Title</b>		Field	Visit									
Course code	24BCIC1104R	24BCIC1104R   Total credits: 1   L   T   P   S   R   O/F   C										
		Total hours: 1200	0	0	0	0	0	8	1			
Pre-requisite	Nil	Co-requisite				1	Vil					
Programme	Bachelor of Cri	tical and Intensive Ca	re Uı	nit Te	chnol	logy						
Semester		I semester of first year	r of t	the pi	ograi	nme						
Course	1. To learn practical si	kills through early expo	sure 1	to prii	nary,	secon	dary,	and tertia	ıry			
Objectives	healthcare settings.											
	2. Understand the role system.	es and responsibilities w	ithin	diffe	rent le	vels o	of the l	nealthcare	e			
	3. Learn to develop in field.	novative solutions and	adapt	to th	e dyna	amic 1	nature	of the me	edical			
CO1	Understand the theore during the visit.	tical concepts and found	datio	nal kn	owled	lge re	levant	to the fie	eld			
CO2	Comprehend the pract	ical applications of theo	retica	al con	cepts	in rea	l-worl	d settings	S.			
CO3	Exposure to diverse sit	tuations to enhance skill	s in p	oatien	t man	agem	ent an	d care.				
CO4	Evaluate the effectiver	ness of different approach	ches a	and m	ethod	s seer	durin	ng the fiel	d trip.			
CO5	Develop innovative str	ategies or solutions insp	pired	by en	hance	d pro	fessio	nal practi	ce.			

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Understand the theoretical concepts and foundational	25670						
1	knowledge relevant to the field during the visit.	2,5,6,7,9						
2	2 Comprehend the practical applications of theoretical	12278						
4	concepts in real-world settings.	1,2,3,7,8						
3	Exposure to diverse situations to enhance skills in patient	12250						
3	management and care.	1,2,3,5,8						
4	Evaluate the effectiveness of different approaches	579						
4	and methods seen during the field trip.	5,7,8						
5	Develop innovative strategies or solutions inspired by	5779						
3	enhanced professional practice.	5,6,7,8						

			SEME	STER – I										
Course	Title		Basic co	mmunicat	ive E	nglisl	1							
Course	code	24UBPD1101R	Total cre	edits: 1	L	T	P	S	R	O/F	С			
				urs: 30P	0	0	2	0	0	0	1			
Pre-rec	quisite	Nil		equisite					Nil					
Progra		Bachelor of							nolog	y				
Semest				of first year of the programme										
Course		1. To improve speaking and	•											
Object	ives	2. To enhance vocabulary for	•	•			•							
		3. To understand common g					•			ly.				
CC		Speak confidently and articu					_							
CO		Expand their vocabulary and use synonyms and antonyms appropriately.  Apply grammatical rules to construct grammatically correct sentences and paragraphs.												
CO											S.			
CO	04	Identify different types of	t commu	inication a	ind s	trateg	ies 1	o ov	ercom	e				
CO	.=	communication barriers.	.contotion	a affactiv	, alv.	main	:	ana1	oida	and n	~ · ·			
CO	13	Prepare and deliver preverbal communication techn		s effectiv	cıy	using	5 V1	sual	aids	and no	on-			
Unit-		Content	iiques.	Contact		Lo	arnir	γα Οτ	ıtcome		KL			
No.		Content		Hour		Lea	a1 1111	ıg Ot	itcome	7	KL			
110.	Sneal	king Skills		Hour	Des	scribe	illı	ıstratı	and	explain				
	_	troduction and greetings		7						ills and	1,2			
I		onunciation		•		nunci	_				1,2			
		sking and offering informatio	n		r									
	Build	ling Vocabulary			Describe and explain about the									
II	i. Sy	nonyms	5	vocabulary						1,2,3				
	ii. Ar	ntonyms			-									
	Gran	nmar (Flipped Classroom)			Des	scribe	, illı	ıstrat	e and	explain				
		rts of Speech			abo	ut th	ie g	ramm	ar ne	eded in				
	ii. Ar				eve	ry ser	itenc	e						
III		firmative and Negative		5							1,2,4			
		ntences												
		ntence Construction from ju	imbled											
		ords munication Skills			Day		:11	44040		10.:				
		munication Skills troduction to Communication							and ex inication	_				
IV		rpose of Communication,	1,	13					skills.		1,2,3			
1 4		rpes of Communication		13	and	COIIII	iuiiic	anon	SKIIIS.		1,2,3			
	-	arriers of Communication												
		entation Skills			Des	scribe	. exp	lain,	demon	strate				
	i. Int	troduction to Presentation ski	ills				_		ls of g					
	ii. Es	sential characteristics of a go	ood			sentat								
<b>X</b> 7	pre	esentation			_						1,2,3,			
V	iii. Pr	eparation of a good presentat	tion	5							4,5			
	(4]	P's of Presentation)												
	iv. Ti	ps for using visual aids du	ıring											
	pre	esentation												

- 1. Barrett, Grant. 2016. Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speaking, Zephyros Press.
- 2. Professionalism Skills for Workplace Success, <u>Lydia E. Anderson</u>, <u>Sandra B. Bolt</u>, Publisher: Pearson Education
- 3. The Art of Public Speaking, <u>Dale Carnegie</u>, Publisher: <u>Diamond Pocket Books</u> <u>Pvt Ltd</u>
- 4. English for Academic CVs, Resumes, and Online Profiles, <u>Adrian Wallwork</u>, Publisher: <u>Springer International Publishing</u>
- 5. Employment & Volunteering: Job Interview Basics, <u>Lisa Renaud</u>, Publisher: <u>Classroom Complete</u> Press

#### **REFERENCE BOOKS:**

- Zinsser, William. (2006) On Writing Well: The Classic Guide to Writing Nonfiction, Harper Perennial
- Taylor J. and Wright, J., *IELTS Advantage Reading Skills: A step-by-step guide to a high IELTS reading score*, Delta Publishing by Klett
- Murphy, Raymond,.(2012) English Grammar in Use Book with Answers: A Self-Study and Practice Book for Intermediate Learners of English, Cambridge University Press
- Real-resumes for Teachers, <u>Anne McKinney</u>, Publisher: <u>Prep Pub.</u>
- Public Speaking for Success, <u>Dale Carnegie</u>, Publisher: <u>Penguin Publishing Group</u>
- Job Interview Skills, Paige Labert, Publisher: Di Dio Calderone Giuseppina

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Speak confidently and articulate ideas clearly with correct pronunciation.	5,7,8							
2	Expand their vocabulary and use synonyms and antonyms appropriately.	5,7,8							
3	Apply grammatical rules to construct grammatically correct sentences and paragraphs.	5,7,8							
4	Identify different types of communication and strategies to overcome communication barriers.	5,7,8							
5	Prepare and deliver presentations effectively using visual aids and non-verbal communication techniques.	5,7,8							

		SEMESTER – I								
Course Title		Extra-curricular	/Co-cui	rricu	lar					
Course code	24UBEC1101/	Total credits: 1	L	T	P	S	R	O/F	C	
	24UBCC1101	Total hour: 60S	0	0	0	4	0	0	1	
Pre-requisite	Nil	Co-requisite		<u> </u>	1	N	Vil			
Programme	Back	nelor of Critical and Inter	sive C	are (	Jnit T	echn	ology	7		
Semester		I semester of first year								
Course	1) To develop skill	To develop skills and interests through participation in diverse extracurricular and co-								
Objectives	curricular activi	curricular activities.								
	2) To learn about to	eamwork and leadership ab	ilities b	y en	gaging	g stuc	lents i	n club-le	ed	
	events and comp									
		ortunities for personal grow	th and	pract	ical le	arnir	ig bey	ond the		
	academic curric									
CO1	_	tivities organized by vario	us club	s, su	ch as	danc	e, mu	sic,		
G0.	photography, drama.	•	1.1		•.•		1.			
CO2		e to participate in regula		acti	vities,	ıncl	udıng	g worksh	nops	
CO2	_	ecording to individual intere				:4 ~	4040		1	
CO3	level competitions.	nd skills to represent ADT	U in ini	ter-ui	niversi	ny, s	tate, a	and nauc	mai	
CO4	•	m to learn from invited exp	arts in t	hair	racnac	otivo:	fialds			
		wth alongside academic de			respec	LIVE.	iicius	•		
Unit-		Content	Conta			Lear	ning		KL	
No.		Jontent	Hou				come		IXL	
	ADTU encourages	a range of activities	Develop skills and			and				
	outside the regular curriculum intended to				confi	_				
	meet learner's inter	rest.		participate in different activities organized by						
	These activities are	e aimed to develop the								
		ls and promote a holistic			the in	nstitu	tion			
	development of the	-								
	-									
		ne 360-degree learning								
		tudents are engaged in headed under different								
	clubs viz. Dance,									
	photography, di									
I		couraged to participate in	60S						1,2,3,	
1	regular club activiti		005	•					4,5	
	competitions as per	-								
	hobbies.									
		pers of the club are								
		AdtU in various inter								
	University student									
	competitions									
	Renewed personali	ties are invited to								
	conduct workshops									
	_	ents by giving them the								
	platform to learn fro	om experts in the								
	respective fields.									

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Explore different activities organized by various clubs, such as dance, music, photography, drama, and literacy	2,5,7,8							
2	Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests	5,7,8							
3	Apply knowledge and skills to represent ADTU in inter- university, state, and national level competitions.	2,5,7,8							
4	Explore new platform to learn from invited experts in their respective fields.	5,7,8							
5	Evaluate overall growth alongside academic development.	5,7,8							

			SEME	STER – II							
Course T	itle		Huma	n Anatomy &	&Phy	ysiolo	gy II				
Course c	ode	24BCIC1201R	<b>Total credits:</b>		L	Т	P	S	R	O/F	С
			Total hours:4	5T+60P	3	0	4	0	0	0	5
Pre-requ	isite	Nil	Co-requis	site		I		N	lil		
Program	me	Bach	elor of Critica	l and Intens	sive (	Care 1	Unit '	Гесhі	nology	y	
Semester	•		II semester	of first year	r of tl	he pro	ogran	nme			
Course		1. To develop fund	1. To develop fundamental knowledge on the gross structure of the excretory system and								
Objective	es	its function.									
		<ul><li>2. To classify the nervous system and understand the functions of all the special senses.</li><li>3. To identify different types of immune cells, comprehend the lymphatic system,</li></ul>									
						_				_	ystem,
		and understand the structure and function of the male and female reproductive systems, including their regulation by the endocrine system.									
001	ı						stem	•			
CO1		Explain the structur					th th -	in for	otion		
CO2		Describe the sensor Identify different ty		-		_					
CO ₃		Explain the structure									
COS		Describe the endoc				u10 10	produ		by Stel	11.	
Unit-		Content		Contact		Le	arnin	g Ou	tcome	2	KL
No.				Hour				0			
	Urii	nary System			Des	scribe	, defi	ne and	d expl	ain the	
I	• Str	ucture of kidney, ure		different structure of organs in					ans in		
	bla	dder, male and fema	10	the	pelvi	s.				1,2	
	• Fu	nctions of kidneys, n	10	_					ify the	1,2	
	• Ur	ine formation.		structure of organs involved in					ed in		
				the urinary system.  Describe, classify and explain the system.						4	
		vous System	,								
		assification of Nervo	*			vous nan b		enn o	f the		
		ntral Nervous system			IIuI.	nan o	ouy.				
	_	inal cord, blood supp anial nerves and sp	-								
		roduction of motor s									
п		stem and	ystem, sensory	9							1,2,3
		tonomic Nervous Sy	rstem								1,2,3
		nctions of brain, ar									
		napse, reflex arc	spinar cora								
		rebrospinal fluid									
		nsory Organs:									
		in, Ear, Nose, Tongu	e Eye								
		nphatic and Immun	•		Cla	ssify	the di	ffere	nt stru	ctures	
	Syst	<del>-</del>			and	lfunc	tions	of the	e lyn	nphs	
	• Str	ucture of lymphatic		alo	ng w	ith t	he im	mune	system		
Ш	fur	nctions.		8	of t	he bo	dy.				1,2,3
		munity – Antigen, A	ntibody, and	U							1,4,3
		mune response.									
	• Ac	quired immunity									

	Reproductive System		Describe, illustrate and explain		
	Structure of male and female		the different parts of the human		
	reproductive organs.		reproductive system.		
	Structure of breast				
IV	Changes during puberty	8		1,2,3,	
	Ovulation,			4	
	Menstrual cycle				
	• Pelvic cavity with its boundaries				
	and contents				
	Endocrine System		Classify, differentiate and		
	Different endocrine glands		explain about endocrine glands		
V	• Hormones and functions of endocrine		with their hormones and	1 2 2	
	glands	10	function.	1,2,3, 4,5	
	• Regulation of secretion hormones.	10		4,3	
	Study of pelvic bones and bones of		Describe, illustrate and explain		
	lower limbs of human body.		about bones and organs of human		
	1. Study of organs: Brain, heart, lung,		body.	1 2 2	
Practical	liver, kidney	30	Analyzing the blood group and	1,2,3, 4,5	
	2. Blood group		total count of RBC and WBC.	7,5	
	DLC				
	Total count of RBC and WBC				

- T1: Fundamentals of Anatomy by Pamela K Levangie, Cynthia C Norkin: JP Bros Medical Publishers, New Delhi
- T2: Fundamentals of Medical Anatomy By, Duane nudson: 2nd ed. 2007 Publisher Springer.
- T3: Ross and Wilson Anatomy and Physiology by Ross and Wilson: **Churchill Livingstone 8**th **Ed.**

#### **REFERENCE BOOKS:**

R1: Medical anatomy: JP Bros Medical Publishers, Bangalore, 1st Indian Ed1997

R2: Clinical Anatomy: JP Bros Medical Publishers, Bangalore, 5th Ed 1996, 1st Indian Ed1998

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Explain the structure and function of excretory system.	1,8					
2	Describe the sensory organs and nervous system along with their functions	1,8					
3	Identify different types of immune cells and lymphatic system in the body.	1,8					
4	Explain the structure and functions of male and female reproductive system.	1,8					
5	Describe the endocrine system and their regulation	1,8					

			SEM	IESTER –	II						
Course 7	Title		Biochemistry: Bi	omolecules	s and '	Their	Met	aboli	ism		
Course	code	24BCIC1202R	Total credits: 5		L	T	P	S	R	O/F	C
			Total hours:45T+	60P	3	0	4	0	0	0	5
Pre-requ		Nil	Co-requisite						Vil		
Progran		Ba	achelor of Critical						olog	y	
Semeste	r		II semester o				_				
Course			teach the technical aspects of biochemical studies, focusing on clinical								
Objectiv	es	implications.	implications.  2. To elucidate the energy dynamics via ATP in human cells.								
								.4:		1.4:	لمسما
		biological sign	omprehension of en	zymes, inc	ruamg	g then	Tun	cuon	s, reg	guiations	, and
CO	1		ication, mechanism	of anzymas	and	factor	c off	octin	7 AN 7	vme activ	one
CO			anism of carbohydi					cum	g CIIZ.	yme acm	J115.
CO			abolism of protein a					diffe	rent c	organs of	hody
CO		_	cess of Lipids meta								Jour.
CO		_	ifferent types of vit								es and
		signs of deficier				, .				,	
Unit-No.						Lea	rning	g Ou	tcom	e	KL
				Hour							
	ENZY	MES :				cribe,		•	•	•	
	• Defi	inition and classif					-		ng with		
	enzy				actors	affe	cting	thei	r		
		ic idea of co-enzy	7	actio	ons.					1,2	
		chanism of enzym									
	• Acti										
	reac	ors affecting enzy	THE								
			METABOLISM		Desc	cribe a	and e	xnlai	n the		
		colysis						-		ates in	
		b's Cycle			the b				,		
II		coneogenesis		10		J					1,2,3
	• Gly	cogenesis									
	• Gly	cogenolysis									
		TEINMETABOI	LISM							xplain	
III		nsamination		10		netabo		_	roteii	n and	1.2.2
111		mination	:C	10	their	signi	fican	ce.			1,2,3
	• Urea	a Cycle and its Signature	gnificance								
		) METABOLISI	M, CLINICAL			ne and	_				
		HEMISTRY						_		ng with	
		idation of Fatty A	cids.				-	-	ic tes	sts and	
IV		one bodies			their	signi	tican	ce.			1,2,3,
		osis and ketoacido	osis	8							4
		er function test.									
	• Ren	al function test									

V	<ul> <li>VITAMINS AND MINERALS:</li> <li>Definition and classification of vitamins according to solubility.</li> <li>Sources and functions of individual vitamins Deficiency.</li> <li>Individual minerals (calcium, phosphorus, iron, magnesium fluslide, copper, selenium, molybdenum etc) –their sources, function and properties.</li> </ul>	10	Describe, explain and classify the different types of vitamins and minerals along with their sources and functions.	1,2,3, 4,5
Practical	To perform precipitation test to determine the presence of proteins in an unknown urine sample.  To perform heat and acetic acid test to determine the presence of proteins in an unknown urine sample  To perform Heller's test to determine the presence of proteins in an unknown urine sample  To perform lipid solubility test	60	Describe, illustrate and explain about different test for proteins and lipids.	1,2, 3,4,

T1: Text Book of biochemistry by U Satyanarayana and U Chakrapani: Sixth Ed

T2: Text book of Biochemistry for medical students by DM Vasudevan (Author), Sreekumari S (Author), Kannan Vaidyanathan (Author): 7th Edition

#### **REFERENCE BOOKS:**

R1: Lehninger Principles of Biochemistry by David L Nelson and Michael M Cox: Eighth Edition|©2021 David L.

**R2:** Text book of Biochemistry, Lubert Stryer, Jeremy M Berg, WH Freeman: 9th ed. 2019

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Describe classification, mechanism of enzymes, and factors affecting enzyme actions.	1,2							
2	Define the mechanism of carbohydrate metabolism in the body.	1,2							
3	Explain the metabolism of protein and its significant effects on different organs of body.	1,2,3							
4	Describe the process of Lipids metabolism and associated clinical conditions.	1,2,3							
5	Determine the different types of vitamins and minerals, their classification, sources and signs of deficiencies in the body	1,2,3							

		SEMESTER	– II										
Cours	se Title	Fundamentals of		re and	l safe	ty							
Cours	se code	24BCIC1203R Total credits: 2		L	T	P	S	R	O/I	C			
		Total hours: 30T		2	0	0	0	0	0	2			
Pre-re	equisite	Nil Co-requisite			•	•	Nil	•					
Progr	amme	Bachelor of Critical and I	ntensive C	are U	nit T	echno	ology						
Semes	ster	II semester of first	year of th	e pro	gram	me							
Cours		1) To impart the knowledge in patient in a	n a holistic approach for the overall wellbeing of										
Objec	ctives	the patient.	the patient.										
			2) To impart a comprehensive knowledge on medical ethics and the quality and functions										
		of medical professionals.											
			ne legal hazardous of medical profession.										
	CO1	Describe signs and symptoms of common						agem	ent				
	02	Explain the medical ethics and its importan				ystem							
	03	Identify the different types of shock along		_			1 (	20 .					
	04	Classify the different types of emergency of											
	05	Proficient in performing quality laboratory	mvestigati	on pro	cess	ana 12	ioorate	эгу					
Unit-	1	management Content	Contact	1	Loo	min	. Out		Τ,	KL			
No.		Content	Hour		Lea	1111118	g Outo	conne		KL			
110.	Poison	ing.	11001	Def	ine de	secrib	e and						
	• Defir	_					erent	tvnes					
		es of poisoning		_			g with						
		ces of Poisoning		_			nagen						
T		otoms of poisoning	6				U			1,2			
1	-	aid & Management	U						-	1,2			
	• Antic	_											
		mon drugs poisoning											
		on monoxide poisoning											
		CAL PROFESSIONAL AND LEGAL		Des	cribe	illust	rate ai	nd					
		RDS OF MEDICAL PROFESSION					ethica						
		lities and Function of medical Professional		_			ilities						
	_	cs of Medical Profession		_	_		sional						
		practice			•								
		l negligence											
II		ical negligence	6						1	,2,3			
		porate negligence											
	1	sumer protection Act for medical											
		Fessional Act of commission, rashness,											
		ligence& damage											
	_	rantage& disadvantage of the act											
	SHOC			Des	cribe,	class	ify and	d					
	• Defin						long v						
***	• Type	s of shock		thei	clini	cal ma	anifest	ations	s	2.2			
III		ral Features of shock Investigations of	6	and	mana	geme	nt .			,2,3			
	shock	_											
	• Initia	l management & first aid of shock											

IV	HYPERGLYCEMIA AND HYPOGLYCEMIA  • Definition  • Clinical features  • Diabetes laboratory tests for diabetes  • Different types of glycosuria  • Ketone bodies  • Glucose tolerance est. Definition, Etiology, Clinical Features, Investigation and Management for Hypoglycemia	6	Describe, classify and explain the hyperglycemia and hypoglycemia along with laboratory tests of diabetes.	1,2,3,
V	<ul> <li>LABORATORY INVESTIGATION AND LABORATORY SETUP</li> <li>Preparation of patients and equipment's</li> <li>Collection of specimens of urine, stool, sputum, blood, CSF, Pericardial fluid, Peritoneal fluid, Pleural fluid, etc.</li> <li>Laboratory designing and management</li> <li>Different laboratories</li> <li>Disposal of wastes</li> <li>Reporting of tests of laboratory</li> <li>Quality control and accreditation</li> <li>Control of fire, infection, corrosive chemicals, toxic fumes, broken glasses, carcinogen. Legal and ethical regulation</li> </ul>	6	Describe, illustrate and explain medical ethics along with the guidelines and management of different laboratories in the hospital.	1,2,3, 4,5

- T1: Principles of Hospital Practice and Patient Care by Srinivasulu Reddy: Paras, New Delhi, India, 13thEdition (2020).
- T2: Hospital and Patient Care Management by Dr. Vidhya Srinivasan, Dr. Akshay Ch. Deka: Asian Humanities Press, New Delhi, India, 4th Edition (2019).

### **REFERENCE BOOKS:**

R1: Principles and Practice of Hospital Medicine by Sylvia McKean: McGraw-Hill Education, USA, 4thEdition (2019).

CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Describe signs and symptoms of common poisonings and its immediate management	1,2,3,6,8				
2	Explain the medical ethics and its importance on the healthcare system	6,7,8				
3	Identify the different types of shock along with the management.	1,2,3,8				
4	Classify the different types of emergency drugs along with the dosage and effects.	1,2,3,7,8				
5	Proficient in performing quality laboratory investigation process and laboratory management	2,3,8				

				MESTER -							
Course				onmental s		l ar		_ ~		0.5	
Course	code	24UBES1101R	Total cr		L 2	T	P	S	R	O/F	C
D	• •,			urs: 30T	2	0	0	0	0	0	2
Pre-rec Progra		Nil		equisite ical and In	toncivo (	⁷ oro I	Init '		Vil	E7	
Semest		Dachen	II semest	ter of first	vear of t	he nro	ogran	ı ecii	norog,	<u>y</u>	
Course		1) To understand and							ı a pr	oblem-01	riented.
Object		inter- disciplinary pe							- ·· F-		,
9		2) To develop a wor			is awa	are o	f ar	d c	onceri	ned abo	ut the
		environment and i		•						_	
		attitudes, motivation							l colle	ectively to	owards
		solutions of current	_	_							. •
		3) To explore strategies for sustainable development and living, including conservation renewable energy, waste reduction, and responsible consumption								vation,	
CC	<u>\</u>	Discuss the importance								ic ovvoro	nocc
CO		Identify natural resour							_		ness.
CO		Explore in-depth knowl					is OII	ше	CHVII	71111CIII	
CO		Discuss the value of bi					f con	serva	tion ()	f Biodive	ersitv.
CO		Explain various enviro									
Unit-		Content		Contact		earni					KL
No.				Hour							
	Mult	idisciplinary nature of								pe, and	
	envir	onmental studies:		importance of environmental studies and discuss the need for public							
I	• Def	inition		7	and di awarene		tne	nee	u 101	public	1,2
	• Sco	pe and importance			awarenc	200.					
	• Nee	ed for public awareness									
	Natu	ral Resources:			Describ	e diffe	erent	types	of na	tural	
	Rene	wable and non-renewa	ble		resources (renewable and non-						
	rese	ources:			renewable) and explain their uses and						
	• For	est resources			environmental impacts.						
II	• Wa	ter resources		5							1,2,3
	• Mir	neral resources									, ,
		od resources									
		ergy resources									
		id resources sources.									
		ystems Concept of an			Describ	e th	e cc	mno	nents	of an	
		stem:						_		low and	
		stem: acture and function- Pro	ducere		•		-		••	compare	
		sumers, and decompose	-		differen					_	
		•	15.		differen	it type	5 01 0	Cosy	<i>5</i> <b>tC</b> 1115.		
		ergy flow									
		ological succession									
Ш		od chains, food webs and	1	5							1,2,3
		logical pyramids									
		oduction- types, character									
		ures, structure, and fund									
		following ecosystem: -									
		system, Grassland ecos	ystem,								
		sert ecosystem,									
	• Aqı	uatic ecosystems									

IV	Biodiversity and its conservation  Introduction —  Definition  Value of biodiversity  Threats to biodiversity  Conservation of biodiversity	8	<b>Discuss,</b> explain biodiversity's value and threats, and describe methods for its conservation.	1,2,3,
V	<ul> <li>Environmental Pollution</li> <li>Definition Cause, effects, and control measures of: - Air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution, nuclear hazards</li> <li>Solid waste management</li> <li>Disaster management</li> </ul>	5	<b>Discuss,</b> explain about the cause, effects of environmental pollution.	1,2,3, 4,5

T1: Harucha E. B, Textbook of Environmental Studies, Orient Blackswan Publishing

T2: Tiwari V. K A Textbook of Environmental Studies, Himalaya Publishing House Chatwal G. R. &Sharma H. Environmental Studies, Himalaya Publishing House

#### **REFERENCE BOOKS:**

R1:Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Stadards, Vol I and II, Enviro Media (R)

R2: Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)

R3: Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380 013, India, Email:mapin@icenet.net (R).

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Discuss the importance of Environment Studies and the need for public awareness.	1,2,8				
2	Identify natural resource, its importance, and its impacts on the environment	1,2,8				
3	Explore in-depth knowledge on concept of ecosystem	1,2,8				
4	Discuss the value of biodiversity and the various methods of conservation of Biodiversity.	1,2,8				
5	Explain various environmental pollution and its impact on human and ecosystem	1,2,8				

		SEMESTER – II							
Course Title		MO	OOC	S					
Course code	24BCICM1O01	Total credits: 1	L	T	P	S	R	O/F	С
		Total hours: 15t	1	0	0	0	0	0	1
Pre-requisite	Nil	Co-requisite				1	Vil		
Programme	Bachelor	of Critical and Inte	ensiv	e Car	e Uni	it Tec	hnolo	gy	
Semester	l	II semester of first y	ear (	of the	prog	ramn	ie		
Course	1) Equip students w	ith a thorough unde	erstan	ding	of the	e cou	rse ma	aterial th	rough
Objectives	engaging online co	ontent.							
	2) Provide hands-on	experience through i	ntera	ctive	exerci	ses ar	nd real	l-world pr	ojects.
	3) Promote effective	communication an	d tea	mwoi	k thr	ough	online	e discussi	ions
	and group activitie	es.							
CO1	Demonstrate a strong	grasp of key princip	les a	nd the	ories	cover	ed in t	the course	).
CO2	Apply learned conc	epts to solve real-	worl	d pro	blems	s thro	ough	practical	
	projects and exercise	es.							
CO3	Analyze and evaluat	e information, impr	oving	g thei	r prol	olem-	solvin	g and	
	decision-making abilities.								
CO4	Develop their ideas clearly and effectively in both written and verbal forms.								
CO5	Demonstrating strong	collaboration and te	amw	ork sl	cills.				

	CO PO Mapping					
SN	Course Outcome (CO)	<b>Mapped Program Outcome</b>				
1	Demonstrate a strong grasp of key principles and theories covered	7,8				
1	in the course.					
2	Apply learned concepts to solve real-world problems through	7,8				
<b>4</b>	practical projects and exercises.					
3	Analyze and evaluate information, improving their problem-	7,8				
3	solving and decision-making abilities.					
4	Develop their ideas clearly and effectively in both written and	7,8				
4	verbal forms.					
5	Demonstrating strong collaboration and teamwork skills.	7,8				

	SEMESTER – II								
<b>Course Title</b>		Field `	Visit						
Course code	24BCICFT102	Total credits: 1	L	T	P	S	R	O/F	С
		Total hours: 1200	0	0	0	0	0	8	1
Pre-requisite	Nil	Co-requisite				ľ	Vil		
Programme	Bachelor of Critic	cal and Intensive Car	e Un	it Teo	chnolo	ogy			
Semester		II semester of first yea	ır of	the p	rogra	mme			
Course	1. To learn practical sk	tills through early expos	sure t	o prii	nary,	secon	dary,	and tertia	ry
Objectives	healthcare settings.								
	2. Understand the roles	s and responsibilities w	ithin	diffe	ent le	vels c	of the l	nealthcare	2
	system.								
	3. Learn to develop in	novative solutions and a	adapt	to th	e dyna	amic r	nature	of the me	edical
	field.								
CO1	Understand the theoret	ical concepts and found	datio	nal kı	nowle	dge re	elevan	t to the fi	eld
	during the visit.								
CO2	Comprehend the practic	cal applications of theo	retica	al con	cepts	in rea	l-worl	d settings	3.
CO3	Exposure to diverse situations to enhance skills in patient management and care.								
CO4	Evaluate the effectiveness of different approaches and methods seen during the field trip.								
CO5	Develop innovative stra	ategies or solutions insp	oired	by en	hance	d pro	fessio	nal praction	ce.

	CO PO Mapping				
SN	Course Outcome (CO)	Mapped Program Outcome			
1	Understand the theoretical concepts and foundational knowledge relevant to the field during the visit.	2,5,6,7,9			
2	Comprehend the practical applications of theoretical concepts in real-world settings.	1,2,3,7,8			
3	Exposure to diverse situations to enhance skills in patient management and care.	1,2,3,5,8			
4	Evaluate the effectiveness of different approaches and methods seen during the field trip.	5,7,8			
5	Develop innovative strategies or solutions inspired by enhanced professional practice.	5,6,7,8			

		SEMEST	TER – II								
Course T	itle	F	unctional	Engli	sh						
Course c	ode 24UBPD1201R	Total credits: 1	L	T	P	S	R	O/F	C		
		Total hours: 30P	0	0	2	0	0	0	1		
Pre-requ		Co-requisite					<u>Vil</u>				
Program		Bachelor of Critical a						ogy			
Semester Course		II semester of									
Objective		udents to learn and u				<b>.</b> .					
Objective	2. To such guid	2. To strengthen the vocabulary of the students which will help in their writing and									
	speaking.										
		e them with the Time									
CO		tenses appropriately	in verba	l and	writte	n con	ımunio	cation,			
COA		their differences.		1.			11	1			
CO2	1	oficiency in recogniz nguage contexts.	ing and us	sing no	omony	ms an	a nom	opnones			
CO3	Ţ.	ragraphs, stories, or	articles	effecti	ivelv	refini	jo nro	nunciatio	n		
	1	er communication.	u1 (1010)	511000	., ory,	. 0111111	.5 PIC	, ii dii CiatiO	••		
CO4	Implement tim	e management strate	gies to or	ganize	e daily	tasks	, cates	gorize the	m		
		Management Matrix,									
CO5		fessional resume and									
		ting and managing a p									
Unit-No.	Con	tent	Contact	;	Le	earnin	ıg Out	come	KL		
	Module1-Grammar		Hour		·: cc	4: a4 a 1 a	-4				
		4° 1 A 4°			Differentiate between interrogative, assertive, and exclamatory sentence types to enhance communication clarity.						
	• Interchange Interro	~									
I	Sentences, Exclama	itory and Assertive	7								
	Sentences			c]					1,2		
	• Types of Tenses										
	Common Errors				1 10						
	Module2-Vocabular	y			dentify		-				
II	<ul> <li>Homonyms</li> </ul>		5		homonyms in context to demonstrate understanding of word meanings.				1,2,3		
	<ul> <li>Homophones</li> </ul>										
	Module3-Reading S	kills			xplain			nce of			
	• Techniques of Effect							hniques			
III	<ul> <li>Gathering ideas and</li> </ul>	•	5					ehension	1,2,3		
	text	information from a		aı	nd info	rmatio	on rete	ntion.			
	Module4–Conflict M			D	iscuss	the ef	fects c	of.			
	• Definition	anagonioni			ifferent			,ı			
IV		onogomont	8		nanagei			on	1,2,3,		
	• Type of Conflict M	•			elations		•		4		
	• Effects of conflict N				ynamic						
	Module5-Time-Man	agement Skills			emons						
	• Introduction To Tin	ne Management,	_		lanning						
V	• Importance of Time	e Management,	5		echniqu				1,2,3,		
	Basic Tips to Maint	ain Time.			ersonal roducti		ororess	sional	4,5		
<u> </u>	*		<u> </u>	p:	roducti	vity.			<u> </u>		

- T1: Wren, P. Cand Martin, H. 1995. High School English Grammar and Composition, S Chand Publishing.
- T2: Barrett, Grant.2016. Perfect English Grammar: The Indispensable Guide to Excellent Writing and Speaking, Zephyros Press.
- T3: Swan, Michael., (2014) Practical English Usage, Cambridge University Press Taylor J and Wright, J., IELTS Advantage Reading Skills: A step- by step guide to a high IELTS reading score, Delta Publishing by Klett

## **REFERENCE BOOKS:**

R1.https://clockify.me/time-management-techniques

R2.https://www.peoplehum.com/glossary/conflict-management

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Utilize various tenses appropriately in verbal and written communication, distinguishing their differences.	7,8				
2	Demonstrate proficiency in recognizing and using homonyms and homophones accurately in language contexts.	7,8				
3	Summarize paragraphs, stories, or articles effectively, refining pronunciation skills for clearer communication.	7,8				
4	Implement time management strategies to organize daily tasks, categorize them using the Time Management Matrix, and solve problems efficiently.	7,8				
5	Develop a professional resume and understand the dos and don'ts of resume writing, along with creating and managing a profile on LinkedIn to build professional networks.	7,8				

			SEMESTE	R _ II							
Course	Title		Extra-curri		<u>``</u> 0-	curr	icular				
Course		24UBEC1201/	Total credits: 1	L		T	P	S	R	O/F	С
		24UBCC1201	Total hours: 608			0	0	4	0	0	1
Pre-requ	isite	Nil	Co-requisite	:				N	Jil	I	
Progran			or of Critical and	Intens						g <b>y</b>	
Semeste	r		II semester of fir								
Course		1. To develop skills an		n partici	pat	tion i	n dive	rse ex	tracur	ricular and	d
Objectiv	ves	co- curricular activit		. 1 .1.					1 .		
		2. To learn about team		ip abilit	ıes	by e	ngagu	ig stu	dents	ın club-lec	1
		events and competit		~~~~~+la		1			a a bar	and tha	
		3.To provide opportun academic curriculum		growin	anc	ı prac	zucai i	earmi	ng bey	ond the	
CO	1	Explore different activ		v varion	18 (	clube	such	ac da	nce n	nusic	
	1	photography, drama, a		y variot	15 C	Juos	, sucii	as ua	ince, i	ilusic,	
CO2	).	Develop confidence		regular	· c	lub :	activit	ies i	ncludi	ng works	hons
		and competitions, acco				100		, 1	1101441	116 WOILE	порз
CO3	3	Apply knowledge and				n inte	r-univ	ersity	, state	and nati	onal
		level competitions.	1					J	,	,	
CO4	ļ	Explore new platform	to learn from invit	ed expe	rts	in th	eir res	pecti	ve fiel	ds.	
COS	5	Evaluate overall growt	th alongside acade	mic dev	elc	opme	nt.				
Unit-No.		Content		Conta	ct		Learning Outcome				KL
				Hou	r				0		
	ADT	U encourages a range of	of activities			Th	e stud	ouraged			
		de the regular curriculu	m intended to			to	to participate in regular club				
		learner's interest.			activities, workshops,						
		e activities are aimed to				co	mpeti	ions a	as per	their	
		al and soft skills and pro					_		bbies.		
		lopment of the learners									
		oing in mind the 360-de nodology the students ar									
		rent activities headed u									
		s viz. Dance, music, pho									
		na, literary etc.	, , , , , , , , , , , , , , , , , , , ,								1.0.0
I		students are encouraged	l to participate	60							1,2,3,
		gular club activities, wo									4,5
	comp	petitions as per their inte	erest and								
	hobb										
		student members of the									
		esent AdtU in various in									
		ent and National level co									
		ewed personalities are in									
		uct workshops that ben bers and students by gi									
		orm to learn from expert	_								
		ective fields.	S III UIC								
	respe	Zuve neids.									1

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Explore different activities organized by various clubs, such as dance, music, photography, drama, and literacy	5,7,8				
2	Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests	5,7,8				
3	Apply knowledge and skills to represent ADTU in inter- university, state, and national level competitions.	5,7,8				
4	Explore new platform to learn from invited experts in their respective fields.	5,7,8				
5	Evaluate overall growth alongside academic development.	5,7,8				

	SEMESTER – III												
Course Titl			management	and resp	pira	tory (	emer	genc	ies				
Course cod		Total cr			L	T	P	S	R	O/F	C		
			ours: 45T+60	P	3	0	4	0	0	0	5		
Pre-requisi		Nil Co-requisite Nil											
Programm	e Bacl		Critical and						ology	7			
Semester			emester of 2 ^r										
Course	1. This course seek					•	•	_					
Objectives		airways. Focuses on providing high-quality hands-on training in accordance with											
	_	global standards. On intubation trainers, all participants will be able to practice various											
	techniques and e			.a									
	2. To introduce the				_		airwa	y obs	structi	on and	manage		
	them in the hosp			_		-					r		
	3. Recognition of a	•	•	•		_		nd m	anage	ment of	upper		
001	airway obstructi							1	(1. 1	<u> </u>			
CO1	Describe anatomy		siology of t	ne airwa	y an	ıa un	uerst	and	ine ba	asic air	way		
CO2	adjuncts and function		managamant	toohnio	20. 21	nd 4-	vol o	n tha	olz;11.	n 120000	com for		
CO2	_	Explain advanced airway management techniques and develop the skills necessary for											
CO3		their effective application.  Classify surgical & non-surgical airways.											
CO3		Identify the symptoms of airway and breathing conditions.											
CO5	Demonstrate the as						snira	tory (	lisord	ers			
Unit-No.	Content		Contact			ning (	_		115010		KL		
UIIIt-NO.	Content		Hour	L	eari	nng v	Jule	ome			KL		
	Airway Management	t <b>:</b>	Describe and explain the anatomy and										
I	Review of Anatomy a		7		physiology of the respiratory system								
_	Physiology		including the basic airway adjuncts.					icts.					
	Basic Airway Manag	ement:		Describ	e.	expla	in a	ınd	demo	nstrate			
	Manual Airway man			advance		_							
	Airway adjuncts		10	with 1		-				_	1,2,3		
II	• Suctioning			procedu			-		,				
	<ul> <li>Assisted and artificial</li> </ul>	a1		_									
	ventilation												
	Advanced Airway			Classify	v and	d exp	lain	diffe	rent a	irwavs			
	Management:			along		ith	the			ations,			
	Endo tracheal intuba	ntions		contrain	ndica	ations	and	proc	edure	·.			
	<ul> <li>Kings PtL Airway</li> </ul>							•					
	• Digital intubations												
Ш	• Laryngeal mask air and Combitube intul		10								1,2,3		
	• Rapid sequence intu	bations											
	• Surgical and non-sur airways	gical											
	<ul> <li>Special patient consideration</li> </ul>												
IV	Respiratory Emerger	ncies I		Classif	assify and differentiate between								
	<ul> <li>Airway problems ve breathing problems</li> </ul>		8	airway							1,2,3, 4		

V	Respiratory Emergencies II		Describe, identify and manage	1,2,3,
	Obstructive airway	10	various respiratory disorders.	4,5
	diseases Assessment and			
	management of various			
	respiratory problems.			
Practical	1. Airway Maneuver-			
	Head-tilt-chin-lift			
	Jaw thrust			
	2. Suctioning, inserting a oral			1,2,3,
	airway	30		4
	3. ET tube intubation			
	4. Non-invasive mask			
	5. Tracheotomy			
	6. Removal of ET tube			

**T1:** Nancy Caroline Emergency care in the street 7th edition

## **REFERENCE BOOKS:**

R1: Textbook of critical care. 6th edition

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Describe anatomy and physiology of the airway and understand the	1,2				
	basic airway adjuncts and functions					
2	Explain advanced airway management techniques and develop	1,2,3				
	the skills necessary for their effective application.					
3	Classify surgical & non-surgical airways.	1,3				
4	Identify the symptoms of airway and breathing conditions.	1,2				
5	Demonstrate the assessment and management of various	3,4,7& 8				
	respiratory disorders					

			SEMESTE	ER – III												
Course	Title		Patient assessme	ent and dri	ug ad	lmin	istr	atio	n							
Course	code	24BCIC2102R	Total credits: 5		L	T	P	5	5	R	0	<b>/F</b>	C			
			Total hours: 45T+	-60P	3	0	4	(	)	0	(	)	5			
Pre-req	uisite	Nil	Co-requisite						ľ	Vil						
Prograi	nme	Bachelor of Critical and Intensive Care Unit Technology														
Semeste	er		III semester of se	cond year	of th	e pro	ogra	amr	ne							
Course		1. Introduce the patient assessment identification principles of history taking in the														
Objecti	ves	assessment process of individuals.														
		2. Demonstrate physical examination skills including focused physical, behavioral,														
		psychological, socioeconomic, and environmental assessments of health and illness														
		parameters in patients.  3. Introducing with the type of drug administration and the techniques of venous access.														
									•							
CO		Understand and app														
CO	2	Comprehend the te- to- toe examination	-	taking and	d der	nons	strat	e h	ow	to 1	perfo	orm	head-			
CO	2	Apply principles for		nd implan	ont a	1:11.	0.10	to a1	نمما	~1100	of					
	3	documentation and c		ina mpiem	ient s	KIIIS	OII	teci	11111	ques	01					
CO	4			uid in the h	ody (	diffe	rent	tvr	166	of IV	V Fli	iide	gain			
	7	IV sites and access.	Identify the different composition of fluid in the body, different types of IV Fluids, gain													
CO	5	Develop comprehe	nsive knowledge	on the ro	utes	of	drus	g a	dm	inist	ratio	n aı	nd			
		utilize skills to perf	~				,									
Unit-		Content		Contact		L	earı	ning	gΟ	utco	me		KI	Ĺ		
No.				Hour												
	Patie	ient assessment			Dis	cuss	bri	efly	ab	out p	patie	nt				
I	• Med	dical patient assessme	nt	7	asse	assessment techniques										
1	• Tra	uma patient assessme		incl	including medical and trauma					1,2	2					
					patients.											
		ry taking			Explain the techniques of											
	• Tec	hniques of history tak	ing		history taking for better analysis of the patient's chief complaint.											
п	• Spe	cial assessment challe	enges													
	• Vita	al signs		10							1,2	,3				
	• Hea	d to toe physical exan	nination	10												
	• Lim	nits of physical exam														
	Inter	pretation & Special	Situations			hance										
	• Cor	ncept formation				erpre					diffe					
	• Dat	a interpretation				cabul	-			_	s to	use				
	• App	olication of principle			in s	speci	al si	itua	tior	ıs.						
III	• Ref	lection in and on action	on.	10									1.0	2		
	• Var	ious communication i	natters.	10									1,2,	,3		
		Documentation techniques														
		Verbal and nonverbal skills														
		pecial interview situations														
		us access			Illu	ıstrat	e ah	)()()(	dif	fere	nt					
		d composition &distri	bution in the body		Illustrate about different techniques and methos of											
IV		fluid composition	.cadon in the body	8	venous access in human						1,2,3,					
		-	c			body.						4				
	• 1e	chniques of I. V acces														

	Medication administration		Explain the procedure of	
V	Routes of medication administration	10	medication preparation for	1,2,3,
	Calculating fluid infusion rates		patient administration.	4,5
	1. Checking Vitals			
	2. Gaining Venous access			1,2,3,
Practical	3. IV fluids administration	60		4
	4. Full body Assessment			
	5. Rapid Assessment			

T1: Nancy Caroline "Textbook of emergency care in the streets" 7th Edition

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Understand and apply the techniques of assessment for medical and trauma patients.	1,2,3,4,5					
2	Comprehend the technique of history taking and demonstrate how to perform head-to-toe examination.	1,2,3,8					
3	Apply principles for critical thinking and implement skills on techniques of documentation and communication.	1,2,7					
4	Identify the different composition of fluid in the body, different types of IV Fluids, gain IV sites and access.	1,2,3,4					
5	Develop comprehensive knowledge on the routes of drug administration and utilize skills to perform correct techniques.	1,2,4					

	SEMESTER – III										
Course				trition	- 700	-		-	0.75		
Course	code	24BCIC2103R	Total credits: 3	г <u>L</u>	T 0	P   0	S 0	R 0	O/F 0	C 3	
Due need	rigito	Nil	Total hours: 457 Co-requisite	_	U	U	N	-	U	3	
Pre-required Program			of Critical and In		Care	Unit '			v		
Semeste			emester of second						<i>y</i>		
Course		1. Utilize knowledge from the physical and biological sciences as a basis for									
Objectiv	ves	understanding the role of food.									
		2. Understanding nutrients in health and disease processes, provide nutrition counselling									
		and education to individuals, groups.									
		3. Communities throughout the lifespan using a variety of communication strategies as									
		well as evaluate nutrition information based on scientific reasoning for clinical,									
		community, and food se	ervice application.								
CO	1	Discuss the principles of	f nutrition and ba	asic kno	wled	ge on	recor	nmen	ded dieta	ary	
		allowance.									
CO	2	Explain about macro n	utrients including	g their	func	ctions	and	the s	igns of	its	
		deficiency and excess of a	nacro nutrients.								
CO	3	Describe the functions an	d the signs of its d	eficienc	y and	l exces	s of n	nicro	nutrients.		
CO	1	Discuss the distribution of	f body fluids along	g with di	ffere	nt type	es of e	lectro	olytes, the	eir	
		functions and causes of in	nbalances.								
CO	5	Identify the roles of dietary plan and its importance with special reference to the									
		benefits of dietary plans in	n critically ill patie	ents							
Unit-		Content		Contac	ct	I	<b>earn</b>	ing O	utcome	KL	
No.				Hour							
		duction to Nutrition Scien				Describ					
		finitions, history, role of no intaining health, classificat				nutrition; it's history and roles in maintaining					
I		OA – factors affecting RDA	7		health including the recommended dietary						
		RDA for different nutrients									
	and	d allowances, balanced diet				allowai	nce.			1,2	
	Macr	o Nutrients:				Describ	oe,	classi	fy and		
	Carb	ohydrates, Proteins and	fats – their						nutrients		
II		tions, source, digestion	and absorption,	10					sources	1,2,3	
		ts of deficiency and			-   -	and fur	ection	S.			
	exces					Dagan:1		-1	fr. and		
		Nutrients:	motions soums			Describ		classi	fy and nutrients		
III		amins and minerals, their for estion and absorption, effe		10					sources	1,2,3	
		excess.	ets of deficiency			and fur					
		r and electrolyte balance:				Describ	oe,	classi	fy and		
	• Dist	tribution of body water – E	CF/ICF,						ent types		
IV		ctions, different electrolyte		8			-		the body	1,2,3,	
		ctions, thirst mechanism, w	ater/electrolyte			_		heir f	unctions	4	
		ince, water imbalance.				in the b		aaif.	and		
		Therapy:				Descrit explain		•			
		ciples of diet therapy	raneutic diets			along v			iorup y		
	• Therapeutic diets, types of therapeutic diets • Modification of consistency, feeding			J -		_			oles in	1,2,3,	
V	<ul> <li>Modification of consistency, feeding techniques, hospital routine diet, different type</li> </ul>		•	10		significance and roles in critically ill patients.					
		iet for ICU patient	,						4,5		
	• Role	e of nutrition in critically i	l patients with								
	refe	rence to ICU care									

Nutrition Science 7th Edition by B Srilakshmi

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Discuss the principles of nutrition and basic knowledge on recommended dietary allowance.	1
2	Explain about macro nutrients including their functions and the signs of its deficiency and excess of macro nutrients.	1,2
3	Describe the functions and the signs of its deficiency and excess of micro nutrients.	1,5
4	Discuss the distribution of body fluids along with different types of electrolytes, their functions and causes of imbalances.	1,5
5	Identify the roles of dietary plan and its importance with special reference to the benefits of dietary plans in critically ill patients	3,7,8

			SEMESTER – III	[						
Course	Title		Pharmacology							
Course	code	24BCIC2104R	Total credits: 3	L	T	P	S	R	O/F	C
			Total hours: 45T	3	0	0	0	0	0	3
Pre-rec	quisite	Nil	Co-requisite				Ni	1		•
Progra	mme	Bac	Bachelor of Critical and Intensive Care Unit Technology							
Semest	er		III semester of second ye	ear of 1	the p	rograi	nme			
Course	;	1. To explain the f	fundamentals of pharmacolog	gy and	comp	orehen	d the	range	of nume	rous
Objecti	ives	•	disciplines, definitions, and drug nomenclature at the conclusion of each study unit.							
		2. To understand the drug's mechanism of action, potential side effects, dosage								
			ns, and therapeutic application							
			he adverse effects of differer							
CC		_	ept of Pharmacology inclu	ding l	Emer	gency	Med	icine	s and th	ne
		routes of administra								
CO		_	drugs that affect the Autono			-		<u> </u>		
CO			d antiepileptic drugs along v							
CO			rugs used to treat cardiovascu							
CO		•	ypes of IV fluids and their	r prepa	агано	ons as	wen	as a	nudiabet	ic
Unit-		drugs.	ntent	Cont	net		Lear	nina	•	KL
No.		Col	itent	Hou				KL		
110.	Gene	ral Pharmacology		1104	-	Defin	Outo		and	
		roduction, definition and classification of drugs						-	drugs	
		utes of drug administration					-		of drug	
I		armacokinetics				admii			C	
_		armacokinetics								1,2
		tors modifying drug								
		verse effects	, , ,							
	Autor	nomic Nervous Syste	em:			Desci	ribe, o	classi	fy and	
		neral Considerations							gs used	
II	• Cho	olinergic and Anti –	Cholinergic drugs			to ma	nage	disor	ders in	
		energic and Adrener	• •	10	)	the no	ervou	s sysi	tem.	1,2,3
		letal muscle relaxan								
	Neuro	ppharmacology:				Desci	ribe, o	classi	fy and	
111	• Sed	ative – Hypnotic Dru	ıgs: Barbiturates,			expla	in th	e dru	gs used	
III	Ben	zodiazepines		10	)	for se	datio	n and	l pain	1,2,3
	• Ant	iepileptic drugs, na	rcotic analgesics.			mana	geme	nt.		
		•	atory Pharmacology:			Desci	ribe, o	classi	fy and	
	• Dru	ugs used in heart failure – Digitalis, uretics, vasodilators.				•			gs used	
			gs – ACE inhibitors.						ascular	1,2,3,
IV	• Dru	gs for ischemic hear	rt disease – Nitrates, Beta	8		and re	_	tory		4
_ ,		Ekers, Calcium nnel blockers.		3		disor	ders.			
		opressors, Inofropic	agents							
	• Ant	icoagulants and Thre	ombolytics							
	• Bro	nchodilators and M	Mucokinetic agents.							

V
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Essentials of Medical Pharmacology - Dr KD Tripathi

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Explain the concept of Pharmacology including Emergency Medicines and the routes of administration.	1,2					
2	Recognize different drugs that affect the Autonomic Nervous System.	1,2,5					
3	Classify sedative and antiepileptic drugs along with their mechanism of action.	2					
4	Discuss different drugs used to treat cardiovascular and respiratory conditions	1,2					
5	Identify different types of IV fluids and their preparations as well as antidiabetic drugs.	7,8					

			SEMES'	TER – III	[							
Course	Title			Psycho	ology							
Course	code	24BCIC2105R	Total cree	dits: 3	L	T	P	S	R	O/F	С	
			Total hou	rs: 45T	3	0	0	0	0	0	3	
Pre-req	uisite	Nil		equisite					Vil			
Prograi	mme	Bachelor o	Bachelor of Critical and Intensive Care Unit Technology									
Semeste				f second year of the programme								
Course		1. Aims to provide students with a comprehensive understanding of human behavior and										
Objecti	ves	mental processes.										
		2. Explore various psychological domains such as cognitive, developmental, social, and										
		abnormal psychology, gaining insights into how individuals think, feel, and act.										
		3. To be equipped with critical thinking skills and an appreciation for the complexities										
		of human behaviour, enabling them to apply psychological concepts to real-world										
			situations.  nderstand the significance, history, scope and branches of psychology.									
CO							ı psy	cnolog	gy.			
CO		Discuss the biology of hum					, 1	1.1 C	, ,	· m ·	•,	
CO		Identify the different stages									g it.	
CO	94	nderstand the concept and types of motivation, emotion, stress along with the										
management of stress and conflict.  CO5 Apply skills to assess mental health				nd identify	tho x	vorni	na cio	ms of	noor	montal ha	olth	
			ai iicaitii a		-							
Unit- No.		Content		Contact	Hour		J	Learn	ung O	utcome	KL	
110.	Introd	uction to Psychology				Int	roduc	es the	- knov	vledge		
		finition of psychology								vicuge		
I		olution of modern psycholo	MON.	7			_		orld an		1,2	
1		ope of psychology	gy	,			different branches of it.					
		anch of psychology										
		gy of Behavior				Ex	nlain	s the	hio.	logy of		
		y mind relationship modula	ation				_			dset and		
		cess in health and illness							ex fun			
	_	n and behavior: nervous sy	stem.					1				
II		ons and synapse, Associati		10							1,2,3	
		ex, Right and Left hemisph										
		chology of Sensation: Visio										
	•	ring, Olfactory, Gustatory a										
		aneous sensation.										
	Grow	th and Development				De	scrib	es th	e gro	wth and		
	• Life	span: different stages of				de	velop	ment	of a p	erson.		
	deve	elopment										
	(Infa	ancy, childhood, adolescen	ce,									
III	adul	thood, middle age, old age	e)	10							1,2,3	
	Heredity and environment: role of											
		edity and environment in ph	-									
		psychological development	t.									
	• Natı	ure v/s Nuture controversy.										

	Motivation and Emotional Processes		Explains the techniques	1,2,3,
	• Motivation: meaning, concepts, types,		of keeping one motivated	4
	theories, motives and behavior.		and maintaining emotional	
	Emotion: definition, components,		processes.	
	changes in emotions, theories,		processes.	
IV	emotional adjustments, emotions in	8		
1 4	health and illness.	0		
	• Stress: stressors, cycle, effects,			
	1			
	adaptation & coping and management.			
	Conflicts and frustration, conflict			
	resolution.			
	Mental Hygiene and Mental Health		Explain the warning sign	1,2,3,
	• Concepts of mental hygiene and		of poor mental health ways	4,5
	mental health.		of preventing it and	
	• Characteristics of mentally healthy		characteristics of a healthy	
<b>X</b> 7	person,	10	person.	
V	Warning signs of poor mental health,	10		
	• Promotive and preventive mental			
	health – strategies and services.			
	Psychology of vulnerable individuals.			
	Guidance counselling and Rehabilitation.			

T1: Jane Ogden "Health Psychology" 3 rd Edition

T2: Amanpreet Kaur Jhand "Psychology" 1 st Edition

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Understand the significance, history, scope and branches of psychology.	1,8					
2	Discuss the biology of human behaviour and sensation.	1,2,7					
3	Identify the different stages of human growth and development and the factors influencing it.	1,8					
4	Understand the concept and types of motivation, emotion, stress along with the management of stress and conflict.	7					
5	Apply skills to assess mental health and identify the warning signs of poor mental health.	2,3,7					

	SEMESTER – III								
<b>Course Title</b>		MOOCS							
Course code	24BCICMO201	Total credits: 1	L T P S R O/F C						
		Total hours: 15T	1	0	0	0	0	0	1
<b>Pre-requisite</b>	Nil	Co-requisite				-	Vil		
Programme	Bachelor of (	Critical and Intensive Car							
Semester		III semester of second ye			<u> </u>				
Course	1. Equip students with a thorough understanding of the course material through								
Objectives	engaging online								
	2. Provide hands-on experience through interactive exercises and real-world projects.								
	3. Promote effective communication and teamwork through online discussions and group								
	activities.								
CO1		ng grasp of key principles a							
CO2	Apply learned co	ncepts to solve real-wor	ld p	roble	ms th	rough	n prac	ctical pro	ojects
	and exercises.								
CO3	Analyze and evalu	ate information, improvin	g th	eir pr	oblen	ı-solv	ing ar	nd decision	on-
	making abilities.								
CO4	Develop their ideas	clearly and effectively in b	oth	writte	n and	verba	l form	ıs.	
CO5	Demonstrating stro	ng collaboration and teamy	vork	skills.					

CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome			
1	Demonstrate a strong grasp of key principles and theories	7,8			
	covered in the course.				
2	Apply learned concepts to solve real-world problems through	7,8			
	practical projects and exercises.				
3	Analyze and evaluate information, improving their problem-	7,8			
	solving and decision-making abilities.				
4	Develop their ideas clearly and effectively in both written and	7,8			
	verbal forms.				
5	Demonstrating strong collaboration and teamwork skills.	7,8			

SEMESTER – III										
<b>Course Title</b>	Title Field Visit									
Course code	24BCIC2106R	Total credits: 1	L	T	P	S	R	O/F	С	
		Total hours: 120	0	0	0	0	8	0	1	
Pre-requisite	Nil	Co-requisite	Nil							
Programme	Bachelor of Critical and Intensive Care Unit Technology									
Semester	III semester of second year of the programme									
Course	rse 1. To introduce the students to the basics of English grammar and their application.									
Objectives	2. To enhance communication skills through listening and speaking exercises.									
	3. To learn and u	inderstand the importance of	rstand the importance of pronunciation of words.							
CO1	Understand the theoretical concepts and foundational knowledge relevant to the field									
	during the visit.									
CO2	Comprehend the practical applications of theoretical concepts in real-world settings.									
CO3	Exposure to diverse situations to enhance skills in patient management and care.		d care.							
CO4	Evaluate the effectiveness of different approaches and methods seen during the field trip.									
CO5	Prepare and deliver presentations effectively using visual aids and non-verbal									
	communication techniques.									

CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Understand the theoretical concepts and foundational knowledge relevant to the field during the visit.	1,6				
2	Comprehend the practical applications of theoretical concepts in real-world settings.	2,3,5				
3	Exposure to diverse situations to enhance skills in patient management and care.	2,3,5,8				
4	Evaluate the effectiveness of different approaches and methods seen during the field trip.	3,4,5,8				
5	Prepare and deliver presentations effectively using visual aids and non-verbal communication techniques.	2,3,5,8				

SEMESTER – III											
Cours	se Title		Basic acclim	atizing s	kills	S					
Cours	se code	de 24UULS2101R Total credits: 1				T	P	S	R	O/F	C
			Total hours: 30		0	0	2	0	0	0	1
Pre-re	equisite	Nil	Co-requisite						Nil		
	amme		or of Critical an							y	
Semes			II semester of se								
Cours		1. To impart knowle	edge of the fund	amentals	of	Hospi	tality	indu	ıstry a	and its	
Objec	tives	applications.									
		2. Students will be at				_			& Ut	ensils.	
	101	3. Students will be at					vatıo	ns.			
	01	Students will have bas					C	D			
	02	Students will gain the					-	Koon	ıs.		
	03	Students will be able to	-	-			_	-1.17		:4: <b>C</b>	4
	O4	Students will be able to- day use.	to acquire the Kno	owieage (	OI D	asic no	ousen	oia s	amen	mes for	uay-
C	O5	Students will develop	an understandi	ng of pa	reon	al fin	ancia	1 mai	nagem	ent and	
	<b></b>	budgeting skills.	o an understandi	ng or pe	13011	.u. 1111	uncia	.i 11101	nagen	ioni and	
Unit-		Content		Contact Learn				rning	Oute	ome	KL
No.				Hour					, 0 0210		
	Introd	uction to Accommoda			Explains the techniques						
	Manag	gement			accor	nmoc	lation	mana	igement.		
	• Telep	phone handling techniq	ue								
I	• Orga	nizing of Rooms.		7							1,2
	• Clear	ning agents.									
	• Clear	ning equipment's and u	ses.								
	• Bed 1	making Process.	naking Process.								
		mentals of Cooking				Intro	luces	the f	undan	nentals	
		nition of cookery–Aim	& Objectives of							efficient	
	cook	•					afety	meth	ods.		
II		of basic Cooking equip	nent's	5							1,2,3
		onal Hygiene and Safet									
		of Fire & Fuels	,								
		ds of Cooking				Illust	rates	diffe	rent	methods	
		erent Cuts.				of co	oking	g.			
Ш	• Use of	of Herbs and Spices.		5							1,2,3
	Basic	Food and Beverage Pr									
	• Regio	onal food Habits	•								
	Forms	& Format's				Expla	ains a	nd ill	ustrat	es	
	• C –fc	orm							of wr	_	
13.7	• Rese	rvation form		0					vation	1,	1,2,3,
IV	• Regis	stration form		8		passp	ort, e	etc.			4
	• Passp	oort Application form L	egal Rent								
	Agre	ement									

	Introduction to Accommodation		Explains the techniques of	
	Management		accommodation management.	
	Telephone handling technique			1 2 2
V	Organizing of Rooms.	5		1,2,3, 4,5
	Cleaning agents.			4,5
	Cleaning equipment's and uses.			
	Bed making Process.			

T1: Arora K "Theory of cookery" 2011

T2: Bruce H. Axler, Carol A. Litrides "Food and Beverage Service" 2010, Vol-1

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Students will have basic knowledge of cooking methods.	7					
2	Students will gain the knowledge of organizing & Cleaning of Rooms.	6,7					
3	Students will be able to gain the travel management concept.	7					
4	Students will be able to acquire the knowledge of basic household's amenities for day- to-day use.	7					
5	Students will develop an understanding of personal financial management and budgeting skills.	7					

Course TitleExecutive EnglishCourse code24UBPD2101RTotal credits: 1 Total hours: 30PL 0 0 0 0 0 0 0 0 0T 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 	O/F 0	C 1
Total hours: 30P 0 0 2 0 0		
	0	1
Dra pagnicita Nil Companicita Nil		
Pre-requisite Nil Co-requisite Nil		
Programme Bachelor of Critical and Intensive Care Unit Technology	y	
Semester III semester of second year of the programme		
Course 1. Develop Writing Skills: To help students write clear paragraphs and		ions.
<b>Objectives</b> Enhance Grammar: To teach correct preposition use and active/passive		
2. Understand Non-Verbal Cues: To provide knowledge on body langu		
meanings. Improve Discussion Skills: To equip students to effective	vely engag	ge in
group discussions.	1	
3. Apply Communication Skills: To prepare students for real-world	d writing	and
communication.		
CO1 Demonstrate proficiency in writing structured paragraphs and formal applications.  CO2 Learn the use of prepositions and convert sentences between active and pass		
CO2 Learn the use of prepositions and convert sentences between active and pass CO3 Identify and interpret various types of body language and their meanings.	sive voice.	
CO4 Initiate, participate in, and summarize group discussions effectively.		
CO5 Apply writing, grammar, non-verbal communication, and group discussions	ion skills	in
real- world contexts.	ion skins .	111
Unit- Content Contact Learning Outcome		KL
No. Hour		
Grammar Describe and explain about	the	
Use of preposition, Tag Question, preposition.		1.2
I Idioms, Phrases and Clauses, Simple, 7		1,2
Complex, Compound Sentences		
Grammar Describe, illustrate and expla		
II Active and Passive Voice, Direct and 5 about the active and passive		1,2,3
Indirect Speech and direct and indirect speec		
Writing Skills Describe, illustrate and apply		
The Basics of writing, avoid basic writing skills like parag		
III ambiguity and vagueness, paragraph 5 writing, resume, CV.		1,2,3
writing, Precise writing, Letter		
writing, resume, CV, Cover Letter	1.0	
Self-Management Skills  Describe and analyse about	seli-	1,2,3,
IV SWOT Analysis, Self-Regulation- Goal Setting, Personal hygiene  8 management skills.		4
Non-Verbal Communication-Science Describe, illustrate, explain a	about	
of Body Language Describe, inustrate, explain a non-verbal communication, t		
What is Non-Verbal Communication body language, importance a	• •	
and Body Language, Elements of impact of body language and		
Communication, types of body planning element and skills	appry	
V language, Importance and impact of 5		1,2,3
body language, types of		4,5
communication through body language, Introduction to Haptic,		
Introduction to kinesics, Introduction		
to Proxemics, Body Language Do's		
and Don'ts, Doubt Clearing Sessions		

T1: Barrett, Grant "Perfect English Grammar: The Indispensible Guide to Excellent Writingand Speaking" 2016

T2: McDowell, Gayle Laakmann "Cracking the Coding Interview" Indian Edition

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Demonstrate proficiency in writing structured paragraphs and formal applications.	7					
2	Learn the use of prepositions and convert sentences between active and passive voice.	7					
3	Identify and interpret various types of body language and their meanings.	7					
4	Initiate, participate in, and summarize group discussions effectively.	7					
5	Apply writing, grammar, non-verbal communication, and group discussion skills in real-world contexts.	7					

		SEMESTER – III								
Course Title		Basic Digital Literac			_	~	_	0.75		
Course code	24UCLD2001R	Total credits: 2	L	T	P 4	<u>S</u>	R	O/F	C 2	
Pre-requisite	Nil	Total hours: 60P Co-requisite								
Programme			ite   Nil Intensive Care Unit Technology							
Semester		mester of second ye								
Course	1. Students will be able							ftware a	nd	
Objectives	their uses.	·	•	•			ŕ			
	2. Students will be able to	use MS-Office suite	e for va	rious	s purp	oses.				
	3. Students will be able to	use the Internet effi	iciently	for r	equir	ed in	forma	tion as w	ell as	
	for digital financial tran	nsactions.								
CO1	Understanding of Compute	er Hardware, Softwa	are and	Com	puter	hand	ling.			
CO2	Apply MS-Office to solve	basic information M	<b>I</b> anager	nent	issues	S.				
CO3	Operate the Internet, socia	l media and e-comm	nerce sit	es ef	ficien	tly ar	nd ethi	ically.		
CO4	Analyse the cybercrimes o	n digital payments a	applicati	on.				-		
CO5	Explore the functionality a	and use of credit card	ds, debi	t card	ls, net	banl	cing, a	nd UPI.		
	Content		Contac	t	I	earn	ing O	utcome	KL	
Unit-No.			Hour				0			
I	Fundamentals of Computer Components of a Computer functions. Different Type and their applications.  Lab Experiment:  • Identify the Components and their Functions and Computers and their Applications and t	es of a Computer different types of plications. of various storage ious operating	7		_		syste	amental ms.	1,2	
П	Introduction to MS-Office of the MS-Office suite. Condocuments with MS-Wo Creating Presentations with PowerPoint., Creating Spr. MS-Excel.  Lab Experiment:  Demonstrate how a documents and formatted the comprehend of the compreh	ce: Components reating rd. th MS- eadsheets with  rument to be I in MS Word. ons for 3 days y marriage Processor. ae using MS- ne table with  ter Components such as Insert, a slides. ter Components such as	13	di M M	Describing the second s	nt oft	tool Offic		1,2,3	

Γ				
	• Creating the time table with MS-Excel.			
	• Creating the 10 student's Marksheet			
	include total, grade, percentage and			
	results using MS-Excel's formulas		Evaloin the immentance	
	Introduction to Internet & Cyber World:		Explain the importance and use of internet along	
	Introduction to Computer Networks and		with its adverse side.	
	Internet. World Wide Web, Websites and		will its adverse side.	
	Web portals, Web browsing. Web			
	Searching, Search engines, Introduction to			
	Google Search Engine; How to search			
	using Keywords, topics of Interest, etc.			
	Creation and use of Email Accounts.			
Ш	Cyber Crimes.	10		1 2 2
	Lab Experiments:			1,2,3
	Creating a professional Google			
	account and use various products of			
	Google like drive, photos. Study of			
	computer network and internet and demonstrate how to search			
	information using keywords in different search engines.			
	Introduction to social media:		Explain the power of	
	The Power of social media, Relevance of		social media their	
	social media in present scenario.		relevance and adverse	
	Creating accounts and using some		effects to over using it.	
	popular social media portals and Apps		crices to over using it.	
	like WhatsApp, Facebook, Twitter,			
	Instagram, and LinkedIn. Social Media			
	Etiquettes.			1,2,3,
IV	Lab Experiments:	15		4
	• Creating an account of some popular			
	social media portals and Apps like			
	LinkedIn, Facebook, Twitter, and			
	Instagram.			
	• Creating an accounts of digital			
	payment systems like credit			
	cards, debit cards, net banking			
	Introduction to Digital Payment Systems.		Illustrate the types of	
	Creating accounts and using Digital		digital payment and their	
	Payment Systems like Credit Cards, Debit		risks.	
	Cards, Net banking, UPI.			
	Lab Experiments:			
	• Create online Google form and learn how			
V	to	15		1,2,3,
,	• give online test.			4,5
	• Creating an account of Online Shopping			
	sites like Amazon, flipkart, eBay etc.			
	Understand the			
	• journey of customer to buy and sell on			
	online shopping sites.			
	omine bhopping blees.			

T1: Sinha Pradeep K. and Priti Sinha "Computer Fundamentals: Concepts Systems & Applications" 3rd Edition

T2: Goel A "Computer Fundamentals" 2010

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Understanding of Computer Hardware, Software and Computer handling.	2,7					
2	Apply MS-Office to solve basic information Management issues.	2,7					
3	Operate the Internet, social media and e-commerce sites efficiently and ethically.	2,7					
4	Analyse the cybercrimes on digital payments application.	2,7					
5	Explore the functionality and use of credit cards, debit cards, net banking, and UPI.	2,7					

	SEMESTER – III								
<b>Course Title</b>		Generic elective							
Course code	24BCICGE201	Total credits: 1	L	T	P	S	R	O/F	С
		Total hours: 15T	1	0	0	0	0	0	1
<b>Pre-requisite</b>	Nil	Co-requisite				ľ	Vil		
Programme	Bachelor	of Critical and Intensive Care	Uni	t Tec	hnolo	gy			
Semester		III semester of second ye	ar o	f the <b>j</b>	progr	amm	e		
Course	1. Equip studen	ts with a thorough understandin	g of	the co	urse 1	nateri	ial thro	ough enga	aging
Objectives	online content.								
	2. Provide hands-on experience through interactive exercises and real-world projects.								
	3. Promote effe	ctive communication and tear	nwoı	k thr	ough	onlin	e disc	ussions	and
	group activiti	es.							
CO1	Demonstrate stro	ong grasp of key principles and	theo	ries co	overe	l in th	e cou	rse.	
CO2	Apply learned	concepts to solve real-world	pro	blem	s thro	ough	practi	cal proje	ects
	and exercises.								
CO3	Analyze and ev	aluate information, improving	thei	r pro	blem-	solvir	ng and	decision	n-
	making abilities.								
CO4	Develop their id	eas clearly and effectively in bo	th w	ritten	and v	erbal	forms		
CO5	Demonstrating s	trong collaboration and teamwo	ork sl	cills.					

CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Demonstrate strong grasp of key principles and theories covered in the course.	7				
2	Apply learned concepts to solve real-world problems through practical projects and exercises.	7				
3	Analyze and evaluate information, improving their problem- solving and decision-making abilities.	7				
4	Develop their ideas clearly and effectively in both written and verbal forms.	7				
5	Demonstrating strong collaboration and teamwork skills.	7				

	SEMESTER – II	I						
<b>Course Title</b>	Extra-Curricular/Co-C		ar					
Course code	24UBEC2101/ Total credits: 1	L	L T P S R O/F					
	24UBCC2101 Total hours: 60S	0	0	0	4	0	0	1
Pre-requisite	Nil Co-requisite				N	Vil	l .	
Programme	Bachelor of Critical and Inte					ology	y	
Semester	III semester of 2nd ye							
Course	1. To develop skills and interests through part	ticipatio	on in	diver	se ext	racur	ricular aı	nd co-
Objectives	curricular activities.							
	2. To learn about teamwork and leadership a	oilities b	y en	gagin	g stuc	lents i	in club-le	ed
	events and competitions.							
	3. To provide opportunities for personal grow	vth and	pract	tical 1	earniı	ng bey	ond the	
	academic curriculum.							
CO1	Explore different activities organized by var	ious clu	bs, s	uch a	s dan	ce, m	usic,	
	photography, drama, and literacy.							
CO2	Develop confidence to participate in regu	lar clul	o act	ivitie	s, ind	cludin	g works	hops
	and competitions, according to individual inte				,		6	
CO3			ter-11	niver	sity s	tate a	and natio	nal
	Apply knowledge and skills to represent ADTU in inter-university, state, and national level competitions.							
CO4	Explore new platform to learn from invited experts in their respective fields.							
CO5	Evaluate overall growth alongside academic of	_		_	CCLIVE	ricia	J.	
Unit-No.						~ 04		1/1
Umt-No.	Content	Contac Hour	:	Lea	armm	g Out	come	KL
	ADTU encourages a range of activities		Tł	ne stu	dents	are		
	outside the regular curriculum intended to		en	coura	iged to	o part	icipate in	1
	meet learner's interest.			_		activit		
	These activities are aimed to develop the						titions as	1
	social and soft skills and promote a holistic					rest ar	nd	
	development of the learners.	_	ho	bbies				
	Keeping in mind the 360-degree learning							
	methodology the students are engaged in different activities headed under different							
	clubs viz. Dance, music, photography,							
	drama, literary etc.							1.0.0
I	The students are encouraged to participate	60						1,2,3
	in regular club activities, workshops,							4,5
	competitions as per their interest and							
	hobbies.							
	The student members of the club are trained							
	represent AdtU in various inter University							
	student and national level competitions							
	Renewed personalities are invited to							
	conduct workshops that benefit the members and students by giving them the							
	platform to learn from experts in the							
	respective fields.							
	respective fields.	L						L

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Explore different activities organized by various clubs, such as dance, music, photography, drama, and literacy.	7					
2	Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests.	7					
3	Apply knowledge and skills to represent ADTU in inter- university, state, and national level competitions.	7					
4	Explore new platform to learn from invited experts in their respective fields.	7					
5	Evaluate overall growth alongside academic development.	7					

	SEMESTER – IV														
Course Ti			Cardiovascular		ologic										
Course co	de	24BCIC2201R	<b>Total credits: 5</b>		L	T	P	S	R	O/F	C				
<b>D</b> •	• .	N 701	Total hours: 45		3	0	4	0	0	0	5				
Pre-requi		Nil	Co-requisit	te	C-	TT	. 4 Tr -	Nil							
Programm Semester	ne	Bacner	or of Critical and IV semester of						ogy						
Course		1. Develop skills to a		-					rolog	iool					
Objective	·C	emergencies.	issess patients an	id identify	Carun	ovasci	iiai ai	ia neu	Tolog	icai					
Objective	.5	2. To master the te	echniques used	for mana	oino	stroke	es an	d seiz	zures	inclu	dino				
						Stroke	25 <b>u</b> 11	G 5012	zares,	mera	amg				
		•	thrombolytic therapy and airway management.  3. To operate in emergency situations with resuscitative knowledge and save lives.												
CO1			Develop fundamental knowledge of the human heart and the circulatory system.												
CO2		Demonstrate skills an													
CO3		Apply acquired skills					s.								
CO4		Develop comprehens													
CO5		Illustrate the ability			•	of ne	urolo	gic er	nerge	ncies,					
		including seizures, str	okes, and other o												
Unit-No.		Content		Contact		Lea	rnin	g Out	come		KL				
		1		Hour	ъ.		1 ,	, 1	, .	1					
		diovascular System			cuss a										
I	Rev	riew of anatomy and pl	iysiology			ictures		-	_						
				7	fun	ction	of ca	ardiova	ascula	r	1,2				
					system.										
	Car	diovascular System A	Assessment and		Exp	plain a	bout of	differe	ent dis	seases					
	mar	nagement of		rela	ated to	cardi	ovascı	ılar sy	stem						
	• C	oronary artery disease		inc	luding	its as	sessm	ent ai	nd						
	• A	cute myocardial infrac		mai	nagem	ent.									
п		ongestive heart failure													
11		ardiac tamponade	10						1,2,3						
		•													
		ardiogenic shock													
		ortic aneurysm													
		ypertensive emergenci													
	ECC	$\mathbf{\tilde{J}}$				strate									
	• E0	CG and arrhythmias			_	cemen		_		•					
	• 12	2 lead ECGs			of o	deliver	ing B	LS an	d AC	LS					
	• Ba	asic and advanced card	liac life support		also	o using	g defil	orillato	or.						
III	• Ca	ardio pulmonary resuso	citation (CPR)								1,2,3				
		efibrillation	` ,	10							, ,-				
		ardio version													
		ranscutaneous cardiac													
		eview of pharmacology	7												
		vous system –	. 1			cuss				•	1.0.0				
IV	Rev	iew of anatomy and ph	ysiology	8	and	l phys	siolog	ic fui	nction	of	1,2,3,				
				nervous system.						4					
		rological emergencie	s Assessment		Dis	cuss a	bout	differe	ent						
		management of			neu	ırologi	cal er	nerge	ncies	and	1,2,3,				
V	• St	roke		10						4,5					
	• TIA			imi	nediat	e mar	nagem	ent.		.,5					
	• A	ltered Mental Status Co	oma, etc.												

Practical	<ol> <li>ECG lead placement</li> <li>ECG rhythm determination</li> <li>Performing CPR</li> <li>Use of defibrillator</li> <li>Identification and management of stroke.</li> </ol>	60		1,2,3,
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T1: Nancy Caroline "Textbook of emergency care in the Streets"  $7^{th}$  Edition

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Develop fundamental knowledge of the human heart and the circulatory system.	1,8					
2	Demonstrate skills and techniques to assess and manage any cardiac emergencies.	1,2,3,4,5					
3	Apply acquired skills to perform ECG and identify anomalies.	2,3,4,5					
4	Develop comprehensive knowledge on the nervous system.	1,8					
5	Illustrate the ability to evaluate and treat a variety of neurologic emergencies, including seizures, strokes, and other conditions.	2,3,7					

			SEMES	STER – IV	7						
Course T	itle		Me	echanical	Venti	ilation	1				
Course co	ode	24BCIC2202R	Total credits: 4		L	T	P	S	R	O/F	C
			Total hours: 45T+30P		3	0	2	0	0	0	4
Pre-requi	site	Nil	Co-requisite					Ni			
Program	me	Bac	chelor of Critical							7	
Semester			IV semester of	_		_	_				
Course		1. To understand								n.	
Objective	es	2. To learn effecti			-	_				11	
		3. To develop sk	-	and respor	naing	to cn	ange	s inpa	nent o	condition	and
CO1		ventilator parar Demonstrate know		ncont of vo	ntilat	ion					
CO2		Apply Knowledge		_			seess :	for any	, resni	ratory fa	ilure
CO3		Apply skills on usi						-	_	-	
CO4		Demonstrate skills									
CO5		Apply knowledge	_	_	_						
		during ventilation.		8							
Unit-No.		Conter	nt	Contact	Le	arnin	g Ou	tcome			KL
				Hour							
		sic concept:				_				epts of	
		lechanics of ventila			echani			ilatior	n and		
		Vork of breathing ressure – Peak, Plat	eau	7	ph	ysiolo	gy of	breatl	ning.		1,2
		tiation of ventilation		Di	scuss	the	cond	lition	where		
	• C	linical conditions le		ve	ntilato	r sup	port i	s nee	ded and		
		nechanical ventilation		ch	check all essential criteria's of				ria's of		
II		entilatory failure,	10	me	echani	cal ve	entilati	on.			
		xygenation failure trategies to improve						1,2,3			
		xygenation									
		erating modes of v	entilation:		Ill	ustrate	e di	fferent	mo	des of	
		Iodes of ventilation			ntilati		includ	_	invasive		
		nvasive modes- con	·		an	d non	-invas	sive m	odes.		
		ssisted, SIMV, APF apport	(V, Pressure								
III		Ion invasive modes	- CPAP &	10							1 2 2
		iPAP Ventilator set									1,2,3
		imings: inspiratory,									
		nspiratory hold PEE	P, F1O2								
		larm settings onitoring during ve	ntilation:		Ex	nlain	facto	rs that	are n	eeded to	
		ital signs, chest ins				_				chanical	
		uscultation	p CCCC CCC					ınd a	-	checking	
		• Arterial blood gases (ABG), Oxygen			ac	id-bas	e bala	ance.			
IV		nd end tidal		8							1,2,3,
		arbon dioxide moni	-								4
		luid electrolyte bala alance	ance Acid base								
	U	ururee									

v	<ul> <li>Weaning:</li> <li>Modes, weaning criteria's</li> <li>Care of ventilator</li> <li>Tubing and sterility complication during mechanical ventilation.</li> </ul>	10	Discuss about the weaning criteria's, maintaining sterility and care of ventilator.	1,2,3, 4,5
Practical	Basic knowledge of ICU: ICU setup, sterilization of ICU, nursing and general care and nutritional support in ICU. Concept on ICU Procedures: Oxygen delivery system, monitoring system, ABG analysis, suctioning of ventilated patient, Central line cannula and infusion pump. Operating Procedures of Ventilators: Ventilator setting, different modes of ventilation, alarm during ventilation, care during mechanical ventilation, pre- use check up of ventilator, defibrillator.	60		1,2,3,

- T1: Nancy Caroline's Emergency Care in the Streets, Andrew N.Pollak, MD, FAAOS, 7th Edition (1970)
- T2: Essential of Mechanical Ventilation, DEAN R. HESS ROBERT M. KACMAREK 3rd Edition

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Demonstrate knowledge on basic concept of ventilation.	1,8				
2	Apply Knowledge to initiate mechanical ventilation and assess for any respiratory failure.	1,2,3,4				
3	Apply skills on using various modes of ventilation and the timings to be initiated with.	3,4				
4	Demonstrate skills on monitoring of patient during ventilation and everyday checklist.	2,3				
5	Apply knowledge on various weaning criteria and management of complications during ventilation.	1,2,3				

			SEMESTER – I	IV									
Course	Title		Micro	biology	7								
Course	code		Total credits: 2	L	T	P	S	R	O/F	C			
			Total hours: 30T	2	0	0	0	0	0	2			
Pre-req		Nil	Co-requisite					Vil					
Programme Bachelor of Critical and Intensive Care Unit Technology						y							
Semeste	r		mester of second	-					1.1.1.1.				
Course		-	1. The study of microbes helps us to understand our world and our place within it. 2. It gives us insights into the complexity of nature and society, which in turn provide										
Objectives		· ·				•			•	ide			
		much different health, environmental, social, cultural, industrial and economic benefits.											
		3. students learn about the	roles microorgani	isms nl:	av in	humai	n hea	lth and	disease				
CO	1	Develop comprehensive l			-								
CO	•	transmission.	ano wieage on the	0 011101	0111		3 <b>0</b> 5 <b>u</b>		, in out				
CO	2	Understand the significance	e of infection con	trol in I	CU.								
CO.			Classify different types of infections including nosocomial and tropical infections.										
CO	4	Understand the growth ar		-			_			for			
		diagnostic tests.											
CO	5	Demonstrate the preparati	on of examination	ion slides and uses of laboratory ins			ry instru	ments.					
Unit-		Content								KL			
No.				Hour									
		oduction and spread of Info			Describ		-						
	_	Agents causing infection – Bacteria, virus,				_			agents				
I		fungus. Sources				ncludi	-		rces	1,2			
						and transmission.							
		ansmission of infection											
		o-hazardous materials and handling.			т	انسممنا		atmata	and				
		ction control: portance of infection in ICU				Describe, illustrate and explain the significance							
		read of infection				_		-	l along				
	1	eaning & methods of sterilization	etion of			vith th			i uiong				
		truments	ition of			responsibilities of							
II		migation of ICU		10		_			in the	1,2,3			
		giene standards of ICU			I	CU.							
		sposal of infections waste											
		veillance											
	• Qu	ality control and role of hea	lth care worker										
		ific infections:			I	Describ	e, illı	ıstrate	and				
	• No	socomial Infection - Typ	es and		6	explain	the c	liffere	nt types				
Ш	_	prevention			(	of nosc	comi	al infe	ctions.	1,2,3			
		HIV – AID Trapical infactions Totalus											
		Tropical infections – Tetanus, Malaria.											
		cal Microbiology:				Describ	e, illi	ıstrate	and				
	• Gro	Growth of microbes				explain							
IV		llection and transport of clin		8		control	-			1,2,3,			
		Iethods in Diagnostic microbiology			I	nicrob	es alc	ng wi	th the	4			
	• Sei	ological and Skin test			I	atholo	gical	tests.					

	Fundamental of laboratory Technique:		Describe, illustrate and	
	Introduction to principle of different advance		explain the principles of	
₹7	laboratory instruments and uses.	10	laboratory instruments	1,2,3,
V	• Inoculation of culture media and preparation	10	including their uses and	4,5
	and examination of slide.		procedure for preparation	9-
			of examination slides.	

**T1:** Nd Medical Parasitology book by S Arora

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Develop comprehensive knowledge on the different microbes and their mode of transmission.	1					
2	Understand the significance of infection control in ICU.	2					
3	Classify different types of infections including nosocomial and tropical infections.	1					
4	Understand the growth and control of microbes as well as specimen collection for diagnostic tests.	2					
5	Demonstrate the preparation of examination slides and uses of laboratory instruments.	3					

			SEMEST	ER – IV								
Course T	itle			Pathology	y							
Course co	ode	24BCIC2204R	Total credits: 2		L	T	P	S	R	O/F		C
			Total hours: 301		2	0	0	0	0	0		2
Pre-requi	isite	Nil Co-requisite Nil										
Programi	me	Bachelor of Critical and Intensive Care Unit Technology										
Semester			IV semester of se	econd year	of th	e prog	gram	me				
Course		1.To understand the	concept of cell inj	jury, the cha	ange j	produ	ces tl	nereb	y, in	the dif	fere	ent
Objective	es	tissues and organs	<b>5.</b>									
		2. The body capacity	for healing, under	rstand the et	tiopa	thoger	nesis	, the	patho	logical	l	
		effects,										
		3. Clinical pathologi										
		-	of neoplasia with r	-	_				icrosc	copic fo	eatu	ires,
			gnosis in different									
CO1		Describe the pathopl		_								
CO2		Identify the various		_		sses, a	is we	ell as	the fa	actors 1	hat	
		contribute to both ac				1	•	1.	1	1	• . •	.1 .
CO3		Explain fundamenta	~	e different	nemo	odynai	mic (	11SOr	iers a	liong v	vith	their
		causes and treatment		ovith the -1	oca:t	iosti = :	2 0 == 1	1	marr	10tres	o.f	
CO4		Identify carcinogeni	ic agents along	with the Ci	assii	icatioi	n and	ı no	menc	iature	01	
			tumors.  Classify various immune system defenses and how immune system disorders can									
CO5			result in disease.							l		
		Conten	<u> </u>	Contact	t Learning Outcome			ne	1	KL		
Unit-No.		Conten	•	Hour	•					_		
	Intr	oduction to Patholog	y:		Γ	Descril	be, cl	assif	y and	]		
		Cellular Adaptation, C				xplain			-			
		eath	en mjury und		n	nechai	nism	of c	ell inj	ury.		
		Cellular adaptation – A	Atrophy									
_		Iypertrophy, Hyperpla		_								
1		plasia	, <b></b>	7								
	· ·	Causes and mechanism	anism of cell injury					]	1,2			
		Classification of cell in										
		leversible and irrever	• •									
		lealing and factors										
		ammation:				Classif	y, id	entify	and			
	• 0	General features of inf	lammation		e	xplain	the	types	of			
II	• (	Classification-Acute a	nd chronic	10	i	nflamı	matic	n.			1	,2,3
		nflammation										
	• (	Chemical mediators of	inflammation									
		emodynamic Disorder				Descri			ate ar	nd		
III		Iyperaemia, Ischemia		10		explai			dicar	dora	1	22
		edema,Haemorrhage, mbolism and infraction				naemo along	-				1,2,3	
		oplasia:	on, shock.			Descri						
		opiasia. menclature, carcinoge	enic agents.			explai			iy and	ı		
IV		mours and Tumours g		8		_			of ti	ımors	1.	,2,3,
				0	1 -	nclud	-				-,	4
						agents	•		- 0011	-		
	1					0203						

	Immunity Disorders:		Describe, illustrate and	
	General features of immune system		explain the features of	
v	• Disorders of Immune system		disorders in the immune	1,2,3,
·	Clinical Pathology:	10	system including the	4,5
	• Routine examination of Urine, CSF and		pathological tests to	1,5
	others body fluids.		examine body fluids.	

**Based on** Harsh Mohan **Textbook of patho**logy 8th edition

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Describe the pathophysiology of cellular adaptation and mechanism of cell injury.	1				
2	Identify the various types of inflammation, their processes, as well as the factors that contribute to both acute and chronic inflammation	1,2				
3	Explain fundamental knowledge on the different hemodynamic disorders along with their causes and treatment	1,7				
4	Identify carcinogenic agents along with the classification and nomenclature of tumors.	2,5,8				
5	Classify various immune system defenses and how immune system disorders can result in disease.	1,7,8				

	SEM	ESTER – IV											
Course T	itle	Palliative care	)										
Course co	ode 24BCIC2205R Tota	l credits: 3	L	T	P	;	S F	3 (	O/F	С			
	Tota	l hours: 45T	3	0	0	(	) (	)	0	3			
Pre-requi	site Nil	Nil Co-requisite Nil											
Program	me Bachelor of Critic	Bachelor of Critical and Intensive Care Unit Technology											
Semester	IV semester	of second year of	the prog	gran	nme	e							
Course	1. To provide a descriptive knowle	•											
Objective	-	-		ildre	en a	nd	thei	r fa	mili	es'			
		facing problems associated with life-threatening illness.											
	3.To become familiar with quality	improvement tool	s that su	ppoi	t ex	ce	llen	ce i	n pa	lliative			
001	care.	D 11''	1										
CO1	Discuss fundamental knowledge o								1				
CO2	Explain the importance of commun		ding the	ıaeı	11111	ca	tion	and	1				
CO3	management of the different barrie  Describe the evaluation and man		n notion	to or	od o	rot	000		ntad	with			
	the different drug interventions.	igement of pain if	ı panen	is al	iu E	501	acq	_[ ual	meu	willi			
CO4	Demonstrate skills to assess different	ent symptoms and	nanagen	nent	usi	no	pha	rm:	acolo	ogical			
004	and non-pharmacological interven		managen	110111	u _D I.		piiu		<b>uc</b> 010	greur			
CO5	Explain high ethical standard and		nal supp	ort v	vhil	le (	leali	ing	with				
	terminal and end of life phase.	1	11					U					
Unit-No.	Content	<b>Contact Hour</b>	Learni	ing (	Out	co	me			KL			
	Introduction to Palliative Care:		Descri	be, c	lass	sif	v an	d					
	• History of Palliative Care		explain to palliative care.					<b>.</b>					
I	Objective	7			•					1,2			
	• Purpose									-,-			
	• Importance												
	Communication Skills:		explair	ı the	im	po	rtan						
	• Importance of Communication Skills		and ba			_			on				
	Barriers to effective Communication		commi	ınica	atio	n s	kills	s an	ıd				
II	• Steps for effective Communication	10	Manag	eme	nt o	of A	∖ng∈	er ai	nd	1,2,3			
	Management of Anger and Denial in		Denial	in P	atie	ent	witl	h					
	Patient with terminal illnesses		terminal illnesses										
	Assessment and Management if Pain:		Descri	be, i	llus	tra	te aı	nd					
	• Definition of pain		explair	ı var	iou	S							
	• Evaluation of pain		assessi	nent	and	d							
	• Assessment & Management		manag	eme	nt o	of p	ain.						
	• Drugs from the WHO Analgesic												
	Ladder												
	• Recommendations for safe												
III	prescription of NSAIDs	10								1,2,3			
	• Management of Neuropathic Pain												
	• Steps for calculating the dose of oral												
	morphine												
	• Fentanyl Citrate												
	• Ways of improving effectiveness of												
	the WHO Analgesic Ladder												
	Management of opioid side effects												

	<ul> <li>Signs of overdose with oral opioids</li> <li>Interventional Techniques for management of pain</li> </ul>			
IV	<ul> <li>Symptom Assessment &amp; Management</li> <li>Principles of symptom assessment &amp; management</li> <li>Pharmacological Management of:         <ul> <li>Dyspnoea, Constipation, Diarrhoea,</li> <li>Nausea and vomiting, Nutrition and</li> <li>Hydration, Anorexia, Anxiety and</li> <li>agitation, Malignant Wounds, Non-pharmacological management</li> </ul> </li> </ul>	8	Describe, classify and explain the pathophysiology, Assessment and management of principle symptoms.	1,2,3,
V	Optimization of Care:  • Quality of Care  • Essential Care  • Anticipatory prescription  • The terminal Phase  • Dying Phase  • Ethic Based Decision Making	10	Describe, illustrate and explain the optimization of care.	1,2,3, 4,5

T1: "An Indian Primer of Palliative Care" by M.R. Rajagopal, Vallath Nandini, et al.

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Discuss fundamental knowledge on Palliative care and its	1				
1	importance.	1				
2	Explain the importance of communication skills including the	1,2				
<u> </u>	identification and management of the different barriers.	1,2				
3	Describe the evaluation and management of pain in patients and get	1,7				
3	acquainted with the different drug interventions.	1,7				
4	Demonstrate skills to assess different symptoms and management	2,5,8				
-	using pharmacological and non-pharmacological interventions.	2,3,6				
5	Explain high ethical standard and provide professional support	1,7,8				
3	while dealing with terminal and end of life phase.	1,7,0				

			SEMESTE	ER – IV								
Course T	itle		Introduction	to researc	h m	etho	dolog	y				
Course c	ode	24BCIC2206R	Total credits: 3	<u> </u>	L	T	P	S	R	O/F	C	
			Total hours: 45		3	0	0	0	0	0	3	
Pre-requ		Nil	Co-requisite Nil									
Program		Bachelor of Critical and Intensive Care Unit Technology  IV semester of 2nd year of the programme										
Semester									1			
Course Objective	OC	-	. To gain a comprehensive understanding of foundational research concepts,									
Objective	CS	including the research process, types of research, and ethical considerations.										
		techniques.	2. Acquire knowledge of various research designs, methodologies, and data collection techniques									
		-	. Develop knowledge about research ethics.									
CO1			Develop knowledge about research etnics.  Develop fundamental knowledge on the principles and types of research.									
CO2		•	Develop comprehensive understanding on research design.									
CO3		Acquire basic knowledg	ge on the signific	ance and c	ond	luctio	n of l	iterat	ure re	view.		
CO4		Classify various types o										
CO5	1	Understand the differen	t types of researc								1	
Unit-No.		Content		Contact		]	Leari	ing (	Outco	ome	KL	
_	Inter	oduction to research		Hour		Vnor	rilada	a aha		noutonoo		
		refinition of research					ourpos			portance arch.		
			and purpose of research			•	•					
		ypes of research (basic, a		7					1,2			
		uantitative, qualitative, e										
	_	esearch process overviev										
	Res	earch design								od of		
		ormulating research que	stions and			_	ning			and		
		ypotheses			meth	od of	appr	oach.				
П		ariables and operational		10							1,2,3	
		xperimental, correlationa escriptive research desig										
		hoosing an appropriate r										
		erature review	escuren design			Knov	vledg	e abo	ut dif	ferent		
		onducting a literature se	arch				of re					
		valuating and synthesizi				_						
Ш	li	terature		10							1,2,3	
	• Ic	lentifying research gaps										
		nportance of literature re	view in									
		esearch							0.110			
		a collection methods						_		ferent ection		
		urveys/questionnaires nterviews					oas o contin					
		nterviews Observations				and C	onull	umg	siau y	•	122	
IV		xperiments		8							1,2,3,	
		ase studies										
		econdary data analysis										
		ampling techniques										

	Research ethics		Knowledge about different	
	Ethical considerations in research		ethical considerations to be	
	Informed consent		made during research.	1 2 2
V	Confidentiality and anonymity	10		1,2,3, 4,5
	• Institutional review boards (IRBs)			4,3
	Avoiding plagiarism and other forms			
	of academic misconduct			

T1: Research methodology by Vivek Singh

T2: Fundamental of research methodology by Kitab Mahal

#### **REFERENCE BOOKS:**

R1: Research methods the basic by Nichols walliman

R2: Research methodology methods and techniques by C.R. Kothari

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Develop fundamental knowledge on the principles and types of research.	3,6,7,8				
2	Develop comprehensive understanding on research design.	3,6,7,8				
3	Acquire basic knowledge on the significance and conduction of literature review.	6,7,8				
4	Classify various types of data collection methods and techniques.	3,5,6,7,8				
5	Understand the different types of research ethics along with plagiarism.	3,6,7,8				

	SEMESTER – IV											
Course '	Title		В	Basic lifesav	ing s	skills						
Course	code	24UULS2201R	Total credits	: 1	L	T	P	S	R	O/F		C
			Total hours:	30P	0	0	2	0	0	0		1
Pre-requ	uisite	Nil	Co-requi	uisite Nil								
Progran	nme	Bachelor of Critical and Intensive Care Unit Technology										
Semester IV semester of 2nd year of the programme												
Course		1. To learn and demonstrate essential Basic Life Support (BLS) techniques for assisting										
Objectiv	ves	in medical emergencies before professional help arrives.										
		2. To enhance communication, teamwork, and conflict resolution skills to improve										
		personal and prof										
		3. To Understand the		_					_	e, and o	class	sify
		common medical	emergencies to	o prioritize	patie	nt care	effe	ctivel	y.			
CO	1	Demonstrate knowle	-	o perform (	CPR	use ar	ı AEI	O, an	d resp	ond to	cho	king
		in adults and children										
CO2		Understand the signif									•	
CO	3	Apply knowledge and	d skill about pr	e-hospital c	are a	nd ma	nager	nent	of trau	ıma		
		emergencies.										
CO ₂		Understand the princi						ealth	care s	ettings.		
CO	5	Identify and manage	common medic	cal emerger	icy co	onditio	ns.					
Unit-No.		Content		Contact		L	earni	ng O	utcom	ie	ŀ	KL
				Hour								
		c Life Support (BLS	)							sic life		
		roduction of BLS						out t		ain of		
		ain of survival				surviva	-			fferent		
Ι		BCs Assessment		7	8	assessi	nent 1	techn	iques.		]	1,2
		R and Ventilation										
		chnique										
		ED - Choking for adult	and children			mı ,	, 1.	CC				
		skills				Illustra						
		roduction mmunications Skills				commu situatio						
II		uational Skills		10		includi					1,	,2,3
		am Work		10	1	inciudi	ing te	amw	JIK.			
		her Soft Skills										
		ıma emergencies			1	Explai	ne	abou	t di	fferent		
		troduction				trauma			encies	and		
		riorities of Initial appr	oach in pre-					_		rauma		
		ospital care	ouen in pre			emerge			·5····5 ·	ruumu		
		cene safety						•				
		rimary assessment										
III e) B		leeding control		10							1	2.2
		elmet removal		10							1,	,2,3
	g) Ca	are of amputated body	part part									
	_	trication of victims a	-									
		ansfer										
		ervical spine stabilizat										
		ervical collar applicati										
	k) - S	Splinting of broken Li	mbs									

	Triage system		Illustrates the triage system	
	Introduction		and explains about multiple	
IV	Flow chart approach of Triage	8	causality operations.	
1 1 1	Triage of Multiple Casualties in Pre-	8		1,2,3,
	Hospital setting			4
	- Triage of Single casualty			·
	Medical emergencies Introduction		Describes different types of	
	Victim centred approach in		medical emergencies and its	
	medical emergency		management.	
	Management of :-			
v	a) Seizures			
V	b) heart attack	10		
	c) asthma	10		
	d) diabetic emergencies			1,2,3,
	e) emergency childbirth			4,5
	f) stroke recovery position			

- T1: Nancy Caroline'S Emergency Care in the streets Seventh edition by Jones and Bartlett
- T2: First Aid book by LC Gupta
- T3: Advance Cardiovascular life support and Basic life support provider manual @ American Heart Association(AHA).

	CO PO Mapping					
SN	Course Outcome (CO)	<b>Mapped Program Outcome</b>				
1	Demonstrate knowledge and skill to perform CPR use an AED,	2,3,4				
1	and respond to choking in adults and children.	2,3,4				
2	Understand the significance of communication and teamwork in	2,5,7				
2	various situations.	2,5,1				
3	Apply knowledge and skill about pre-hospital care and	2				
3	management of trauma emergencies.	2				
4	Understand the principles and purpose of the Triage system in	2,3,4,7				
_	healthcare settings.	2,3,4,7				
5	Identify and manage common medical emergency conditions.	2				

Course Title Employability skills for personality developed Course code 24UBPD2201R Total credits: 1 L T P									
Course code 24UBPD2201R Total credits: 1 L T P	pment								
	S R O/F	C							
Total hours: 30   0   0   2		1							
Pre-requisite Nil Co-requisite	Nil								
	Bachelor of Critical and Intensive Care Unit Technology								
	IV semester of 2nd year of the programme								
	1. To teach students the essential elements of public speaking and techniques to								
	overcome the fear of speaking in public.								
2. To enhance students' ability to effectively use non-verbal cues public speech.	s when delivering a								
3. To guide students through the process of creating, finalizing,	and corponing a								
professional resume.	and screening a								
4. To familiarize students with different types of interviews, incl	luding telephonic, virtu	บล1.							
and face-to-face formats.	roung terepriorite, virte	,							
5. To prepare students to answer common interview quest	tions confidently and	d							
understand appropriate dress code ethics.	ř								
CO1 Identify and effectively utilize key elements of public speaking v	while overcoming								
associated fears.									
-	Demonstrate the ability to use non-verbal cues to enhance their public speeches.								
	Produce and submit a polished, professional resume suitable for job applications.								
1.2	Understand different interview types, including telephonic, virtual, and face-to-face.								
	Learn to answer common interview questions and adhere to appropriate dress code ethics.								
Unit- Content Contact Learni	ing/lutoomo   K								
	ing Outcome K	KL							
No. Hour		KL							
No. Hour Presentation Skills Knowledge a	about different	KL							
No. Hour  Presentation Skills  Introduction  Knowledge a skills needed	about different I to do								
No. Hour  Presentation Skills Introduction  I Essential characteristics of a good  Hour  Knowledge a skills needed presentation.	about different I to do	1,2							
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Presentation  Hour  Knowledge a skills needed presentation.	about different I to do								
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Preparation of a good presentation  Hour  Knowledge a skills needed presentation.	about different I to do								
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Preparation of a good presentation  Public Skills  Hour  Knowledge a skills needed presentation.	about different I to do  I to do  I to do to								
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Preparation of a good presentation  Public Skills  Fear of Public Speaking  Hour  Knowledge a skills needed presentation  6  Presentation  Gain confider speaking, shown	about different I to do								
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Preparation of a good presentation  Public Skills  Fear of Public Speaking  Understanding and Overcoming Fear of  Phour  Knowledge a skills needed presentation.  6  Presentation.  Gain confide speaking, shown	about different I to do  I to do  I to do to								
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Preparation of a good presentation  Public Skills  Fear of Public Speaking  Understanding and Overcoming Fear of Public Speaking  Public Speaking	about different I to do  I to do  I to do to								
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Preparation of a good presentation  Public Skills  Fear of Public Speaking  Understanding and Overcoming Fear of Public Speaking  Confidence and Control  Foundation  Knowledge as skills needed presentation.  Gain confidence and Control	about different I to do  I to do  I to do to								
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Preparation of a good presentation  Public Skills  Fear of Public Speaking  Understanding and Overcoming Fear of Public Speaking  Confidence and Control  Physiology and Stress- Control/Process  Knowledge a skills needed presentation.  Gain confide speaking, shown and control  Public Speaking  Confidence and Control  Physiology and Stress- Control/Process	about different I to do  I to do  I to do to								
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Preparation of a good presentation  Public Skills  Fear of Public Speaking  Understanding and Overcoming Fear of Public Speaking  Confidence and Control  Physiology and Stress- Control/Process  Tips for Presentations and Public  Knowledge a skills needed presentation.  Gain confidence appresentation	about different I to do I ence on public ow leadership.								
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Preparation of a good presentation  Public Skills  Fear of Public Speaking  Understanding and Overcoming Fear of Public Speaking  Confidence and Control  Physiology and Stress- Control/Process  Tips for Presentations and Public  Speaking,  Speaking,  6  Knowledge a skills needed presentation.  Gain confidence speaking speaking, shows the speaking of the speaking of the speaking of the speaking.	about different I to do I ence on public ow leadership.	1,2							
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Preparation of a good presentation  Public Skills  Fear of Public Speaking  Understanding and Overcoming Fear of Public Speaking  Confidence and Control  Physiology and Stress- Control/Process  Tips for Presentations and Public  Knowledge a skills needed presentation.  Gain confidence appresentation	about different I to do I ence on public ow leadership.	1,2							
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Preparation of a good presentation  Public Skills  Fear of Public Speaking  Understanding and Overcoming Fear of Public Speaking  Confidence and Control  Physiology and Stress- Control/Process  Tips for Presentations and Public  Speaking,  Tips for Using Visual Aids in	about different I to do I ence on public ow leadership.	1,2							
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Preparation of a good presentation  Public Skills  Fear of Public Speaking  Understanding and Overcoming Fear of Public Speaking  Confidence and Control  Physiology and Stress- Control/Process  Tips for Presentations and Public Speaking,  Tips for Using Visual Aids in Presentations,  Knowledge a skills needed presentation.  Gain confidence and confidence appearing speaking, shows the strength of the skills of the skills needed presentation.  Gain confidence appearing speaking, shows the strength of the skills needed presentation.	about different I to do I ence on public ow leadership.	1,2							
No.  Presentation Skills  Introduction  Essential characteristics of a good presentation  Preparation of a good presentation  Public Skills  Fear of Public Speaking  Understanding and Overcoming Fear of Public Speaking  Confidence and Control  Physiology and Stress- Control/Process  Tips for Presentations and Public  Speaking,  Tips for Using Visual Aids in Presentations,  Process for Preparing and Creating	about different I to do I ence on public ow leadership.	1,2							
Presentation Skills Introduction I Essential characteristics of a good presentation Preparation of a good presentation  Public Skills Fear of Public Speaking Understanding and Overcoming Fear of Public Speaking Confidence and Control Physiology and Stress- Control/Process Tips for Presentations and Public Speaking, Tips for Using Visual Aids in Presentations, Process for Preparing and Creating Presentations  Knowledge a skills needed presentation.  Gain confide speaking, shows a speaking, shows a speaking, shows a speaking, shows a speaking speaking.  Gain confide speaking, shows a speaking speaking speaking speaking speaking.  Gain confide speaking speaking speaking speaking speaking speaking speaking.	about different I to do I ence on public ow leadership.	1,2							

Ш	Practical session on Resume, Curriculum Vitae, Writing cover letter &LinkedIn Profile Preparation, submission & screening of Resume  • Practical session on cover letter screening session • Creating profile in LinkedIn • How to utilize it	6	Knowledge on skills of writing professional letters.	1,2,3
IV	Leadership & Management Skills  Concepts of Leadership  Leadership Styles  Manager VS Leader  How to be an Effective Leader  Mock/Practice Session	6	Learn about different management skills and show leadership qualities.	1,2,3,
V	Interview Skills & Dress code Ethics  Types of interviews- telephonic, virtual & face to face  Online interview, personal interview  Panel interview,  Group interview,  JAM session,  Types of interview questions traditional/ common	6	Gain ethical understanding of dress code and different interview skills.	1,2,3,

T1: Barrett, Grant "Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speak" 2016

T2: McDowell, Gayle Laakmann "Cracking the Coding Interview" Indian Edition

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Identify and effectively utilize key elements of public speaking while overcoming associated fears.	6					
2	Demonstrate the ability to use non-verbal cues to enhance their public speeches.	6					
3	Produce and submit a polished, professional resume suitable for job applications.	6					
4	Understand different interview types, including telephonic, virtual, and face-to-face.	6					
5	Learn to answer common interview questions and adhere to appropriate dress code ethics.	6					

		SEMES	TER – IV								
Course Ti	tle	Perso	nal Financia	al Plannin	g						
Course co	de 24UUFL2201R		credits: 2		Ĺ	T	P	S	R	O/F	C
			hours:60P		0	0	4	0	0	0	2
Pre-requi			Co-requisite Nil								
Programm								olo	gy		
Semester			of 2nd year o					<u>c:</u>		11:4	
Course Objective	1. To create awareness amo education.	ong stude	nts about the	need for j	oos	sess	ing	ma	пста	u mera	acy
Objective		as a work	ring asset								
	_	tion of money as a working asset. e ability to make better financial decisions									
CO1	The students would be al				nce	e of	f fii	nanc	ial	Know	ledge
	and prepare financial plans			-							U
CO2	The students would be able	e to unde	rstand the ne	ed and va	rio	us l	cind	of	banl	king	
	institutions' instrument and	their util	lities								
CO3	The student would be able	to descril	be the import	ance of ir	sui	anc	e se	rvic	es a	as soci	al
	security measures.										
CO4	The student would be able to										
CO5	Students will learn how make informed financial de		s and compa	are diffe	ent	i in	ves	imei	nt c	ptions	s to
Unit-No.	Content	CISIOIIS.	Contact	Learnir	σ (	Dut	com				KL
CIIIt-140.	Content		Hour	Learnin	g	Jui	COII	ıc			KL
	Introduction:			Define	ina	nci	al li	tera	cy a	nd	
	Meaning, need and importance	e of					in p	erso	onal		
	Financial Literacy;			finance	ma	nag	eme	nt a	ınd		
	• Different components of Final	ncial		Identify		_					
	Literacy;			savings,							
I	• Prerequisites of financial litera	•	10	instituti		, an	d in	vesi	tmei	nt	1,2
_	• Savings– Meaning and Difference		10	avenues	•						1,2
	between savings and investme										
	• Types of Financial Institutions										
	the services provided- Bankin	g and									
	Non-Banking; • Different investment avenues.										
	Financial Planning	•		Explain	the	sic	mifi	can	ce o	f	
	Meaning, need and importance	e for		financia		_				1	
	financial planning,	7 101		achievii	_		_		oals	and	
	• Budgeting and its importance	in		understa	_			_			
	financial planning;			tool for	ma	nag	ing	inco	me	and	
	• Steps to involved in Financial			expense	S						
П	Planning Process;		10								1,2,3
	<ul> <li>Preparation of personal budget</li> </ul>	ts,									
	budget surplus and budget def	icit,									
	avenues for savings from surp	lus,									
	sources for meeting deficit.										
	• Informal Society funds and cro	owd									
	funding										

III	Banks & Post Office- As financial service provider:  • Meaning and evolution of money,  • Banks— meaning, types & functions; types of accounts;  • Formalities to open various accounts.  • Different types of Post Office saving schemes: Recurring deposit, savings, term deposit; NSC; Kisan Vikas Patra; Monthly Income scheme (MIS) Account,  • Public Provident Funds (PPF), Senior citizen savings scheme (SCSS), Sukanya Samriddhi Accounts,  • Indian Postal Order; International Money transfer service; Forex Services;  • Money remittance services; Jansuraksha Scheme	10	Define different types of banks, their functions, and account opening formalities and Understand services like international money transfer, forex, and insurance offered by banks and post offices	1,2,3
IV	<ul> <li>Insurance-As financial service provider:</li> <li>Different types of Risks and their Management, Diversification of risk;</li> <li>Meaning, need and importance of Insurance</li> <li>Pension and retirement policies;</li> <li>Post office life insurance schemes, Postal life insurance and rural postal life insurance.</li> </ul>	15	Identify types of insurance policies such as life insurance and retirement plans and learn about post office insurance schemes like Postal Life Insurance and Rural Postal Life Insurance.	1,2,3,
V	Transformations in Digital Money market:  • Various functions & innovative services of Banks; Mobile Banking, NEFT, IMPS, RTGS,  • Money transfer, Different types of cards-Debits & Credit, E-Banking, Unified payment interface (UPI),  • Credit Scoring- CIBIL, Digital Banking, crypto currency and related transactions,	15	Explore innovative banking services like mobile banking, NEFT, IMPS, RTGS, and digital wallets and understand digital transactions, security measures, and credit scoring systems like CIBIL.	1,2,3, 4,5

- T1: The Young Adult's Guide to Financial Success- HowTo Manage Your Money& Live Better On Less By Edward M. Wolpert
- T2: Financial Freedom with Financial Control by Jagmohan Singh Pen down Press

#### **REFERENCE BOOKS:**

- R1: The Richest Man in Babylon (Deluxe Hardbound Edition) by George S. Clason ixia Press Garden City, New York, Ships from and sold by MG BOOKS.
- R2: Financial literacy to financial planning by Dr.Purvi Kothari and Mr. Keyur Mehta Nexus Publications Surat Gujarat

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	The students would be able to understand the importance of	<b>7.7.</b> 0							
1	financial Knowledge and prepare financial plans and budgets and plan and manage personal finances.	5,7,8							
2	The students would be able to understand the need and various	5,7,8							
	kind of banking institutions' instrument and their utilities	3,7,0							
3	The student would be able to describe the importance of	5,7,8							
	insurance services as social security measures.	3,7,0							
4	The student would be able to manage the money and debt more	5,7,8							
7	effectively	3,7,0							
5	Students will learn how to assess and compare different	5,7,8							
5	investment options to make informed financial decisions.	3,7,0							

	SEMESTER -VI								
<b>Course Title</b>	Generic Elective								
Course code	24BCICGE201	Total credits: 2	L T P S R O/F						
		Total hours: 30T	2	0	0	0	0	0	2
<b>Pre-requisite</b>	Nil	Co-requisite		•		N	Vil		•
Programme	Bachelor of Critica	l and Intensive Car	e Un	it Tec	chnol	ogy			
Semester	VI	semester of third ye	ar of	the p	rogra	amme	)		
Course	1. To equip with a thoroug	gh understanding of the	he co	urse r	nateri	al thro	ough e	ngaging o	online
Objectives	content.								
	2. To provide hands-on ex	perience through inte	racti	ve exe	ercises	and r	eal-w	orld proje	ects.
	3. To promote effective co	mmunication and tea	m wo	ork th	rough	onlin	e discı	ussions ar	nd
	group activities.								
CO1	Demonstrateastronggrasp	ofkeyprinciplesandth	eorie	scove	redint	hecou	ırse.		
CO2	Apply learned concepts to	solve real-world pro	blen	ns thro	ough p	oractic	cal pro	jects and	
	exercises.								
CO3	Analyze and evaluate info	ormation, improving t	heir j	proble	em-so	lving	and d	ecision-m	aking
	abilities.								
CO4	Developtheirideasclearlya	andeffectivelyinbothy	vritte	nandv	erbalf	orms.			
CO5	Demonstrating strong coll	laboration and team v	vork	skills.					

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Demonstrate a strong grasp of key principles and theories covered	7.0
1	in the course.	7,8
2	Apply learned concepts to solve real-world problems through	7.0
2	practical projects and exercises.	7,8
2	Analyze and evaluate information, improving their problem-	7.0
3	solving and decision-making abilities.	7,8
4	Develop their ideas clearly and effectively in both written and	7.9
4	verbal forms.	7,8
5	Demonstrating strong collaboration and team work skills.	7,8

	SEMESTER – IV									
<b>Course Title</b>		Indian heritage (Swayam/ NPTEL)								
Course code	24BCICIH201	Total credits: 1 L T P S R O/I							С	
		Total hours: 15T	1	0	0	0	0	0	1	
Pre-requisite	Nil	Co-requisite				Nil				
Programme	Bachelor o	of Critical and Inter	nsive (	Care <b>U</b>	Jnit T	echnol	logy			
Semester	IV	semester of 2nd year	ar of t	he pro	gramı	me				
Course	1. Equip students with a	thorough understar	nding	of the	cours	e mate	erial tl	hrough		
Objectives	engaging online content.									
	2. Provide hands-on expe	rience through intera	ctive 6	exercis	ses and	l real-v	vorld p	projects	<b>.</b>	
	3. Promote effective con	nmunication and tea	amwor	k thro	ugh o	nline	discus	sions a	ınd	
	group activities.									
CO1	Demonstrate strong grass	p of key principles ar	nd the	ories c	overed	l in the	cours	e.		
CO2	Apply learned concept	s to solve real-wo	rld pr	oblem	s thro	ough p	oractic	al pro	jects	
	and exercises.									
CO3	Analyze and evaluate in	nformation, improvi	ng the	ir pro	blem-s	solving	and	decisio	n-	
	making abilities.									
CO4	Develop their ideas clear	ly and effectively in	both v	vritten	and ve	erbal fo	orms.			
CO5	Demonstrating strong co	llaboration and team	work s	skills.						

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Demonstrate strong grasp of key principles and theories covered	7,8						
	in the course.							
2	Apply learned concepts to solve real-world problems through	7,8						
	practical projects and exercises.							
3	Analyze and evaluate information, improving their	7,8						
	problem-solving and decision-making abilities.							
4	Develop their ideas clearly and effectively in both written and	7,8						
	verbal forms.							
5	Demonstrating strong collaboration and teamwork skills.	7,8						

	SEMESTER – IV								
<b>Course Title</b>		Extra-curricular/Co-curricular							
Course code	24UBEC2201/	Total credits: 1	L T P S R O/F C						
	24UBCC2201	Total hours: 60S	0 0 0 4 0 0						1
Pre-requisite	Nil	Co-requisite				1	Vil		
Programme	Bachelor of Critical	and Intensive Car	e Un	it Tec	chnolo	ogy			
Semester	IV se	emester of second ye	ear o	f the	progr	amm	e		
Course	1. To develop writing abi	lities through variou	s exe	rcises	s and a	assign	ments	•	
Objectives	2. To develop innovative	thinking and creativ	e ide	as.					
	3. To develop skill and ki	nowledge to explore	diffe	rent a	ctiviti	es.			
CO1	Explore different activitie	es organized by vario	us cl	ubs, s	such a	s dano	ce, mu	ısic,	
	photography, drama, and	literacy							
CO2	Develop confidence to	participate in regul	ar c	lub a	ctiviti	es, ir	ncludi	ng works	shops
	and competitions, accordi	ng to individual inter	rests						
CO3	Apply knowledge and ski	lls to represent ADT	'U in	inter-	unive	rsity,	state,	and natio	nal
	level competitions.								
CO4	Explore new platform to l	earn from invited ex	perts	in the	eir res	pectiv	e field	ds.	
CO5	Evaluate overall growth a	longside academic d	evelo	pmer	ıt.				

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Explore different activities organized by various clubs, such as	5,7,8					
1	dance, music, photography, drama, and literacy						
	Develop confidence to participate in regular club activities,	5,7,8					
2	including workshops and competitions, according to						
	individual interests						
3	Apply knowledge and skills to represent ADTU in inter-	5,7,8					
3	university, state, and national level competitions.						
4	Explore new platform to learn from invited experts in their	5,7,8					
4	respective fields.						
5	Evaluate overall growth alongside academic development.	5,7,8					

			SEME	STER – V	7						
Course	e Title	Clinic	al Observat	ion I (ICU	proced	dure &	&Patio	ent car	<b>e</b> )		
Course	e code	24BCIC3101R	Total credi	ts: 4	L	T	P	S	R	O/F	С
			Total hours	s: 120P	0	0	8	0	0	0	4
Pre-re	quisite	Nil	Co-requ	uisite		I	11	Nil			
Progra	mme	Bachelo	or of Critica	l and Inter	nsive C	are U	Init Te	echnol	ogy		
Semest	ter		V semester o	_		_	_				
Course		1. Understand ICU setu									
Object	ives	2. Assist in common IC	U procedure	es and learn	patien	t care	protoc	cols in	cludin	ig hygi	iene
		and nutrition.						,			
		3. Develop emergency	-				nd leg	al cons	sidera	tions a	ind
C	<b>N</b> 1	learn teamwork and				_	T				
CO		Understand the roles of Develop fundamental si						oo sofo	hvai	ono	
	, 4	techniques.	ZIIIS IU IIIUIII	ioi vitai pai	ametel	s and	practi	ce sait	nygi	CHE	
CC	)3	Ability to perform full b	ody examin	ation and ir	nterpret	diffe	rential	diagn	osis.		
CC		Apply knowledge to as			_					nonito	r the
		side effects.	1			C	•				
CC	)5	Ability to empathize an	d communic	ate effectiv	ely wit	h patio	ent's f	amily.			
Unit-		Content		Contact	Lear	ning (	Outcor	ne			KL
No.				Hour							
	Introd	uction to the ICU Enviro	nment		Desci	ribe al	out IC	CU env	ironn	nent,	
		rview of the ICU setting			explain different roles and						
I		es and responsibilities of	24	responsibilities of ICU staff and						1,2	
	• Imp	ortance of teamwork in	the ICU		importance of teamwork in the						
	D ' - '	ICII D 1			ICU.	1.			4	1	
		ICU Procedures d hygiene and infection	control		_		out inf ifety p				
		tices	Connor		_		vital s		is and	L	
п	_	ent identification and saf	etv			ment'		,15113			
		ocols		24	- q-np						1,2,3
	•	nitoring vital signs (hear	rate, blood								, ,
	pres	sure, respiratory rate, te	mperature								
	Initial	Patient Assessment			Desci	ribe th	e asse	ssment	of		
		ducting a thorough phys	ical		physical examination.						
III		nination	24							1,2,3	
		aining and interpreting p									
hist		•									
<ul> <li>Developing differential diagnoses</li> <li>Pain and Sedation Management</li> <li>Describe and</li> </ul>				nd oss	acemor	nt of s	nain				
		nd Sedation Managemer essment of pain and agita			Describe and assessment of pain and sedation management.						
IV		of analgesics and sedati		24	and S	cuant	n mal	agenic	.11t.		1,2,3,
• •		nitoring for side effects		<b>4</b> 7							
		plications									
L	1	1			1						

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Understand the roles of ICU staffs and basic settings of ICU.	1						
2	Develop fundamental skills to monitor vital parameters and practice safe hygiene techniques.	1,2						
3	Ability to perform full body examination and interpret differential diagnosis.	2,3,4						
4	Apply knowledge to assess pain levels and skills to manage pain as well as monitor the side effects.	4,5						
5	Ability to empathize and communicate effectively with patient's family.	7,8						

			SEMES	TER – V							
				ation II (ICU monitoring Devices)							
Course code		24BCIC3102R	Total credits: 4	_	L	T	P	S	R	O/F	
		2-0-	Total hours: 120P		0	0	8	0	0	0	4
Pre-requisite		Nil	Co-requisite			·		Nil			
Progra		Bachelor of Critical and Intensive Care Unit Technology									
Semest		V semester of 3 rd year of the programme									
Course		1. Master the usage of ICU monitoring devices.									
Objectives		2. Interpret patient data accurately.									
001		3. Ensure patient safety through vigilant monitoring.									
CO1		Understand the purpose and importance of monitoring devices in the ICU.									
CO2		Apply knowledge and skills to monitor cardiac activity using ECG and Hemodynamic									
		status.  Demonstrate the machenism significance and types of different devices used to									
CO3 CO4 CO5		Demonstrate the mechanism, significance and types of different devices used to monitor respiration.									
		Demonstrate devices used to monitor Intracranial Pressure, interpret the results									
		and management of increased ICP.									
		Explain the procedures used to monitor hemodynamic status such as arterial line									
		catheter, central venous catheter and pulmonary artery catheter.									
Unit-		Content		Contact	Learn	ing C	utco	me			KL
No.				Hour							
	Introd	ntroduction to ICU Monitoring Devices			Define	and	expla	in the			
I		• Definition and importance.			import		of mo	onitori	ng		1,2
	• Goa	• Goals of monitoring critically ill patients			device	s.					
	Cardi	ac Monitoring Device		Descri	be the	Prin	ciples	of EC	CG,		
п	• Elec	ctrocardiogram (ECG		lead p	lacem	ent, v	vavefo	orm			
	Mo	nitoring: Principles of		interp	etatio	n, re	cogniz	ing			
	_	cement, waveform int		arrhytl	hmias						
		ognizing arrhythmias.	24								
		Hemodynamic Monitoring: Non-									1,2,3
		invasive and invasive techniques,									
		interpreting arterial pressure									
		waveforms, central venous pressure monitoring.									
		ratory Monitoring De	vices		Explai	n the	diffe	rent ty	nes of	f	
	_	Pulse Oximetry: Principles of pulse			respira			-	_		
ш		metry, proper sensor p		F							
		rpreting oxygen satur									
	• Cap	Capnography: Understanding end- tidal									
	CO	CO2 monitoring, capnograph waveform									
		<ul><li>interpretation, clinical significance.</li><li>Ventilator Monitors: Types of ventilators, modes of ventilation, setting and adjusting</li></ul>									
											1,2,3
		tilator parameters, mo									
	ven	tilator performance.									

IV	<ul> <li>Neurological Monitoring Devices</li> <li>Intracranial Pressure (ICP) Monitoring:         <ul> <li>Indications for ICP monitoring, types of</li> <li>ICP monitors, interpreting ICP readings,</li> <li>management of increased ICP.</li> </ul> </li> <li>Cerebral Oximetry: Understanding near-</li> </ul>	24	Describe the Neurological Monitoring Devices	1,2,3,
V	<ul> <li>infrared spectroscopy (NIRS), applications in monitoring cerebral oxygenation.</li> <li>Hemodynamic Monitoring Devices         Arterial Lines: Insertion techniques and indications for use, Complications and management.         </li> <li>Central Venous Catheters (CVC): Uses of CVC in monitoring central venous pressure (CVP), Insertion techniques and care.</li> <li>Pulmonary Artery Catheters (Swan-Ganz): Indications for use and insertion techniques, Monitoring pulmonary artery pressure and cardiac output, Clinical</li> </ul>	<i>2</i> 4	Describe and explain Hemodynamic Monitoring Devices	1,2,3, 4,5
	techniques, Monitoring pulmonary artery			

	CO PO Mapping				
SN	Course Outcome (CO)	<b>Mapped Program Outcome</b>			
1	Understand the purpose and importance of monitoring devices in	1			
	the ICU.				
2	Apply knowledge and skills to monitor cardiac activity using ECG	1,2			
	and Hemodynamic status.				
3	Demonstrate the mechanism, significance and types of different	2,3,4			
	devices used to monitor respiration.				
4	Demonstrate devices used to monitor Intracranial Pressure,	4,5			
	interpret the results and management of increased ICP.				
5	Explain the procedures used to monitor hemodynamic status	7,8			
	such as arterial line catheter, central venous catheter and				
	pulmonary artery catheter.				

			SEMESTER -	- <b>V</b>							
Course 7	Title	Clinica	l Observation I	II (I	CU c	are m	edica	tion)	)		
Course c	ode	24BCIC3103R	Total credits: 4	ļ.	L	T	P	S	R	O/F	C
			Total hours: 12	20P	0	0	8	0	0	0	4
Pre-requ	uisite	Nil	Co-requisit	te				N	il		
Progran	nme	Bachelor of	Critical and In	tensi	ive C	are U	nit T	echn	ology	7	
Semeste	r	V se	emester of 3 rd ye	ear o	f the	prog	ramn	ne			
Course		1. Understand the pharmacol	logy of ICU med	licati	ons.						
Objectiv	ves	2. Administer medications sa	afely and accurat	tely.							
		3. Monitor patients for drug	efficacy and adv	erse	effec	ts.					
CO	1	1	es of sedative an	d an	algesi	ics us	ed for	pain	mana	agemen	t in
		ICU.									
CO	2	Classify the different drugs u									
CO.		Identify the common antibio			_						
CO			<u> </u>			Texplain and describe Hemodynamic Support Medications  Explain about Anticoagulants and Thrombolytics					
CO	5	1	ptoms of electronic	rolyt	e iml	baland	ce in	the	body	along	with
	1	their management.				1					
Unit-		Content			tact	Lea	rning	Out	come		KL
No.				Hou	ır						
		tion and Pain Management					-				
		dative Medications: indicatio	•						geme	nt	
	effects, withdrawal management, potential					med	ıcatıo	n.			
I		mplications and monitoring f	or hypotension	2	4			Technology me  or pain managemen  rmalities. ble side effects. ation and dosing. In the body along assist Sedation Management ion.  and describe rnamic Support ions  and about common ibiotics	1,2		
		d bradycardia.									
		algesic Medications: indicat	-								
		nagement protocols, side e erance, and dependence.	errects,								
		odynamic Support Medication	ne			Evn	lain a	nd de	scrib	Δ	
		sopressors: indications, mecl				_					
		ration, and monitoring for eff	_				-		Бирр	,010	
II		verse effects.	cett veness and	2	4	1,100	nounc	7110			1,2,3
		otropes: indications for use, c	losing.								
		onitoring for effectiveness, ar	_								
		mon ICU Antibiotics:				Exp	lain		and		
	• Br	oad-spectrum antibiotics (e.g	., piperacillin-			_		out c	omm	on	
777	taz	obactam, meropenem): indic	ations and	2	4	ICU	antib	oiotic	S		1 2 2
III	dos	sing.		2	4						1,2,3
	• Mo	onitoring for antibiotic resista	ance and side								
	eff	ects.									
	Anti	coagulants and Thrombolytic	es			Exp	lain a	bout			
		ticoagulants: Heparin and lo				Anti	coag	ulant	and		
	we	ight heparin: indications, do	sing, and			Thro	ombo	lytics			
	mo	onitoring (aPTT, anti-Xa leve	els), Direct oral			Anti	coag	ulant	s: Hep	oarin	
IV		ticoagulants: uses in ICU sett	-	2	4					-	1,2,3,
		onitoring, Warfarin: role in IC	-	_	-	_					4
		R, and managing interactions	s.				-			-	
		rombolytics:									
		lications for thrombolytic the							icoagi	ulants:	
	use	ed: dosing and administration	l <b>.</b>			uses	in IC	U_			

	Electrolyte & Glucose Management:		Apply skills of Electrolyte	
	Common electrolyte imbalances in ICU		& Glucose Management:	
	patients (sodium, potassium, calcium,		Common electrolyte	
	magnesium, phosphate).		imbalances in ICU	
	Clinical implications and correction strategies.		patients (sodium,	100
V	Monitoring and managing complications of	24	potassium, calcium,	1,2,3,
	electrolyte imbalances.		magnesium, phosphate).	4,5
	Insulin protocols for hyperglycemia in ICU			
	patients.			
	Continuous glucose monitoring systems.			
	Preventing and managing hypoglycemia			

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Understand the different types of sedative and analgesics used for pain management in ICU.	1
2	Classify the different drugs used to manage hemodynamic abnormalities.	1,2
3	Identify the common antibiotics used in ICU including the possible side effects.	2,3,4
4	Classify anticoagulants and thrombolytics along with their indication and dosing.	4,5
5	Identify the signs and symptoms of electrolyte imbalance in the body along with their management.	7,8

		SEMESTER - V									
<b>Course Title</b>		MOOC	S								
Course code	24BCICMO301	Total credits: 1	L	T	P	S	R	O/F	C		
		Total hours: 15T	1	0	0	0	0	0	1		
<b>Pre-requisite</b>		Co-requisite				Nil					
Programme		of Critical and Intens					ogy				
Semester	V	semester of 3rd year	r of the programme								
Course	1. Equip students with a thorough understanding of the course material through										
Objectives	engaging online content.										
	2. Provide hands-on experience through interactive exercises and real-world projects.										
	3. Promote effective communication and teamwork through online discussions and group activities.										
CO1	Demonstrate strong grasp	of key principles and	theori	es cov	ered in	n the c	ourse				
CO2	Apply learned concepts	to solve real-world	prob	lems	throug	gh pra	actica	l proje	ects		
	and exercises.										
CO3	Analyze and evaluate in	formation, improving	their	proble	em-sol	lving	and d	lecision	n-		
	making abilities.										
CO4	Develop their ideas clearl	y and effectively in bo	th wri	tten ar	nd vert	oal for	ms.				
CO5	Demonstrating strong coll	laboration and teamwo	rk skil	lls.							

	CO PO Mapping	
SN	Course Outcome (CO)	<b>Mapped Program Outcome</b>
1	Demonstrate strong grasp of key principles and theories covered in the course.	7,8
2	Apply learned concepts to solve real-world problems through practical projects and exercises.	7,8
3	Analyze and evaluate information, improving their problem-solving and decision-making abilities.	7,8
4	Develop their ideas clearly and effectively in both written and verbal forms.	7,8
5	Demonstrating strong collaboration and teamwork skills.	7,8

		SEMESTER -	- <b>V</b>											
<b>Course Title</b>		Summer	Internsh	Internship										
Course code	24BCIC3105R	Total credits: 3	L	T	P	S	R	O/F	C					
		Total hours:	0	0	0	0	0	24	3					
<b>Pre-requisite</b>	Nil	Co-requisite		Nil										
Programme	В	achelor of Critical and In	tensive C	are Ur	nit Te	chnolo	gy							
Semester		V semester of 3rd year of the programme												
Course	1. To develop and enhance specific professional skills relevant to the intern's career path.													
Objectives	2. To gain a comnetwork.	prehensive understanding of	of the indu	stry an	ıd buil	d a pro	ofessio	onal						
	3. To identify a mentorship.	nd pursue personal and c	areer goa	ls thro	ough g	guided	refle	ction a	nd					
CO1	Understand and b	ecome familiar with the wo	ork enviro	nment.										
CO2	Understanding ar	d practicing workplace pro	fessionalis	sm.										
CO3	Develop specific	skills like communication,	teamwork	, or tec	chnica	l abilit	ies							
CO4	Develop a clear s	cope of career aspect.												
CO5	Develop practical	knowledge and skills for a	pplication	in rea	l time.									

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Understand and become familiar with the work environment.	2,5,6,7,8
2	Understanding and practicing workplace professionalism.	2,3,5,6,7,8
3	Develop specific skills like communication, teamwork, or	5,6,7,8
3	technical abilities	
4	Develop a clear scope of career aspect.	2,5,6,7,8
5	Develop practical knowledge and skills for application in real	1,2,3,5,6,7,8
5	time.	

	SEMESTER – V										
<b>Course Title</b>		Digital Tech	1								
Course code	24BCIC3106R	Total credits: 2	L	T	P	S	R	O/F	C		
		Total hours: 30T	2	0	0	0	0	0	2		
<b>Pre-requisite</b>		Co-requisite				Nil					
Programme	Bachel	or of Critical and Intensive				nolog	gy				
Semester	V semester of 3rd year of the programme										
Course	1. Equip students with a thorough understanding of the course material through										
Objectives	engaging online content.										
	2. Provide hands-on experience through interactive exercises and real-world projects.										
	3. Promote effective communication and teamwork through online discussions and group										
	activities.										
CO1	Demonstrate strong gr	asp of key principles and the	ories co	over	ed in t	the co	urse.				
CO2	Apply learned conce	pts to solve real-world p	roblems	s th	rough	n pra	ctical	proje	ects		
	and exercises.				Ü	•		1 5			
CO3	Analyze and evaluate	information, improving the	eir prob	olem	-solv	ing a	nd de	cision	-		
	making abilities.		•			J					
CO4	Develop their ideas cle	early and effectively in both	written	and	verba	l form	ns.				
CO5	Demonstrating strong	collaboration and teamwork	skills.								

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Demonstrate strong grasp of key principles and theories covered	7,8
	in the course.	
2	Apply learned concepts to solve real-world problems through	7,8
	practical projects and exercises.	
3	Analyze and evaluate information, improving their problem-	7,8
	solving and decision-making abilities.	
4	Develop their ideas clearly and effectively in both written and	7,8
	verbal forms.	
5	Demonstrating strong collaboration and teamwork skills.	7,8

		SEMESTER – V									
<b>Course Title</b>		Generic Elective	е								
Course code	24BCICGE301	Total credits: 2	L	T	P	S	R	O/F	C		
		Total hours: 30T	2	0	0	0	0	0	2		
Pre-requisite	Nil	Co-requisite			•	Nil					
Programme	Bachelo	r of Critical and Intensive C	are U	J <b>nit T</b>	echn	ology					
Semester	V semester of 3rd year of the programme										
Course	1. Equip students with a thorough understanding of the course material through										
Objectives	engaging online content.										
	2. Provide hands-on ex	perience through interactive ex	kercis	es and	d real-	world	l proj	ects.			
	3. Promote effective c group activities.	ommunication and teamwork	thro	ugh c	online	discu	issior	ns and			
CO1	Demonstrate strong gra	asp of key principles and theor	ries co	overed	l in th	e cou	rse.				
CO2	Apply learned conce	pts to solve real-world pro	blems	thro	ough	practi	ical 1	project	S		
CO2	and exercises.										
CO3	Analyze and evaluate	information, improving their	r proł	olem-	solvin	g and	dec	ision-	-		
CO3	making abilities.										
CO4	Develop their ideas cle	early and effectively in both wr	ritten	and v	erbal 1	forms	•				
CO5	Demonstrating strong	collaboration and teamwork sk	tills.								

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Demonstrate strong grasp of key principles and theories covered in the course.	7,8						
2	Apply learned concepts to solve real-world problems through practical projects and exercises.	7,8						
3	Analyze and evaluate information, improving their problem-solving and decision-making abilities.	7,8						
4	Develop their ideas clearly and effectively in both written and verbal forms.	7,8						
5	Demonstrating strong collaboration and teamwork skills.	7,8						

		SEMEST	TER – V	'I								
Course Ti	itle	Trauma I	Emergen	cies l	Manage	ment						
Course co	ode 24BCIC3201R	Total credits: 3		L	T	P	S	R	O/F	C		
		Total hours: 30T+	30P	2	0	2	0	0	0	3		
Pre-requi		Co-requisite					Nil					
Programm	ne I							ology				
Semester		VI semester of 3 rd year of the programme										
Course		•	_	-	Nil  Te Care Unit Technology  The programme  The programme  Typically involves teaching participant of traumatic injuries efficiently and ones, prioritizing interventions.  The ability to recognize and treatment outcomes.  The with the ability to recognize and treatment outcomes are related to the abdominal and ones of injuries related to  The ability to recognize and treatment of the abdominal and ones of injuries such as lightning strike of the abdominal and explain the mechanism of injury along with the types of trauma and trauma centers.  The ability to recognize and treatment of the abdominal and ones of injuries such as lightning strike ones of injuries and trauma centers.  The ability to recognize and treatment of injuries and treatment of the abdominal and ones of injuries and trauma centers.  The ability to recognize and treatment of injuries and treatment of injuries and trauma centers.  The ability to recognize and treatment of injuries and treatment of injuries and trauma centers.  The ability to recognize and treatment of injuries and treatment of injuries and treatment of injury along with the types of trauma and trauma centers.  The ability to recognize and treatment of injuries and its injuri							
Objective		ss, stabilize, and treat	patients	s with	trauma	atic in	juries e	fficier	ıtly and			
	effectively.											
					_		-	ventior	ıs.			
		g care within a team to										
CO1												
CO2			gy of the	skin	with th	e abil	ity to re	ecogni	ze and t	treat		
		tissue injuries.										
CO3			d manag	ge inj	uries re	elated	to the	abdon	ninal an	nd		
~~.		es including burns.										
CO4	_	-	assess a	and m	nanage	injuri	es rela	ted to				
	musculoskelet	•	11.00		2.1							
CO5		_	differer	it typ	es of 11	njuries	s such	as ligh	itning s	strike,		
	heat injury, etc	•	G 4	4								
Unit-No.	Con	tent	Conta Hou		L	earniı	ng Out	come		KL		
	Trauma systems a	nd mechanism of			Descr	ibe, ill	lustrate	and				
	injury:				explai	n the	mechar	nism o	f			
	<ul> <li>Energy</li> </ul>				Describe, illustrate and explain the mechanism of injury along with the types of trauma and trauma	es						
I	<ul> <li>Biomechanics and</li> </ul>	l			of trai	ıma aı	nd trauı	ma				
	<ul> <li>Kinematics</li> </ul>		6		center	S.				1,2		
	<ul> <li>Trauma centers</li> </ul>							aching partiefficiently are abdominal ated to as lightning tome e and anism of the types lima.				
	• Types of trauma											
	Soft Tissue Injury	and Bleeding			Descr	ibe, ill	lustrate	and				
	and Shock:				explai	n the	mechar	nism o	f			
	<ul> <li>Anatomy and phy</li> </ul>	siology of skin			soft ti	ssue ii	njuries	and its				
	• Pathophysiology	of shock			manag	gemen	t includ	ding				
	Assessment and m	nanagement of			bleedi	ng an	d shock	ζ.				
II	shock in ICU											
11	snock in ICU				1,2							
	<ul><li>Wound healing</li></ul>		6						1	1,2,3		
		n wounds	6						1	1,2,3		
	<ul> <li>Wound healing</li> </ul>	en wounds	6							1,2,3		
	<ul><li>Wound healing</li><li>Closed versus ope</li></ul>	en wounds	6						1	1,2,3		
	<ul><li>Wound healing</li><li>Closed versus ope</li></ul>	en wounds	6							1,2,3		

III	<ul> <li>Burns, Abdominal Injuries &amp; Thoracic Injuries:</li> <li>Review of anatomy and physiology and abdomen and thorax</li> <li>Pathophysiology of burns Assessment and management of burns</li> <li>Pathophysiology, assessment and management of abdominal injuries</li> <li>Pathophysiology Assessment &amp; Management of Thoracic</li> </ul>	6	Explain, identify and assess injuries related to the abdominal and thoracic cavity including burns.	1,2,3
IV	<ul> <li>Injuries</li> <li>Musculoskeletal injuries, Head and face and Spinal Injuries:</li> <li>Review of anatomy and physiology</li> <li>Assessment and management of head and facial injuries</li> <li>Assessment and management of spinal injuries</li> <li>Spinal immobilization techniques</li> </ul>	6	Describe, identify and demonstrate assessment of various musculoskeletal injuries along with techniques of spinal immobilization.	1,2,3,
V	<ul> <li>Environmental Emergencies:</li> <li>Heat Illness</li> <li>Cold Injuries</li> <li>Drowning</li> <li>Diving Injuries</li> <li>Altitude Illness</li> <li>Lightning Strike</li> <li>Bites &amp; Stings.</li> </ul>	6	Explain, assess and manage environmental emergencies such as heat cramps, cold injuries, altitude sickness, etc.	1,2,3, 4,5
Practical	1.diffrent types of haemorrhage management 2.dressing, bandaging 3.burn management 4.spinal immobilization techniques	30	Explain and demonstrate of haemorrhage management, different types of dressing, bandages and burn management.	1,2,3,

#### **TEXT BOOKS:**

T1: Nancy Caroline's emergency care in the streets 9th edition

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Determine the mechanism of injury and identify different trauma	1					
	centers.						
2	Describe the anatomy and physiology of the skin with the ability	1,2					
	to recognize and treat shock and soft tissue injuries.						
3	Discuss various skills to assess and manage injuries related to the	3,4					
	abdominal and thoracic cavities including burns.						
4	Develop knowledge and skills to assess and manage injuries	3,4					
	related to musculoskeletal system.						
5	Apply skills to assess and manage different types of injuries such	4,7&8					
	as lightning strike, heat injury, etc.						

	SEMESTER – VI										
Cours	se Title			edical an		rgical F	Emerge	ncies (	Care		
Cours	se code	24BCIC3202R	<b>Total credits: 3</b>		L	Т	P	S	R	O/F	С
			Total hours: 30T+	+30P	2	0	2	0	0	0	3
Pre-re	equisite	Nil	Co-requisite			l .		Nil	I	1	I
Progr	amme	В	achelor of Critical	l and In	tensiv	ve Care	Unit 7	Techno	ology		
Semes	ster		VI semester	r of 3 rd y	ear of	f the pr	ogram	me			
Cours	se	1. This course is	designed to assist s	tudents i	n dev	eloping	expert	ise and	l in de	pth	
Objec		-	in the field of mediastudents to develop		-				ention	in vari	ious
		conditions.									
		3. helps the stude	ent to develop a com	nprehens	ive kr	nowledg	ge in de	aling v	vith ps	ychiatı	ric
		emergencies.									
(	CO1	Develop funda	mental knowledge o	on the ne	rvous	system	along	with th	ne asse	essmen	t of
		neurologic exa									
C	CO2	Understand the	pathophysiology a	nd mana	geme	nt of ne	uromus	scular	disord	ers.	
C	CO3	Describe signs	and symptoms of co	ommon p	oisor	nings an	d its in	nmedia	ite mai	nageme	ent.
C	CO4	Explain the ass	essment and manag	gement of	f vario	ous obs	tetric ei	nergen	cies.		
C	CO5	Identify the sig	ns of behavioral em	ergencie	s and	manag	e accor	dingly	•		
Unit- No.		Conte	nt	Contac Hour		L	earnin	g Out	come		KL
I	<ul><li>Cere</li><li>CV.</li><li>Hae</li><li>Head</li></ul>	s System: brovascular disea A emorrhage, Embo I Injury rium, Persistent	6	Explain, identify and assess various neurologic disorders including their etiology and pathophysiology.				1,2			
	Brain     Com	n death a.	-								
П	• Myas	nuscular disease thenia Gravis nin Barre Syndron		6	n n	Explain, leuromu nyasthe parre syr	iscular nia gra	disorde vis and	ers suc		1,2,3
ш	Gener     Snake	non poisons cal supportive car bite		Explain, identify and manage various types of poisoning including snake bite, animal bite, insect bite, etc.							
IV	<ul> <li>Insect and animal bite – scorpion sting</li> <li>Obstetric Emergency:         <ul> <li>Complications of labour - Fetal distress, obstructed labour, reputed uterus</li> </ul> </li> <li>V Antepartum Hemorrhage         <ul> <li>Post partum Hemorrhage</li> <li>Preeclampsia, Eclampsia</li> <li>Ectopic pregnancy</li> <li>Puerperal sepsis</li> </ul> </li> <li>Explain, identify and assess various obstetric complications and emergencies.</li> <li>6</li> </ul>				ons	1,2,3, 4					

	Behavioural Emergencies:		Explain, identify and manage	
	Psychiatric signs and symptoms		psychiatric and behavioural	
	Management of behavioural		emergencies.	
W	emergencies	6		1,2,3,
•	Management and handling of violent	U		4,5
	patients			
	Management of post ventilation			
	psychosis.			

#### **TEXT BOOKS:**

T1: Textbook of critical care. 6th edition

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Develop fundamental knowledge on the nervous system along with the assessment of neurologic examinations.	1,2					
2	Understand the pathophysiology and management of neuromuscular disorders.	1,2					
3	Describe signs and symptoms of common poisonings and its immediate management.	2,3					
4	Explain the assessment and management of various obstetric emergencies.	3,7					
5	Identify the signs of behavioral emergencies and manage accordingly.	7,8					

	SEMESTER – VI									
Course	Title	Patie	ent safety and	Quality (	Care					
Course	code		redits: 3	L	T	P	S	R	0/F 0	
			ours: 45T 3 0 0 0 0							3
Pre-rec		L L	Co-requisite	• ~	<del></del> •.		Nil			
Progra		Bachelor of Critic					nology	7		
Semest Course			ter of 3 rd year				m ov 1 m	مطنمنا		. d
Course 1. To understand basic pharmacological concepts, including emerger their properties.				ncy m	earci	nes an	ıa			
Object	ives	2. To identify various drugs used	in medicine :	and discus	s thei	r mecl	nanism	s of :	action	ı
		3. To report on clinical application								
		pharmacological principles int					0 /			
CO	)1	Explain and Implement the conce				ertain	ing to	patie	nt safe	ety
		and healthcare quality.								
CC	)2	Utilize appropriate tools and ap	-		syster	natic	evalua	tion,		
		measurement and quality system	*							
CC	)3	Identify gaps in quality and safety	y in healthcar	e organiza	tions	and de	evelop	strat	egies	that
00	<b>\</b>	will solve them.	1 1	. 41				4:		
CC	)4	Recognize causes of medical errinto practice.	ors and narm	i; then inc	orpor	ate pr	eventa	liive	meast	ires
CC	CO5 Describe the healthcare data and analytics to measure healthcare quality and patie				ient s	afety				
Unit-		Content	Contact				tcome	ia pai		KL
No.			Hour			-8				
	Introd	luction to Patient Safety		Describe	and	unders	stand t	he		
	• Defi	nition and Importance of		definition and importance of						
	_	ent safety		patient s	-			with		
		ciples and concepts of		its historical context and						
		ent Safety		development, grasp the principles and concepts of						
I		ory context and development of	10	patient s			_		1	1,2
		ent Safety		role of o	-	_			,	
	_	ortance and role of organization attent Safety Culture		promotin	-					
		ls and techniques for identifying		tools and	_	•				
		ntial patient safety hazards.		identifyi	ng po	tentia	l patie	nt		
	_			safety ha	zards					
		cal Errors and Prevention		Describe			•			
	• Typ	es and classification of medical		types of				-	У	
	erro			factors c		_				
		ors contributing to medical errors		errors, co				ment	S	
		assessment in healthcare settings		compreh		_				
II	_	act of medical errors on patients healthcare organizations	9	medical		_			1,	,2,3
		conding to adverse events		organiza		_				
		agement of patients affected by		appropri	ately	to adv	erse e	vents	,	
		ical harm		manage	•			-		
				medical			_			
	erro	<u>-</u>		effective	prev	ention	strate	gies.		
me • Pre		rention strategies for medical			harm,	and	impler	nent		

Ш	<ul> <li>Healthcare Quality Management</li> <li>Definition and significance of healthcare quality management</li> <li>History and evolution of quality management in healthcare</li> <li>Key concepts and principles of quality management</li> <li>Metrics and indicators used to measure healthcare quality Relationship Between quality management and patient outcomes</li> </ul>	9	Describe, illustrate and understand the definition, significance, and evolution of healthcare quality management, apply key concepts and principles of quality management, utilize metrics and indicators to measure healthcare quality, and analyze the relationship between quality management and patient outcomes.	1,2,3
IV	Quality Improvement in Healthcare  Plan-Do-Study-Act (PDSA) cycle  Continuous quality improvement (CQI) processes  Root cause analysis (RCA) techniques for identifying quality issues  Utilization of quality improvement tools  Implementation of evidence- based practices  Clinical guidelines to enhance quality of patient care	9	Describe, illustrate and explain about the Plan-Do- Study-Act (PDSA) cycle, engage in continuous quality improvement (CQI) processes, apply root cause analysis (RCA) techniques to identify quality issues, use quality improvement tools effectively, implement evidence-based practices, and follow clinical guidelines to enhance the quality of patient care.	1,2,3,
V	Incident Reporting and Documentation  Principles and purpose of Incident reporting in healthcare setting  Documentation requirements for adverse events  Utilization of incident reporting tools and systems  Role of incident reporting in promoting transparency and accountability  Training and education on incident reporting for healthcare professionals	8	Describe and apply knowledge about the principles and purpose of incident reporting in healthcare, meet documentation requirements for adverse events, utilize incident reporting tools and systems, appreciate the role of incident reporting in promoting transparency and accountability, and participate in training and education on incident reporting for healthcare professionals.	1,2,3, 4,5

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Explain and implement the concepts of quality management pertaining to patient safety and healthcare quality.	1,2,3,5,7				
2	Utilize appropriate tools and approaches required for systematic evaluation, measurement and quality system improvements.	2,3,5,7				
3	Identify gaps in quality and safety in healthcare organizations and develop strategies that will solve them.	2,5,7				
4	Recognize causes of medical errors and harm; then incorporate preventative measures into practice.	2,3,5,7				
5	Describe the healthcare data and analytics to measure healthcare quality and patient safety	2,5,7				

SEMESTER – VI											
Course	Title		Dia	lysis							
Course	code	24BCIC3204R	Total credits: 3 L T P S F						R	O/F	C
			Total hours: 45T 3 0 0 0 0							0	3
Pre-req	uisite	Nil	Co-requi	site					Nil		
Prograi	mme	Bach	elor of Critical and Int	ensive	Car	e Unit	Tech	nolog	y		
Semeste	er		VI semester of 3 rd ye	ar of t	the pr	ograr	nme				
Course		1. Understand the pr	rinciples and techniques	of dia	lysis.						
Objectives 2. Operate and maintain dialysis equipment.											
		3. Monitor and man	age patient responses to	dialys	is trea	tment					
CO		•	atomy and physiology.								
CO	2		es of acute and chronic i	renal d	lisease	es follo	owed	by the	purp	ose a	nd
		types of dialysis.									
CO			emodialysis machine its					enanc	e		
CO			eritoneal Dialysis machi				ility.				
CO	)5	Discuss various drug	gs used during treatment	of rer	nal dis	eases.					
Unit-		Conte	nt	Cont	tact		Lear	ning (	Outco	ome	KL
No.				Hou	r						
	Revie	ew of Anatomy & Ph	ysiology:			Descr	ribe, i	llustra	te and	d	
	• Ana	tomy of Kidney			_		l orga	nizati	on		
Ι	• Phy	ysiology of Kidney			'		unctic				1,2
						microscopy and					
								liffere			
		s of Dialysis:			Describe, illus					d	
		ications of dialysis – Acute and chronic				_		mbrar		_	
II		nal disease						unctio		ll	1 2 2
		inciples of dialysis, definitions  pes of dialysis			)	organization and the proteins involved in transportation.				1,2,3	
	<ul> <li>Typ</li> </ul>										
	IIaan	nodialysis						on. llustra	to on	4	
		•	4 of dial 0-							u	
		mbrane	<ul><li>types of dialyzer &amp;</li></ul>			_		omoso nd typ			
			s for hoomedialysis			Struct	uic ai	iu typ	cs.		
Ш		_	and management	10	)						
			atus								
		•									1,2,3
		•	•								, ,
			during diarysis.			Daga	نامطنس	11,,,,,	to on	4	
		•	20								
		<u>-</u>				_		meen	amsn	101	
IV			s. types of cameter	8				ntion			1,2,3,
			(P.D.)			COIIII	iuiiica	шоп			4
		_	,								
			iteria								
	Drug	s and Fluid:					-				
$\mathbf{v}$			disease	10	)						1,2,3
•	• Diu	retics					-			4,5	
	• Ant	ihypertensive and the	eir use during dialysis			some	speci	tic cel	ll type	es	
	<ul> <li>Intromace</li> <li>Print</li> <li>Ass</li> <li>Con</li> <li>Mon</li> <li>Perite</li> <li>Perite</li></ul>	Types of vascular access for haemodialysis Introduction, functioning and management machine Priming of dialysis apparatus Assessment during dialysis Common complications of haemodialysis Monitoring of patient during dialysis.  Peritoneal Dialysis: Peritoneal dialysis machine Peritoneal access devices: types of catheter insertion Complications of dialysis (P.D.) Anticoagulation Withdrawal of dialysis criteria  Prugs and Fluid: I.V. fluid therapy in renal disease Diuretics Antihypertensive and their use during dialysis  10  Describe, illustrate and explain the mechanism of cell-to-cell communication  Describe, illustrate are explain the cell cycle are division in general and some specific cell types					and and d in	1,2			

CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome			
1	Explain the renal anatomy and physiology.	1			
2	Discuss the principles of acute and chronic renal diseases followed by the purpose and types of dialysis.	2			
3	Discuss the use of hemodialysis machine its Performance and maintenance	2,3			
4	Discuss about the Peritoneal Dialysis machine and its applicability.	4			
5	Discuss various drugs used during treatment of renal diseases.	4,8			

	SEMESTER – VI								
<b>Course Title</b>			MO	OCS					
Course code	24BCICMO302	Total credits: 2	L T P S R O/F C				С		
		Total hours: 30T	2	0	0	0	0	0	2
Pre-requisite	Nil	Co-requisite				1	Nil		
Programme	Bachelor of	Critical and Intensi	ve Ca	re Un	it Tec	hnolo	gy		
Semester		VI semester of 3	rd yea	ar of t	he pro	gram	me		
Course	1. To equip with a	thorough understan	ling o	of the c	course	materi	al thro	ıgh engagi	ing
Objective	online content.								
	2. To provide han	ds-on experience thro	ugh i	nterac	tive ex	ercises	s and re	eal-world p	projects.
	3. To promote effe	ective communication	and	team v	vork th	rough	online	discussion	ns and
	group activities								
CO1	Demonstrateastron	ggraspofkeyprinciple	sandt	heorie	scover	edinth	ecours	e.	
CO2	Apply learned con	cepts to solve real-we	orld p	roblen	ns thro	ugh pi	ractical	projects a	ınd
	exercises.								
CO3	Analyze and evalu	ate information, impi	oving	their	proble	m-solv	ing ar	nd decision	n-making
	abilities.								
CO4	Develop their idea	s clearly and effective	ely in	both v	vritten	and ve	erbal fo	orms.	
CO5	Demonstrating stro	ong collaboration and	team	work	skills.				

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Demonstrate a strong grasp of key principles and theories covered in the course.	7,8					
2	Apply learned concepts to solve real-world problems through Practical projects and exercises.	7,8					
3	Analyze and evaluate information, improving their problem- solving and decision- making abilities.	7,8					
4	Develop their ideas clearly and effectively in both written and verbal forms.	7,8					
5	Demonstrating strong collaboration and team work skills.	7,8					

		SEMESTER -VI	[									
<b>Course Title</b>		Generic Elective										
Course code	24BCICGE302	Total credits: 2	L	T	P	S	R	O/F	C			
		Total hours: 30T	2	0	0	0	0	0	2			
Pre-requisite	Nil	Co-requisite				1	Vil		•			
Programme	Bachelor of Critical and Intensive Care Unit Technology											
Semester	VI semester of third year of the programme											
Course	1. To equip with a thorough understanding of the course material through engaging online											
Objectives	content.											
	2. To provide hands-on e	experience through int	teract	tive ex	kercis	es and	real-v	world proj	jects.			
	3. To promote effective of	communication and te	eam v	vork t	hroug	h onli	ne dis	cussions a	and			
	group activities.											
CO1	Demonstrateastronggrasp	ofkeyprinciplesandth	eorie	scove	redint	hecou	ırse.					
CO2	Apply learned concepts to	o solve real-world pro	blen	ns thro	ough լ	oractio	cal pro	jects and				
	exercises.											
CO3	Analyze and evaluate info	ormation, improving t	heir	proble	m-so	lving	and de	ecision-m	aking			
	abilities.											
CO4	Developtheirideasclearlya	andeffectivelyinbothy	vritte	nandv	erbali	forms.						
CO5	Demonstrating strong col	laboration and team v	vork	skills.								

	CO PO Mapping										
SN	Course Outcome (CO)	Mapped Program Outcome									
1	Demonstrate a strong grasp of key principles and theories covered	7,8									
	in the course.										
2	Apply learned concepts to solve real-world problems through	7,8									
	practical projects and exercises.										
3	Analyze and evaluate information, improving their problem-	7,8									
	solving and decision-making abilities.										
4	Develop their ideas clearly and effectively in both written and	7,8									
	verbal forms.										
5	Demonstrating strong collaboration and team work skills.	7,8									

	SEMESTER – VI											
<b>Course Title</b>		Digital	Tech	1								
Course code	24BCIC3106R	Total credits: 2	L	T	P	S	R	O/F	C			
		Total hours: 30T	2	0	0	0	0	0	2			
Pre-requisite	Nil	Co-requisite				ľ	Vil		•			
Programme	Bachelor of Critical and Intensive Care Unit Technology											
Semester		VI semester of third year of the programme										
Course	1. To equip with a thorough understanding of the course material through engaging											
Objectives	online content.											
	2. To provide hands-	on experience through in	teract	ive ex	ercise	es and	real-v	vorld proj	ects.			
	3. To promote effect	ive communication and te	am v	vork t	hroug	h onli	ne disc	cussions a	ınd			
	group activities.											
CO1	Demonstrate a strong	grasp of key principles a	nd th	eories	cove	red in	the co	ourse.				
CO2	Apply learned conce	pts to solve real-world pro	oblen	s thro	ough p	ractio	al pro	jects and				
	exercises.											
CO3	Analyze and evaluate	information, improving t	their j	proble	m-sol	ving	and de	ecision-m	aking			
	abilities.											
CO4	Develop their ideas c	learly and effectively in b	oth w	ritten	and v	erbal	forms					
CO5	Demonstrating strong	g collaboration and teamw	ork s	kills.								

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Demonstrate a strong grasp of key principles and theories	7,8
	covered in the course.	
2	Apply learned concepts to solve real-world problems through	7,8
	practical projects and exercises.	
3	Analyze and evaluate information, improving their problem-	7,8
	solving and decision-making abilities.	
4	Develop their ideas clearly and effectively in both written and	7,8
	verbal forms.	
5	Demonstrating strong collaboration and teamwork skills.	7,8



# **Assam down town UNIVERSITY**

# Curriculum and Syllabus

# **Bachelor of Operation Theatre Technology**

OUTCOME BASED EDUCATION FRAMEWORK
CHOICE BASED CREDIT SYSTEM

Version: 2.2

# FACULTY OF PARAMEDICAL SCIENCES

July, 2024

**PREAMBLE** 

Assam down town University is a premier higher educational institution which offers

Bachelor, Master and Ph.D. degree programmes across various faculties. These

programmes, collectively embodies the vision and mission of the university. In keeping

with the vision of evolutionary changes taking place in the educational landscape of the

country, the university has restructured the course curriculum as per the guidelines of

National Education Policy 2020. This document contains outline of teaching and learning

framework and complete detailing of the courses. This document is a guidebook for the

students to choose desired courses for completing the programme and to be eligible for the

degree. This volume also includes the prescribed literature, study materials, texts and

reference books under different courses as guidance for the students to follow.

Recommended by the Board of Studies (BOS) meeting of the Faculty of Paramedical

Sciences held on dated 20/06/2024 and approved by the 51st Academic Council (AC)

meeting held on dated 26/07/2024.

Chairmann Banad

Chairperson, Board of Studies

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Member Secretary, Academic Council

#### Vision

To become a Globally Recognized University from North Eastern Region of India, Dedicated to the Holistic Development of Students and Making Society Better

#### Missions

- 1. Creation of curricula that address the local, regional, national, and international needs of graduates, providing them with diverse and well-rounded education.
- 2. Build a diverse student body from various socio-economic backgrounds, provide exceptional value-based education, and foster holistic personal development, strong academic careers, and confidence.
- 3. Achieve high placement success by offering students skill-based, innovative education and strong industry connections.
- 4. Become the premier destination of young people, desirous of becoming future professional leaders through multi-disciplinary learning and serving society better.
- 5. Create a highly inspiring intellectual environment for exceptional learners, empowering them to aspire to join internationally acclaimed institutions and contribute to global efforts in addressing critical issues, such as sustainable development, Climate mitigation and fostering conflict-free global society.
- 6. To be renowned for creating new knowledge through high quality inter disciplinary research for betterment of society.
- 7. Become a key hub for the growth and excellence of AdtU's stake holders including educators, researchers and innovators
- 8. Adapt to the evolving needs and changing realities of our students and community by incorporating national and global perspectives, while ensuring our actions are in harmony with our foundational values and objectives of serving the community.

# **Programme Details**

#### **Programme Overview**

Operation Theatre Technicians are allied healthcare professionals. Their tasks include assisting Doctors in Surgery, arranging surgical instruments before surgery, sterilizing instrumentation before surgery, cleaning surgical instruments after surgery, carrying out Surgeons commands during surgery and taking care of anesthesia equipment. The duration of the study for Bachelor in Operation theatre technology will be of 3 years

#### **Specific Features of the Curriculum**

Healthcare sector is going through a phase of growth. This sector, to function efficiently, will need more qualified allied healthcare professionals. Operation Theatres in hospitals, Emergency Care Departments as well as ICUs in hospitals are places where OT Technicians are needed. For any operation theatre to function smoothly, OT Technicians are needed. We all give credit to Doctors and nurses for saving patients' lives by performing operations. Yes, they do deserve the credit. But OT technicians, who are part of the team, also deserve credit.

The curriculum provides skill enhancement and value-added courses along with the core papers.

#### **Eligibility Criteria:**

- He/she has passed the Higher Secondary (10+2) with Science(PCB) or equivalent examination recognized by any Indian University or a duly constituted Board with pass marks in Chemistry, and Biology
- Minimum percentage of marks: 45% aggregate.

#### I. Program Educational Objectives (PEOs):

- **PEO-1:** Operation Technology graduates will be well prepared for successful careers in the operation theatre, surgical centers and emergency services provided by the government and/ or private healthcare organizations.
- **PEO-2:** The graduates will be engaged in professional activities to enhance their stature and simultaneously contribute to the healthcare profession and society at large.
- **PEO-3:** Graduates will be successful in higher education in inter-disciplines of operation theatre technology if pursued.

#### **II.** Program Specific Outcomes (PSOs):

- **PSO1: Clinical Competency:** Demonstrate effective clinical competency and efficiency in operation theatre procedures and technology.
- **PSO2: Techno-Professional Efficiency:** Apply comprehensive knowledge proficiently to operate modern surgical equipment, adopt techniques and maintain high standards in diverse medical settings for better health outcomes.
- **PSO3:** Global Competency: Attain global competency through interdisciplinary certification courses at international learning platforms.

#### **III.** Program Outcome (POs):

- **PO 1: Human Health Knowledge:** Apply the knowledge of human anatomy, physiology, microbiology, biochemistry, and Pathophysiology to provide effective support to doctors, surgeons and anesthesiologists during surgical procedures in diverse settings.
- **PO 2: Procedures and Techniques:** Apply modern sterilization methods, life-saving techniques, loading and labeling of medications, drug interventions, anesthesia induction, patient preparation, and crisis management in the operation theatre.
- **PO 3: Modern Equipment Use:** Efficiently operate modern patient monitoring and support systems including an anesthesia workstation, surgical diathermy etc.
- **PO 4: Health Crisis Management:** Ability to think critically and function as a member of rescue/code-blue team in recognizing health crises including cardiac arrest and participate in revival cum cardiopulmonary resuscitation.
- **PO 5: Teamwork:** Perform efficiently as a member or leader in diverse teams/ multidisciplinary settings.
- **PO 6: Professional Ethics:** Prepare and maintain patient information, and apply ethical principles in the profession.
- **PO 7: Communication:** Use effective communication within the healthcare team rendering seamless collaboration and timely sharing of critical information.
- **PO 8: Lifelong Learning:** Ability to engage in independent and lifelong learning in the broadest sense of procedural and technological advancements.

#### IV. Total Credits to be Earned: 123

#### **Career Prospects:**

A Bachelor's degree in Operation Theatre Technology (BOTT) opens up various career opportunities in healthcare. Graduates can work as operation theatre technologists, surgical assistants, or anaesthesia technicians in hospitals and clinics and also in the academics by going for a higher studies.

# **EVALUATION METHODS**

The student performance shall be evaluated through In-semester (Sessional) and semester-end examinations. A weight age of 40% or as prescribed by the programme shall be added to the score of the end semester examination.

#### A. INTERNAL ASSESSMENT:

The teacher who offers the course shall be responsible for internal assessment by conducting insemester (sessional) examination and evaluating the performance of the students pursuing that course. The components for internal assessment are illustrated in the table given below.

SN	Components/ Examinations	Marks Allotted
1.	In-Sem Exam – I (ISE-I) (Written Examination)*	30
2.	In-Sem Exam – II (ISE-II) (Written Examination)*	30
3.	Assignment	10
4.	Presentation (SP)	10
5.	Quiz	5
6.	Class Performance based score*	5

^{*}are compulsory

Note: Total Internal assessment should be out of 40

#### **INSTRUCTION**

- 1. If a student fails to appear in the any of the component without any valid reason he/she shall be marked zero in that component. However, the course teacher at his discretion may arrange for the missed test on an alternate date for the absentee students after determining ground with genuine/valid reasons for the absent.
- 2. The report of evaluation of an activity towards the in-semester (sessional) component of a course shall be duly notified by the concerned course teacher within a week of completion.
- 3. The program coordinators should upload the in-semester marks to the ERP and forward acknowledgement of all the courses of the program to the Controller of Examinations before the start of the End-semester examination.

#### **B. SEMESTER END EXAMINATION:**

Time table for end semester examination is published at least 25 days prior to the start of Examination.

#### I. Pre-Examination:

#### Eligibility Criteria for a student to appear in University Examinations:

The student shall only be allowed to appear in a University Examination, if:

- i) He/ She is a registered student of the University;
- ii) He/ She is of good conduct and character;
- iii) He/ She has completed the prescribed Programme of study with minimum percentage of attendance as laid down in the Regulations of the Programme concerned.

Under special cases, a student may be allowed to appear for an examination without being registered in the University but the result of the said student will be kept on hold till the registration of the concerned student is completed.

#### II. Admit Card:

Admit card for the examination may be downloaded through ERP where the system will generate a Unique ID Cards through online.

The University shall have the right to cancel admission for examination of any candidate on valid grounds.

#### **III. Pattern of Question Papers**:

The question paper shall follow the principles of Bloom's Taxonomy.

Table

S. N.	Level	Questions /verbs for test
1	Remember	List, Define, tell, describe, recite, recall, identify, show who, when,
1	Kemember	where, etc.
2	Understand	Describe, explain, contrast, summarize, differentiate, discuss etc.
3	Apply	Predict, apply, solve, illustrate, determine, examine, modify
4	Analyze	Classify, outline, categorize, analyze, diagrams, illustrate, infer, etc.
5	Evaluate	Assess, summarize, choose, evaluate, recommend, justify, compare etc.
6	Create	Design, Formulate, Modify, Develop, integrate, etc.

Note: No course is to be evaluated on basis of all 6 knowledge levels.

The format of the question paper across all the program follow a unique pattern and the total marks is 60

Table 1: Question paper pattern for End semester examination

Sl no	Question pattern	Total marks
1	MCQs (10 Questions)	10
2	2 Marks questions (10 Questions)	20
3	4 Marks questions (5 Questions)	20
4	10 Marks questions (1 Question)	10

#### **IV. Examination Duration:**

Each paper of 60 marks shall ordinarily be of two hours duration.

#### V. Practical Examinations, Viva-Voice etc.:

- i) Practical examination shall be conducted in the presence of one external expert and one or more internal examiners.
- ii) Viva-Voice, Oral examinations of the Project report, Dissertation etc. shall be undertaken by a Board of Examiners constituted by the respective Dean of Program with the advice of Supervisor(s).

#### VI. Procedure of Expulsion:

If any candidate is found to be using any unfair-means during the examination, the invigilator may cease his/her answer sheet and report it directly to the Officer-in-Charge. The Office-in-Charge of the center may take appropriate decisions as per the rules and procedure of the examination. The Officer-in-Charge may allow the students to write the exam with new answer sheet or may expel the student from appearing the paper depending on the nature of unfair-means. In case of Computer based test, the students may be directed to write an apology letter and sign in the prescribe expulsion form. The student may not be allowed to write that examination.

#### **VII.** Instruction to the Students:

- (i) The students shall not bring to the Examination Hall, any electronic gadget used as a means of communication or record except electronic calculator, if required.
- (ii) The students shall not receive any book or printed or hand written or photo copy (Xerox) or blank-paper from any other person while he/she is in the examination-room or in laboratory or in any other place to which he/she is allowed to have access during course of examination.
- (iii) The students shall not communicate with any other candidate in the examination room or with any other person in and outside the examination-room.
- (iv) The students shall not see, read or copy anything written by any other candidate, nor shall he/she knowingly or negligently permit any other candidate to see, read or copy anything written by him/her or conveyed by him/her.
- (v) The students shall not write anything on the Question Paper or in other paper or materials during the examination, or pass any kind of paper to any other candidate in the examination-room, or to any person outside the room.
- (vi) The students shall not disclose his/her identity to the examiner by writing his/her name or putting any sign / symbol in any part of his answer-script.
- (vii) The students shall not use any abusive language or write any objectionable remark or make any appeal to examiner by writing in any part of his answer-script.
- (viii) The students shall not detach any page from the answer-script or insert any authorized or unauthorized loose sheet into it. He /she shall also not insert any other answer-script / loose sheet by removing the pins of the origin answer-scripts and re-fixing it.
- (ix) The students shall not resort to any disorderly conduct inside the examination-room or misbehave with the invigilator or any other examination official.

#### **VIII. Provision for an Amanuensis (writer):**

- (i) A candidate may be provided with an Amanuensis (writer) to write down on dictation on his / her behalf on ground of his / her physical disability to write down by himself / herself due to accident or any other reason. The amanuensis may be provided till he / she recovers from the physical disability. The physical disability to write down by himself / herself must be supported by Medical Certificate from a competent Medical Officer.
- (ii) The qualifications of the amanuensis so provided must not be equal or higher than that of the candidate. This is also to be supported by Certificate from the Faculty of Study where the Amanuensis is provided.
- (iii) Such candidates are to be accommodated in a separate room under the supervision of an invigilator so that the fellow candidates are not disturbed in the process.

#### **C.** Credit Point:

It is the product of grade point and number of credits for a course, thus, CP = GP x CR

#### i. Credit:

A unit by which the course work is measured. It determines the number of hours of instructions required per week. 'Credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. Credits assigned for a single course always pay attention to how many hours it would take for an average learner to complete a single course successfully.

#### ii. Grade Point:

Grade Point is a numerical weight allotted to each Grade Letter on a 10-point scale.

#### iii. Letter Grade:

Letter Grade is an index of the performance of students in a said paper of a particular course. Grades are denoted by letters O, A+, A, B+, B, C, P, F and Abs. Student obtaining Grade F / Grade Abs shall be considered failed/ absent and, will be required to appear in the subsequent ESE. The UGC recommends a 10-point grading system with the following (Table: 1) Letter Grades:

- (i) A Letter Grade shall signify the level of qualitative/quantitative academic achievement of a student in a Course, while the Grade Point shall indicate the numerical weight of the Letter Grade on a 10-point scale.
- (ii) There shall be 08 (eight) Letter Grades bearing specific Grade Points as listed in Table 1, where the Letter Grades 'O' to 'P' shall indicate successful completion of a course.
- (iii) Apart from the 08 (eight) regular Letter Grades listed in Table 1, there shall be 03 (three) additional Letter Grades, which shall be awarded if a Course is withdrawn or spanned over the next Semester or remains incomplete as stated in Table 2.

**Letter Grade Grade Points Description**  $\mathbf{O}$ 10 Outstanding 9 A+Excellent 8 Very Good A 7 B+Good В Above Average 6 C 5 Average P 4 **Pass** F 0 Fail Abs 0 Absent **UFM** 0 **Unfair Means** 

**Table 2: Letter Grades and Grade Points** 

#### iv. Grade Point Average:

#### a. SGPA (Semester Grade Point Average)

The SGPA of a student in a Semester shall be the weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered in that Semester, irrespective of whether he/she could or could not complete the Courses. More specifically, the calculation of SGPA shall take into account the Courses graded with Letter Grades 'O' to 'F' as given in Table 1.

$$SGPA = \frac{\sum_{i=1}^{n} C_{i}G_{i}}{\sum_{i=1}^{n} C_{i}}$$
 (1.1)

The SGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.1) up to two decimal places, where n is the total number of Credit Courses registered by the student in that Semester, Gi is the Grade Point secured in the ith registered Course and Ci is the Credit (weight) of that Course.

#### b. CGPA (Cumulative Grade Point Average)

- (i) The CGPA of a student in a Semester of a Programme shall be the accumulated weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered and successfully completed so far starting from the enrollment in the Programme. In other words,taking into account all the Courses graded with 'O' to 'P' as given in Table 1.1, generally the CGPA of a student shall be calculated starting from the first Semester of his/her enrolled Programme, while the CGPA of a lateral-entry student shall be calculated starting from the Semester of his/her enrollment.
- (ii) The CGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.2) up to two decimal places, where N is the total number of Credit Courses registered and successfully completed so far by the student, Gi is the Grade Point secured in the ith completed Course and Ci is the Credit (weight) of that Course.

CGPA = 
$$\frac{\sum_{i=1}^{N} C_{i}G_{i}}{\sum_{i=1}^{N} C_{i}}$$
 (1.2)

(iii) The CGPA shall be convertible into equivalent percentage of marks using Equation Conversion of CGPA to percentage marks: = CGPA*10

#### **D.** Post-Examination

#### i. Transcript or Grade Card or Certificate:

A marking certificate shall be issued to all the registered students after every Semester. The Semester mark sheet will display the course details (code, title, number of credits, grade secured) along with total credit earned in that Semester.

#### ii. Grievance Readdress Mechanism:

Students with any dissatisfaction or grievance regarding the marks awarded in any of the Papers / Courses may appeal to the Controller of Examinations for remedial action such as Re-evaluation within 10 days of the declaration of result.

- (i) A student has options to appeal for re-evaluation of his /her answer script to the Controller of Examination.
- (ii) Application for re-evaluation / re-scrutiny of answer scripts shall be made in the definite proforma available with the Examination Office through the head of the respective departments within 10 days of declaration of the results of the respective examinations.

- (iii) The Controller of Examination may appoint an examiner for re-evaluation and will consider and recognize the evaluation done by a University appointed examiner.
- (iv) There shall be no provision for re-evaluation of the Practical Papers, Project Work, and Dissertation etc. However, the students fail in practical examination or viva voce and wish to appear again may apply to be evaluated can do so with the next schedule.
- (v) After screening the application for re-evaluation, the CoE may send the answer scripts of the student to the examiners appointed by the CoE with the approval of Vice Chancellor.
- (vi) The marks/grades achieved by the students after the re-evaluation shall be final and binding.
- (vii) Fresh Marks sheets / Grade Card shall be issued only if the candidate secures pass marks / passing grade in the re-evaluated paper.
- (viii) Revaluation of answer scripts shall be deemed to be an additional facility provided to the students with a view to improving upon their results at the preceding examination result for any reason whatsoever shall not confer any right upon them for admission to next higher class which matters always be regulated in accordance with the relevant rules or regulations framed by the University.
- (ix) If as a result of revaluation of the candidate attracts the provision of condonation of deficiency, the same may be applied to his/her only for fresh attempt.

#### INSTRUCTION TO TEACHERS AND STUDENTS

(Teaching and Learning Methods)

In all the courses the teacher has to select topics for teacher-method which should not be less than 20 percent. The approach will be direct class room teaching through series of lectures delivering concepts using ITC facilities, white or black board. Notes may also be circulated to the students however; the students are to be involved in preparation of the notes. The teacher will be responsible in selecting the best note for circulation. The teacher- centric methodology has recently fallen out of favour because this strategy for teaching is seen to favor passive students.

#### 1. Student- centric / Constructivist Approach:

The topics of the courses may be selected at the start of the class and assigned one topic to each of the student for studying by themselves, prepare presentations, notes etc., and present at respective class time after consultation and discussion with the course teachers. The teacher facilitate the learning of the students by guiding and providing input and explaining concepts. 60 percent of the course contents may be selected for this purpose. To avoid behavior problems, teachers must lay a lot of groundwork in student- centric classrooms. Typically, it involves instilling a sense of responsibility in students. In addition, students must learn internal motivation.

- **a. Project-Based Learning:** The teacher may select 5 percent of topics for the purpose and may conduct visit to the laboratory for experiments or field and survey. The selection of the topic may be done considering the available facility for the purpose. However, in the final semester of each of the programme the student has to undergo a project-Based learning at least 4 months duration. This approach will help the student to think critically, evaluate, analyze, make decisions, collaborate, and more.
- **b. Inquiry-Based Learning:** The teacher/ students are supposed to list at least five questions in each contact hour and student solve these question or search for answer which becomes the home work for the students "question-driven" learning approach. The teacher may look for the correctness of the solution or the best possible answer and discuss in the successive class. This will help in the preparation for various competitive examination and develop a habit for search for solutions.
- **c. Flipped Classroom:** About 10 percent of the course content has to be completed by this method. In this approach the students are asked to watchvideo or lecture prepared by the teacher or any video available (relevant to the course). A set of questions may be given to the students for searching answers by the students. The idea is that students should have more time in-classroom focusing on achieving these higher levels of thinking and learning. The Flipped classroom is also an acronym. The letters FLIP represent the four pillars included in this type of learning: Flexible environment, Learning culture shift, Intentional content, and Professional educator. As you can see, the second pillar refers to a culture shift from the traditional approach where students are more passive to an approach where students are active participants. As a result, this approach is also a student- centric teaching method.
- **d. Cooperative Learning:** The remaining five percent has to be completed by cooperative learning approach. In this approach the students are allotted with problems. During the library hours the student along with the teacher visits library search probable solution for the assigned problem. The same has to be done in group so that the students discuss among

themselves for the appropriate answers. Essentially, cooperative learning believes that social interactions can improve learning. In addition, the approach recreates real-world work situations in which collaboration and cooperation are required.

#### The percentage categorization for the completion of a theory course

Teacher- centric or Direct Classroom Teaching: Delivery by series of lectures	20%
Student- centric Approach, Student present and deliver lectures in presence of	
teacher and supervised by teacher	60%
Student visit fields or perform experiments or teacher perform demonstration	05%
Flipped Classroom approach	10%
Cooperative learning approach	05%

#### Inquiry based approach has to be followed in all of the classes

Teacher has to distribute the topics to be considered for teaching by the above-mentioned approaches and prepare lesson plan for execution and maintain a file

# **Breakdown of Credits**

Sl.	Category		<b>Total number of</b>
No			Credits
		Skill Enhancement Course (SEC)	
		Ability Enhancement Course(AEC)	]
1	University Core (UC)	Field Training	16
		Discipline Specific Elective (DSE)	
		Value Added Course (VAC)	ļ
2	University Fleetine (UE)	Multidisciplinary Course (MDC)	- 16
2	University Elective (UE)	Value Added Course (VAC)	10
		Discipline Specific Core(DSC)	
3	D (DC)	Field Training	71
3	Program Core (PC)	Research /Industry Internship	71
		Summer Internship	
4	Program Elective (PE)	Discipline Specific Elective (DSE)	20
4	Trogram Elective (LE)	Value Added Course (VAC)	20
5	Skill Enhancement Course (SEC)		
<i>J</i>	Faculty Core(FC)	Ability Enhancement Course(AEC)	
		Total	123

#### SEMESTER WISE COURSE DISTRIBUTION

	S.	Course Code	Course Title	Course					men	Maximum Marks for					
	N.	Course Code	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total
	1.	24BOTT1101R	Human Anatomy & Physiology I	DSC (Major)	4	0	4	0	0	0	6	40	60	100	200
	2	24BOTT1102R	General Biochemistry	DSC (Minor)	3	0	2	0	0	0	4	40	60	100	200
er I	3	24BOTT1103R	Basic principles of Hospital practice and patient care	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	100
Semester	4	24UBPD1101R	English for Enhancing career opportunities	AEC	0	0	2	0	0	0	1	0	0	100	100
	5	24BOTT1101M	Network analysis in systems biology	VAC	2	0	0	0	0	0	2	0	100	0	100
	6	24BOTT1104R	Medical Psychology	MDC	3	0	0	0	0	0	3	40	60	0	100
	7	24UBEC1101	Extra-curricular activities	Extra- Curricular	0	0	0	4	0	0	1	0	100	0	100
	Total			14	0	10	4	0	0	20	160	440	300	1000	
	S. Course Code Course Title		Course Title	Course			_		men		ı		imum I		
	N.	004150 0040		Category	L	T	P	S	R	O	C	IA*	SEE*	PE*	Total
	1.	24BOTT1201R	Human anatomy and physiology 1	DSC (Major)	4	0	4	0	0	0	6	40	60	100	200
	2	24BOTT1202R	Biochemistry: Biomolecules and its Metabolism	DSC (Minor)	3	0	2	0	0	0	4	40	60	100	200
II	3	24BOTT1203R	Fundamentals of Patient Care and Safety	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	100
ster	4	24UBPD1201R	Functional English	AEC	0	0	2	0	0	0	1	0	0	100	100
Semes	5	24ODI1201R	Ocular Disease I	MDC	3	0	0	0	0	0	3	40	60	0	100
	6	24UBES1201R	Environmental Science	VAC	2	0	0	0	0	0	2	40	60	0	100
	7	24BOTT1204R	Self-Study Seminar	AEC	0	0	2	0	0	0	1	0	0	100	100
	8	24UBCC1201	Co-curricular activities	Co- Curricular	0	0	0	4	0	0	1	0	0	100	100
			Total		14	0	10	4	0	0	20	200	300	500	1000

	S.	Course Code	Course Title	Course			Enga					Maximum Marks for					
	N.	Course Coue	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PE*	Total		
	1.	24BOTT2101R	Introduction of post Operative care unit	DSC (Major)	3	0	2	0	0	0	4	40	60	100	200		
	2	24BOTT2102R	Introduction to Anesthesia and Basic Life Support	DSC (Major)	3	0	2	0	0	0	4	40	60	100	200		
	3	24BOTT2103R	Basic Microbiology	DSC (Minor)	3	0	0	0	0	0	3	40	60	0	100		
	4	24BOTT2104R	Pharmacology I	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	100		
Semester III	5	24BOTT2105R	Infection control and Sterile technique procedure	DSC (Minor)	2	0	2	0	0	0	3	40	60	100	200		
Sem	6		DISA	MDC	1	0	0	0	0	0	1	0	0	100	100		
	7		Ocular Disease II	MDC	1	0	0	0	0	0	1	40	60	0	100		
	8	24UBPD2101R	CLPPD	AEC	0	0	2	0	0	0	1	0	0	100	100		
	9	24UDLS2101 R	Digital literacy	SEC	0	0	2	0	0	0	1	0	0	100	100		
	10	24UULS2101 R	BAS	SEC	0	0	2	0	0	0	1	0	0	100	100		
	11	24BOTT2106R	Techno Professional Skills	FT	0	0	0	0	0	8	1	0	0	100	100		
	12	24BOTT2107R	Field training	FT	0	0	0	0	0	0	1	0	0	100	100		
		Tot	tal		15	0	12	0	0	8	23	240	360	900	1500		

	S.	Course Code	Course Title	Course			Eng	agen	nent			Maximum Marks for			
	N.	Course Code	Course Title	Category	L	Т	P	S	R	0	C	IA*	SEE*	PE*	Total
	1.	24BOTT2201R	Management of Medical & Surgical Emergencies	DSC (Major)	3	0	4	0	0	0	5	40	60	100	200
	2	24BOTT2202R	Medical Law and Ethics	DSC (Major)	2	0	0	0	0	0	2	40	60	0	100
	3	24BOTT2203R	Patient safety and quality care	DSC (Major)	3	0	0	0	0	0	3	40	60	0	100
IV	4	24BOTT2204R	Clinical pathology, hematology and blood bank	DSC (Major)	3	0	0	0	0	0	3	40	60	0	100
ter I	5	24BOTT2205R	Pharmacology-II	DSC (Minor)	2	0	0	0	0	0	2	40	60	0	100
Semester	6	24BOTT2206R	Bio medical waste management	DSC (Minor)	1	0	0	0	0	0	1	40	60	0	100
	7	24UBPD2201 R	CLPPD	AEC	0	0	2	0	0	0	1	0	0	100	100
	8	24UUFL2202R	Financial Literacy	MDC	0	0	2	0	0	0	1	0	0	100	100
	9	24BOTT2207R	Techno Professional Skills	AEC	0	0	4	0	0	0	2	0	0	100	100
	10	24BOTT2208R	Advance Cardiac Life Support (ACLS)	VAC	0	0	2	0	0	0	1	0	0	100	100
	11	24BOTT2209R	Self-Study Seminar	AEC	0	0	2	0	0	0	1	0	0	100	100
			Total		14	0	18	0	0	0	22	240	360	600	1200
	S.	Course Code	Course Title	Course		Engagement				Maximum Marks for					
	N.	course coue		Category	L	T	P	S	R	0	С	IA*	SEE*	PE*	Total
	1.	24BOTTT3101R	Clinical Observation I (OT Procedure & Patient care)	DSC (Major)	0	0	0	16	0	0	4	0	0	100	100
r V	2	24BOTT3102R	Clinical Observation II (Sterilization & aseptic techniques )	DSC (Major)	0	0	0	16	0	0	4	0	0	100	100
Semester	3	24BOTT3103R	Clinical Observation III (Anesthesia & Surgical Procedure)	DSC (Major)	0	0	0	16	0	0	4	0	0	100	100
	4	24BOTT3104R	Case Study Report	DSC (Major)	0	0	0	16	0	0	4	0	0	100	100
	5	24BOTT3106R	Summer Internship	Internship	0	0	0	0	0	24	4	0	0	100	100
	6	24BOTT3107R	Research	Research	0	0	0	0	18	0	2	0	0	100	100
	Total					0	0	64	18	24	22	0	0	600	600

Semester VI	S. N.	Course Code	Course Title	Course	Engagement							Maximum Marks for			
				Category	L	T	P	S	R	О	C	IA*	SEE*	PE*	Total
	1.	24BOTT3201R	Clinical application	DSC (Major)	3	0	4	0	0	0	5	40	60	100	100
	2	24B0TT3202R	Advanced Anaesthesia Technique	DSC (Major)	3	0	4	0	0	0	5	40	60	100	100
	3.	24BOTT3203R	Surgical procedure and equipment use in the OT	DSC (Major)	2	0	4	0	0	0	4	40	60	100	100
	4	24BOTT3204R	Introduction to Research methodology	DSC (Major)	2	0	0	0	0	0	2	40	60	0	100
	5	24BOTT3205R	Research/ Industry Internship	Research	0	0	0	0	24	0	4	0	0	100	100
	6	24BOTT3206R	Techno Professional Skills	SEC	0	0	4	0	0	0	4	0	0	100	100
	7		Finishing School	AEC	0	0	4	0	0	0	2	0	0	100	100
Total					10	0	20	0	24	0	26	160	240	600	1000

^{*}IA: Internal Assessment, SEE: Semester End Examination, PE: Practical Examination

			SEMESTI	ER – I							
Course Ti	tle		Human Ana	atomy an	d Phy	ysiolo	ogy I				
Course co	de	24BOTT1101R	Total credits: 4		L	T	P	S	R	O/F	C
			Total hours: 45T		3	0	2	0	0	0	4
Pre-requis		Nil	Co-requisit			<b>7</b> D		Nil			
Programm			Bachelor of Operation Theatre Technology								
Semeste	r	Fall/ I semester of first year of the programme  1. To familiarize with anotomical positions and understand the microscopic structure.									
		1. To familiarize with anatomical positions and understand the microscopic structure of organs and skeleton in the human body.									
Course		of organs and skeleton in the human body.  2. To facilitate a deeper comprehension of anatomical structure and basic									
Objective			al functions across of						G 0 41514		
9			tudents to apply this		-	_		variou	s healt	hcare a	nd
		scientific co	ontexts.								
CO1		Discuss the anatomic									
CO2		Explore knowledge o	of Musculo skeletal s	ystem and	bone	s alor	ng with	their s	pecial 1	eatures	and
		functions.							•		
CO3		Describe the compos						ecific fu	ınction	S.	
CO4		Explain respiratory synchronic				•		nid aa	mnociti	on ond	
CO5		distribution in the boo		ne cardiov	ascui	ar sys	stem, m	uia coi	nposiu	on and	
Unit-No.		Conte	•	Contac	t.	Lea	rning	Outco	me	K	L
				Hour		Lou	· ····································	outeo			_
I	In	troduction To Anat	omical Terms,	7	De	escrib	e, illu	strate a	and		
	Ba	sic Structure and F	<b>Sunction of Cell</b>		ex	plain	the di	fferent			
	•	Level of Organiza	tion – Body Parts				ical te				
		and Areas, Planes					e and	functio	on of	1,	2
		Common anatomic			cell.						
	•	Structure and Fund									
TT	N/L	Membrane, Cellul		10		11		-44	1		
II		usculo – Skeletal Sy		10		escrit assify	oe, illu	strate a	ına		
	•	Bones: Classificat according to morp	• •			-	oskele	tal sys	tem		
	•	Tissue and its type					vith bo	•			
	•	Cartilage				υ					
	•	Joints: definition,	classification,							1,	2
		and movements of									
	•	Muscle and its ty	pes								
	F	or Specific progran	ns-								
		adiology: Importar									
		ones of human body	•								
III		Digestive System-		8			e, illu				
•		Anatomy of gastro				_	the str		of		
		and accessory org	ans or digestive			gans stem.	of dige	esuve		1,	2
		system.  Composition and	functions of		Sy	otCIII.	•			1,	<i>L</i>
		gastric, pancreati									
		and biliary secret									
		and biliary secret	10n.								

IV	Respiratory System-	10	Describe, illustrate and	
	Anatomy of the respiratory tract		explain the anatomy of	
	Mechanisms and Regulation of		respiratory tract.	
	respiration.			
	Gaseous exchange in lung and			
	tissues.			
	Lung volumes and capacities.			
	Respiratory abnormalities:			
	Hypoxia, cyanosis, dyspnoea,			
	Asphyxia, hyperventilation,			1,2
	hypoventilation, tachypnoea and			
	bradypnea			
	Specific Program ECC:			
	Intrapleural and intrapulmonary			
	pressures and their changes with			
	respiration, Hypoxia.			
	For Specific programs-			
	ECC: Description of larynx, trachea, and			
	respiratory centers.			
V	Cardio-vascular System and Blood:	10	Describe, classify and	
	Mediastinum – division		explain the about cardio	
	Structure of heart and blood		vascular system and	
	vessels.		composition and function	
	Systemic circulation, pulmonary		of blood.	
	circulation, and coronary circulation			
	Cardiac output, cardiac cycle,			
	conducting system of heart.			
	Heart sounds, pulse, blood pressure			1,2
	and the irregulation.			
	Composition and functions of			
	blood, Plasma, and body fluids.			
	• Functions of RBC, WBC, and			
	platelets.			
	Hemoglobin.			
	Blood hemostasis			
	Blood groups			
Practical	1. Study of Skull Vertebrae, Ribs	10	Describe, illustrate,	
	and bones of upper limb.		explain and apply	
	2. Study of compound	4	different anatomical	
	Microscope.	-	planes and position. And	
	3. Measurement of blood	6	describe and illustrate	1,2,3,4,5
	pressure, Arterial pulse	-	about skeleton and bones	
	4. Bleeding time (BT)	6	of human body.	
	5. Clotting time (CT)		_	
	6. Hemoglobin estimation	4		

- **T1.** Fundamentals of Anatomy, Pamela K Levangie, Cynthia C Norkin, JP Bros Medical Publishers, New Delhi
- T2. Fundamentals of Medical Anatomy By, Duane nudson, 2nd ed. 2007 Publisher Springer.

T3. Ross and Wilson Anatomy and Physiology, Ross and Wilson, JP Bros Medical Publishers, New Delhi

### **REFERENCE BOOKS:**

**R1.** Medical anatomy, JP Bros Medical Publishers, Bangalore, 1st Indian Ed1997, JP Bros Medical Publishers, Bangalore, 1st Indian Ed1997

R2. Clinical Anatomy, JP Bros Medical Publishers, Bangalore, 5th Ed 1996, 1st Indian Ed1998

	CO PO Mapping									
SN	Course Outcome (CO)	Mapped Program Outcome								
1	Discuss the anatomical terms and basic structure and function of cells	1,3,8								
2	Explore knowledge of Musculo skeletal system and bones along with their special features and functions.	1,3,8								
3	Describe the composition of the human digestive system and their specific functions.	1,3,8								
4	Explain respiratory system and classify various respiratory disorders.	1,3,8								
5	Describe the anatomy and physiology of the cardiovascular system, fluid composition and distribution in the body	1,3,8								

SEMESTER – I											
Course Tit		GENERAI	L BIOCHI	EMISTRY	Y			_			
Course Co	de   24BOTT1102R			L T	P	S	R	O/F	С		
		Total hours: 45T+3		3 0	2	0	0	0	4		
Pre-requis		Co-requisite				Nil					
Programn		Bachelor of Open									
Semester		Fall/ I semester of					. 1	• ,	<u> </u>		
	_	1. To impart the knowledge in the technical aspects of biochemical studies specially focusing on the clinical findings in various body									
		metabolites.									
Course	2 To expla	in the energy flow i	n the for	n on AT	P in	the h	umar	n body	7		
Objective	and cells			011.111			ama	loody			
		3. To demonstrate a practical knowledge for the qualitative									
		determination of carbohydrate, proteins and lipids.									
CO1	Explain the source	s, functions and metab	olism proc	cess of Car	bohy	drates	S				
CO2	· ·	assification of amino-a				gnifica	ance o	f Prote	in.		
CO3		ficance, classification a		_	ls.						
CO4	•	tructure and functions									
CO5		mentals and importance	e of acid, b					Τ,			
Unit-No.	Con	Content			Learning Outcome				KL		
I	CARBOHYDRATI	7 <b>S</b> •	Hour	Define,	classi	fy and	1				
	<ul> <li>Definition and class</li> </ul>			describe		•					
		carbohydrates				ohydra					
	· · · · · · · · · · · · · · · · · · ·	Example of some common			along with their functions						
	•	carbohydrates (Glucose, Fructose,			in the body.				1,2		
	· · · · · · · · · · · · · · · · · · ·	Starch, Glycogen, Starch), their									
	sources and structu	sources and structures.									
	• Biological signific	ance of									
	Carbohydrate										
II	<b>PROTEINS:</b>			Define,							
	• Definition of	_		explain				f			
	with the biologic	_	7	proteins					1,2		
	• Amino acids	· · · · · · · · · · · · · · · · · · ·		function	s in ti	ne boo	ay.				
		Essential and									
III	Non-essential an	iiiio acius		Define a	nd al	occify	typos				
111	<ul><li>Definition and class</li></ul>	scification of lipids		of lipids		•	• •				
	<ul> <li>Classification of F</li> </ul>	_		function		-					
		functions of some	7						1,2		
	common lipids										
	Glycolipids, Stero										
IV	NUCLEIC ACIDS:	·		Describe	e, illu	strate	and				
	• Basics on the str	ucture of DNA and	8	explain	the ba	asic st	ructur	e	1.2		
	RNA		ð	and fund	ctions	of nu	cleic	1,2			
	• Function of DNA	and RNA	acids in the bo		ody.						
V	ACID-BASE BUFF	ERS:	8	Define,	expla	in and	1		1,2		

	• Basics about acids, bases, pH, pOH, pKa and Buffer		describe acid-base buffers.	
	Acid base balance			
Practical	To identification and demonstration of biochemistry laboratory glassware's and apparatus.	6	Define, illustrate, explain and apply different laboratory test like	
	2. To identification and demonstration of biochemistry laboratory instruments (Principle and Applications)	4	Fehling test, Benedict's test and molest text	
	3. To perform Fehling's test for determination of reducing and non-reducing sugar in an unknown sample.	4		1,2,3,4,5
	4. To perform Benedict's test for determination of reducing and non-reducing sugar in an unknown sample.	4		
	5. To perform Molisch's test for determination of sugar in an unknown sample.	4		

**T1.** Text Book of biochemistry, U Satyanaryana and U Chakrapani, Sixth Ed T2. Text book of Biochemistry for medical students, DM Vasudevan (Author), Sreekumari S (Author), Kannan Vaidyanathan (Author), 7th Edition

### **REFERENCE BOOKS:**

**R1.** Lehninger Principles of Biochemistry, David L Nelson and Michael M Cox, Eighth Edition|©2021 David L.

R2. Text book of Biochemistry, Lubert Stryer, Jeremy M Berg, WH Freeman, 9th ed. 2019

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Explain the sources, functions and metabolism process of Carbohydrates	1,2,3,8
2	Identify various classification of amino-acids and recognize the significance of Protein.	1,2,8
3	Describe the significance, classification and functions of lipids.	1,2,8
4	Comprehend the structure and functions of Nucleic Acids.	1,2,3,8
5	Explain the fundamentals and importance of acid, base and buffers	1,2,3,8

SEMESTER – I										
Course T	Title		Basic Principle of Ho						T	
Course c	ode	24BOTT1103R		L	T	P	S	R	O/F	C
			Total hours: 30T	2	0	0	0	0	0	2
Pre-requ		Nil	Co-requisite	4. 75		7D 1	N			
Program			Bachelor of Oper							
Semest	er	1 To impart the	Fall/ I semester of in knowledge in patient in						ll wallbair	ng of
Cours Objectiv	ves	the patient. 2. To impart a coof medical pro 3. To provide a g	the patient.  2. To impart a comprehensive knowledge on medical ethics and the quality and functions of medical professionals.  3. To provide a gross knowledge on the legal hazardous of medical profession.							
CO1		of hospital manag	Discuss different functions, process of record keeping, reporting and essential components of hospital management.							
CO2		in certain medical							ement the	skills
CO ₃			mplement safety measu						<b>C</b>	
CO4 Describe different body positions and the										
CO5 Unit-	5 Identify various sites to measure pulse, b			Conta		and as	sess re	spirau	OII.	
No.		Content				Le	arning	g Outc	ome	KL
I	Hos	Iospital &Records & Reports:			Г	escribe	e, illus	trate ar	nd	
	<ul> <li>Definition and hospitals</li> <li>Classification departments of Management</li> <li>Definition of Different type reports</li> <li>Values object of records pri writing</li> </ul>		d functions of  , organization and of hospitals		e re in	xplain ecord a 1 the ho	the dif nd rep ospital	ferent (	types of aintained	1,2
II	FIR	<ul> <li>aid</li> <li>Priorities of fi</li> <li>Golden rules</li> <li>Qualities &amp; reaider</li> <li>Simple first a selected cond poisoning Sna</li> </ul>	of first aid esponsibilities of first id measures in itions like—food ake bite Scorpion bite ign bodies in various & scald	10	a: n	ixplain id and ( nanagen nedical	demon	strate t f vario	us	1,2

III	HYGIENE AND BASIC CARE NEEDS OF PATIENTS:  • Personal Hygiene and Maintenance of Hygiene Maintaining therapeutic environment  • Safety factors for patients such as safety from mechanical injury, thermal & chemical injury, radiation & bacteriological injury  • Safety from allergens  • Different positions of the body: Supine position, Prone Position, Cardiac position, Lateral Position, Fowlers position	10	Describe, illustrate and explain the significance of maintaining safety and hygiene in patient care.	1,2
IV	<ul> <li>SAFETY IN THE LABORATORY:</li> <li>Common laboratory accidents from physical injuries</li> <li>Electrical shock</li> <li>Chemical injury</li> <li>Bleeding</li> <li>Burn</li> <li>Eye accidents</li> <li>Biological hazards</li> </ul>	9	Describe, define and explain the different positions of the body along with the management of temperature for patients.	1,2
V	<ul> <li>VITAL SIGNS OF PATIENTS:</li> <li>Body temperature</li> <li>Maintenance of body temperature</li> <li>Factors influencing body temperature</li> <li>Different types of fever</li> <li>Stages of rigor</li> <li>Management of pyrexia</li> <li>Pulse</li> <li>Common pulse sites</li> <li>Factors influencing pulse rate Characteristics of Pulse Abnormal pulses</li> <li>Reading of pulse Blood Pressure Definition Factors influencing B.P. Abnormalities of B.P.</li> <li>Recording of B.P.</li> <li>Respiration</li> <li>Regulation of respiration</li> <li>Factors causing variations in respiration</li> <li>Abnormal respiratory rate.</li> <li>Different methods of Artificial Respiration</li> </ul>	9	Describe, explain and demonstrate the assessment of pulse and respiration along with the factors affecting them.	1,2

- **T1.** Principles of Hospital Practice and Patient Care, Srinivasulu Reddy, Paras, New Delhi, India, 13thEdition (2020).
- T2. Hospital and Patient Care Management, Dr. Vidhya Srinivasan, Dr. Akshay Ch. Deka, Asian Humanities Press, New Delhi, India, 4th Edition (2019).

#### **REFERENCE BOOKS:**

**R1.** Principles and Practice of Hospital Medicine, Sylvia McKean, McGraw-Hill Education, USA, 4thEdition (2019).

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Discuss different functions, process of record keeping, reporting and essential components of hospital management.	5,6,7,8							
2	Explain the basic principles, golden rules of First Aid and effectively implement the skills in certain medical emergencies.	1,2,3,4							
3	Apply fundamental knowledge of patient safety and care to ensure basic care needs of patients.	2,3,7							
4	Assessment of common laboratory accidents and its effective management.	2,3,5							
5	Describe vital signs and effectively manage the abnormalities	1,2,3							

	SEMESTER – I								
Course Title		FIE	LD V	ISIT					
Course code	24BOTT1104R	104R Total credits: 1 L T P S						O/F	C
Course code		Total hours: 120T	0	0	0	0	0	8	1
Pre-requisite	Nil	Co-requisite				N:	il		
Programme		Bachelor of Operat	ion T	'heatr	e Tech	nolog	y		
Semester	Fall/ I semester of first year of the Programme								
Course Objectives	healthcare s  2. Understand system.  3. Learn to de medical fiel	the roles and responsible velop innovative solution.	oilities ons ar	s withi	n diffe	rent le	evels of	the health	ncare e
CO1	Understand the theo during the visit.	retical concepts and fo	undat	ional k	cnowle	dge re	levant	to the field	d
CO2	Comprehend the pra	actical applications of the	heore	tical co	oncept	s in rea	al-worl	d settings.	
CO3	Exposure to diverse	situations to enhance s	kills i	in pati	ent ma	nagem	ent an	d care.	
CO4	Evaluate the effective	veness of different appr	oache	es and	metho	ds seei	n durin	g the field	l trip.
CO5	Develop innovative	strategies or solutions	inspir	ed by	enhanc	ced pro	ofessio	nal practic	e.

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Understand the theoretical concepts and foundational knowledge relevant to the field during the visit.	2,5,6,7,9
2	Comprehend the practical applications of theoretical concepts in real-world settings.	1,2,3,7,8
3	Exposure to diverse situations to enhance skills in patient management and care.	1,2,3,5,8
4	Evaluate the effectiveness of different approaches and methods seen during the field trip.	5,7,8
5	Develop innovative strategies or solutions inspired by enhanced professional practice.	5,6,7,8

			SEME	STER -	I							
Course T	itle		BASIC CO			TIVE I	ENGL	ISH				
		24UBPD1101	Total credits:		L	T	P	S	R	O/F	С	
Course c	ode R		Total hours:	30P	0	0	2	0	0	0	1	
Pre-requi	isite	Nil	Co-requis	site			ı	Ni	il	<u> </u>	ı	
Program	ıme		Bachelor of (	Operatio	on Theatre Technology							
Semeste	er	]	Fall/ I semeste	r of firs	rst year of the Programme							
Course		1. To improve s	peaking and pr	onuncia	tion s	kills.						
Objectiv		2. To enhance v	ocabulary for e	everyday	conv	versatio	ons and	l prof	essiona	al interact	ions.	
_			d common gran					•		curately.		
CO1	_	peak confidently and articulate ideas clearly with correct pronunciation.										
CO2		pand their vocabul										
CO3		ply grammatical r										
CO4		ntify different type	es of communic	cation ar	d stra	ategies	to ove	rcom	e comr	nunicatio	n	
		riers.										
CO5		repare and deliver presentations effectively using visual aids and non-verbal										
	cor	nmunication techn			1~						KL	
Unit-		Cont	ent			ntact	t Learning Outcome			ng Outcome		
No.	G	1. (1.11			Н	lour	Б	.1 .	111 4	, 1		
I	_	eaking Skills	eastin as			6	Describe, illustrate and explain about the					
		ntroduction and gr Pronunciation	eetings				_				1,2	
		Asking and offeri	ng information				speaking skills and pronunciation.			ıu		
II		ilding Vocabular				6	_			lain		
11		Synonyms	y			U	Describe and explain about the vocabulary				1,2	
		Antonyms				about the vocabula				iary	1,2	
III		rammar (Flipped	Classroom)				Desc	ribe .	illustra	ate and		
		Parts of Speech	014651 00111)						out the			
		Articles				_	•			in every	1.0	
	iii.	iii. Affirmative and Negative Sentences			6 sentences				•	1,2		
	iv.	Sentence Constru	ction from juml	bled								
	wo	ords										
IV	Co	mmunication Ski	ills			6	Desc	ribe, i	llustra	te and		
	i. I	ntroduction to Cor	nmunication,				expla	in the	e types	of		
		Purpose of Comm					comr	nunic	ation a	ınd	1,2	
		Types of Commu					comr	nunic	ation s	kills.		
		Barriers of Comm	nunication									
V		esentation Skills							explain			
		i. Introduction to Presentation skills								applied		
		ii. Essential characteristics of a good							of good	l		
	_	presentation iii. Preparation of a good presentation (4P's			6 presentation.					1,2		
			good presentatio	m (4P´s								
		Presentation) Tips for using visit	ual aide durina									
		_	uai aius uuiiiig									
	pre	presentation										

- T1. Barrett, Grant. 2016. Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speaking, Zephyros Press.
- T2. Professionalism Skills for Workplace Success, <u>Lydia E. Anderson</u>, <u>Sandra B. Bolt</u>, Publisher: <u>Pearson</u> Education
- T3.The Art of Public Speaking, <u>Dale Carnegie</u>, Publisher: <u>Diamond Pocket Books Pvt Ltd</u>
- T4. English for Academic CVs, Resumes, and Online Profiles, <u>Adrian Wallwork</u>, Publisher: <u>Springer International Publishing</u>
- T5. Employment & Volunteering: Job Interview Basics, <u>Lisa Renaud</u>, Publisher: <u>Classroom Complete Press</u>

#### **REFERENCE BOOKS:**

- R1. Zinsser, William. (2006) On Writing Well: The Classic Guide to Writing Nonfiction, Harper Perennial
- R2. Taylor J. and Wright, J., *IELTS Advantage Reading Skills: A step-by-step guide to a high IELTS reading score*, Delta Publishing by Klett
- R3. Murphy, Raymond,.(2012) English Grammar in Use Book with Answers: A Self-Study and Practice Book for Intermediate Learners of English, Cambridge University Press
- R4. Real-resumes for Teachers, Anne McKinney, Publisher: Prep Pub.
- R5. Public Speaking for Success, <u>Dale Carnegie</u>, Publisher: <u>Penguin Publishing Group</u>
- R6. Job Interview Skills, Paige Labret, Publisher: Di Dior Calderone Giuseppina

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Speak confidently and articulate ideas clearly with correct pronunciation.	5,7,8						
2	Expand their vocabulary and use synonyms and antonyms appropriately.	5,7,8						
3	Apply grammatical rules to construct grammatically correct sentences and paragraphs.	5,7,8						
4	Identify different types of communication and strategies to overcome communication barriers.	5,7,8						
5	Prepare and deliver presentations effectively using visual aids and non-verbal communication techniques.	5,7,8						

			SEMESTER – I								
Cours	e Title	(	Co0Curricular/ E	Extra-C	Curric	ular					
		24UBEC1101/	Total credits: 1	L	T	P	S	R	O/F	C	
Cours	e code	24UBCC1101	Total hours:60T	0	0	0	4	0	0	1	
Pre-re	quisite	Nil	Co-requisite				Nil	ı	I		
Progra	amme	Bache	elor of Operation	Theat	tre Te	chnolo	gy				
Semo	ester	Fall/ I s	semester of first y	ear of	the P	rogran	nme				
Course Objectives		<ol> <li>To develop skills and interests through participation in diverse extracurricular and co-curricular activities.</li> <li>To learn about teamwork and leadership abilities by engaging students in club-led events and competitions.</li> <li>To provide opportunities for personal growth and practical learning beyond the academic curriculum.</li> </ol>									
CO	)2	photography, drama, and li Develop confidence to part competitions, according to	Explore different activities organized by various clubs, such as dance, music, photography, drama, and literacy  Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests  Apply knowledge and skills to represent ADTU in inter-university, state, and national								
CC	)4	Explore new platform to learn from invited experts in their respective fields.									
CO		Evaluate overall growth alo		•							
Unit-				Cont			earnin	g			
No.		Content		Hou			utcon	_	K	L	
I	<ul> <li>ADTU encourages a range of activities outside the regular curriculum intended to meet learner's interest.</li> <li>These activities are aimed to develop the social and soft skills and promote a holistic development of the learners.</li> <li>Keeping in mind the 360 degree learning methodology the students are engaged in different activities headed under different clubs viz. Dance, music, photography, drama,</li> </ul>					par differe organ	op skil fidenc ticipate ent act nized b stitutio	e to e in ivities y the		3,4,	

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Explore different activities organized by various clubs, such as dance, music, photography, drama, and literacy	2,5,7,8						
2	Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests	5,7,8						
3	Apply knowledge and skills to represent ADTU in inter- university, state, and national level competitions.	2,5,7,8						
4	Explore new platform to learn from invited experts in their respective fields.	5,7,8						
5	Evaluate overall growth alongside academic development.	5,7,8						

SEMESTER – II									
Course Title		HUMAN ANATO	OMY & P	HYSIC	LOGY	/ II			
Course code	24BOTT1201R	Total credits: 5	L	T	P	S	R	O/F	C
Course code		Total hours: 45T, 60	)P 3	0	4	0	0	0	5
Pre-requisite	Nil	Co-requisite				Nil			
Programmed		Bachelor of Ope							
Semester		Fall/ II semester of			<u> </u>				
Course	and its function 2. To classify the	ndamental knowledge n. e nervous system and u	_						n
Objectives	and understan systems, inclu	fferent types of immur d the structure and fun ding their regulation b	nction of the	ne male ocrine sy	and fen	-	-		
CO1	Explain the struct	ure and function of ex	cretory sy	stem.					
CO2	Describe the sens	ory organs and nervou	is system a	long wi	th their	funct	ions		
CO3	Identify different	types of immune cells	and lymp	hatic sy	stem in	the bo	ody.		
CO4	Explain the struct	ure and functions of m	nale and fe	male re	product	ive sy	stem.		
CO5	Describe the endo	crine system and their	r regulation	n					
Unit-No.	C	ontent	Contact	Le	earning	Outc	ome	I	KL
			Hour						
I	urinary blac female uret	f kidney, ureter, lder, male and hra. of kidneys, nephron.	7	expla struct pelvis Expla classi organ	ribe, de in the dure of de s. s. sin, defify the ses involves system	organs organs one and otructu	nt in the d re of		1,2
II	and Spinal of brain.  Cranial nerves  Introductio sensory sys  Autonomic Functions spinal cord Synapse, re Cerebrospin Sensory Or Skin, Ear, N	on of Nervous  ryous system – Brain cord, blood supply nerves and spinal n of motor system, tem and Nervous System. of brain, and efflex arc nal fluid gans: Nose, Tongue Eye	12	expla syster body.		ervou e huma	s an	1	1,2
Ш	Lymphatic and System	Immunological	8	struct	ify the ures an lymph	d func	tions		1,2

	<ul> <li>Structure of lymphatic system and functions.</li> <li>Immunity – Antigen, Antibody, and Immune response.</li> <li>Acquired immunity</li> </ul>		the immune system of the body.	
IV	<ul> <li>Reproductive System</li> <li>Structure of male and female reproductive organs.</li> <li>Structure of breast</li> <li>Changes during puberty</li> <li>Ovulation,</li> <li>Menstrual cycle</li> <li>Pelvic cavity with its boundaries and contents</li> </ul>	10	Describe, illustrate and explain the different parts of the human reproductive system.	1,2
V	<ul> <li>Endocrine System</li> <li>Different endocrine glands</li> <li>Hormones and functions of endocrine glands</li> <li>Regulation of secretion hormones.</li> </ul>	10	Classify, differentiate and explain about endocrine glands with their hormones and function.	1,2
Practical	Study of pelvic bones and bones of lower limbs of human body.	8	Describe, illustrate and explain about bones and organs of human body.	
	Study of organs: Brain,     heart, lung, liver, kidney     Blood group     DLC	8 4 4	Analyzing the blood group and total count of RBC and WBC.	1,2,3,4,5
	5. Total count of RBC and WBC	6		

- T1. Fundamentals of Anatomy, Fundamentals of Anatomy, JP Bros Medical Publishers, New Delhi
- T2. Fundamentals of Medical Anatomy By, Duane nudson, 2nd ed. 2007 Publisher Springer.
- T3. Ross and Wilson Anatomy and Physiology, Ross and Wilson, Churchill Livingstone 8th Ed.

### **REFERENCE BOOKS:**

- R1. Medical anatomy, JP Bros Medical Publishers, Bangalore, 1st Indian Ed1997
- R2. Clinical Anatomy, JP Bros Medical Publishers, Bangalore, 5th Ed 1996, 1st Indian Ed1998

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Explain the structure and function of excretory system.	1,8						
2	Describe the sensory organs and nervous system along with their functions	1,8						
3	Identify different types of immune cells and lymphatic system in the body.	1,8						
4	Explain the structure and functions of male and female reproductive system.	1,8						
5	Describe the endocrine system and their regulation	1,8						

		SEMESTER -	- II						
Course Tit	tle BIOCH	IEMISTRY: BIOMOLE	CULES A	ND IT	S MET	ABOL	ISM		
Course co	24BOTT1202R	Total credits: 5	L	T P	S	R	O/F	C	
Course co		Total hours: 45T,60P	3	0 4		0	0	5	
Pre-requis	ite Nil	Co-requisite				ſil			
Programn	ne	Bachelor of Operat	ion Theatr	e Techi	nology				
Semester	•	Fall/ II semester of fir	st year of	the pro	gramm	ie			
	1. To teach the	technical aspects of biocl	nemical stu	dies, fo	cusing o	on clin	ical		
Course	implications								
Objective	AC .	the energy dynamics via							
Objective	3. To provide c	comprehension of enzyme	s, including	g their f	unction	s, regu	lation	s, and	
	biological si								
CO1		ation, mechanism of enzy				enzym	e acti	ons.	
CO2		nism of carbohydrate met		•	•				
CO3		olism of protein and its si						body.	
CO4	_	ess of Lipids metabolism							
CO5		Ferent types of vitamins ar	nd minerals	, their c	lassific	ation, s	source	s and	
	signs of deficienci	<u> </u>							
Unit-No.	Co	ontent	Contact	Lea	rning C	Outcon	ıe	KL	
			Hour						
I	ENZYMES:				ibe, cla	-			
		and classification of		_	in the ty	_			
	•	enzyme.			nes alor	-		4.0	
		• Basic idea of co-enzyme, iso-			ctors af	tecting	,	1,2	
	enzyme.	6		their a	actions.				
		n of enzyme Action.							
TT		ecting enzymeaction		D	1	1.:			
II		TESMETABOLISM			ibe and echanis	_	n		
	• Glycolysis								
	Glyconeogen	Kreb's Cycle  Classes and the control of the c				s in the		1,2	
	<ul><li>Glycofleogen</li><li>Glcogenesis</li></ul>	ES1S		body.					
	Gleogenesis     Gleogenolysis	e.							
III	PROTEINMETA			Descr	ibe, illu	ctrate			
111	Transaming				xplain tl				
	Deamination		7		olism o		in	1,2	
		eandits Significance			eir sign	•			
IV	LIPID METABO			1	e and ex				
_ ,	CLINICALBIOC	•			olism o	_			
		of Fatty Acids.			with th	_			
	Ketone bodi	*	9	_	ostic tes			1,2	
		ketoacidosis		_	significa			-,-	
	Liver function				_				
	Renal functi								
V	VITAMINSAND			Descr	ibe, exp	lain a	nd		
		nd classification of			fy the d				
	vitamins acc		12		of vitar			1,2	
	solubility.	ording to	12		als alon			1,4	
	*	functions of			sources	-			
	- Sources and	Turicuons Of		then s	,541003	ana			

	•	individual vitamins.  Deficiency.  Individual minerals (calcium, phosphorus, iron, magnesium fluslide, copper, selenium, molybdenum etc) –their sources,		functions.	
Practical	1. 2. 3.	determine the presence of proteins in an unknown urine sample.  To perform heat and acetic acid test to determine the presence of proteins in an unknown urine sample	30	Describe, illustrate and explain about different test for proteins and lipids.	1,2,3,4,5

T1. Text Book of biochemistry, U Satyanaryana and U Chakrapani, Sixth Ed

T2. Text book of Biochemistry for medical students, DM

Vasudevan (Author), SreekumariS (Author), KannanVaidyanathan (Author), 7th Edition

### **REFERENCE BOOKS:**

**R1.** Lehninger Principles of Biochemistry, David L Nelson and Michael M Cox, Eighth Edition ©2021 David L.

R2. Text book of Biochemistry, LubertStryer, Jeremy M Berg, WH Freeman, 9th ed. 2019

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Describe classification, mechanism of enzymes, and factors affecting enzyme actions.	1,2						
2	Define the mechanism of carbohydrate metabolism in the body.	1,2						
3	Explain the metabolism of protein and its significant effects on different organs of body.	1,2,3						
4	Describe the process of Lipids metabolism and associated clinical conditions.	1,2,3						
5	Determine the different types of vitamins and minerals, their classification, sources and signs of deficiencies in the body	1,2,3						

SEMESTER – II												
Course T									r			
Course c	ode	24BOTT1203R	Total credits: 2	L	T	P	S	R	O/F	C		
	• • •	<b>3.701</b>	Total hours: 30T	2	0	0	0	0	0	2		
Pre-requ		Nil	Co-requisite	I								
Program		Bachelor of Operation Theatre Technology										
Semest	er		Fall/ II semester of f	•					111 '	<u> </u>		
Course Objectives		the patient.  2. To impart a comp of medical profe  3. To provide a gros	orehensive knowledge ssionals.	ient in a holistic approach for the overall wellbeing of wheeling on medical ethics and the quality and functions on the legal hazardous of medical profession.								
CO1			ethics and its importa						anagemen	ι		
CO ₂		_	t types of shock along					.0111				
CO4		· ·	it types of emergency					ge and	effects			
			ning quality laborator					_				
CO5		management		,, 0.50	-5~~	proc	555 <b>a</b> II	J 14001				
Unit- No.		Conte	nt	Contac Hour		Lea	arning	g Outc	ome	KL		
<u>I</u>	Poi	soning:		Hour		efine	descri	he and	d explain			
	<ul> <li>Definition</li> <li>Causes of poisoning</li> <li>Sources of Poisoning</li> <li>Symptoms of poisoning</li> <li>First aid &amp; Managemen</li> <li>Antidotes</li> <li>Common drugs poison</li> <li>Carbon monoxide poison</li> </ul>			8	al		ith th	_	f poisons arces and	1,2		
п	II MEDICAL PROFESSIONAL AND LEGAL HAZARDS OF MEDICAL PROFESSION  • Qualities and Function of medical Professional Ethics of Medical Profession  • Malpractice • Civil negligence • Clinical negligence • Corporate negligence • Consumer protection Act for medical • Professional Act of commission, rashness, negligence& damage • Advantage& disadvantage of the act			5	ex le	xplain gal res	various ponsib	trate ar s ethica silities sionals	al and of	1,2		
Ш	SHO	<ul> <li>OCK</li> <li>Definition</li> <li>Types of shock</li> <li>General Feature Investigations o</li> </ul>		6	sh m		ong w	ith thei	l explain r clinical	1,2		

	Initial management & first aid of shock			
IV	HYPERGLYCEMIA AND HYPOGLYCEMIA	4	Describe, classify and explain the hyperglycemia and hypoglycaemia along with laboratory tests of diabetes.	1,2
V	<ul> <li>LABORATORY INVESTIGATION</li> <li>AND LABORATORY SETUP</li> <li>Preparation of patients and equipment's</li> <li>Collection of specimens of urine, stool, sputum, blood, CSF, Pericardial fluid, Peritoneal fluid, Pleural fluid, etc.</li> <li>Laboratory designing and management</li> <li>Different laboratories</li> <li>Disposal of wastes</li> <li>Reporting of tests of laboratory</li> <li>Quality control and accreditation</li> <li>Control of fire, infection, corrosive chemicals, toxic fumes, broken glasses, carcinogen.</li> <li>Legal and ethical regulation</li> </ul>	9	Describe, illustrate and explain medical ethics along with the guidelines and management of different laboratories in the hospital.	1,2

- **T1.** Principles of Hospital Practice and Patient Care, Srinivasulu Reddy, Paras, New Delhi, India, 13thEdition (2020).
- T2. Hospital and Patient Care Management, Dr. Vidhya Srinivasan, Dr. Akshay Ch. Deka, Asian Humanities Press, New Delhi, India, 4th Edition (2019).

#### **REFERENCE BOOKS:**

R1. Principles and Practice of Hospital Medicine, Sylvia McKean, McGraw-Hill Education, USA, 4thEdition (2019).

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Describe signs and symptoms of common poisonings and its immediate management	1,2,3,6,8						
2	Explain the medical ethics and its importance on the healthcare system	6,7,8						
3	Identify the different types of shock along with the management.	1,2,3,8						
4	Classify the different types of emergency drugs along with the dosage and effects.	1,2,3,7,8						
5	Proficient in performing quality laboratory investigation process and laboratory management	2,3,8						

			SEMESTER	R – II						
Course T	itle		ENVIRONM	1ENTA	L SO	CIENC	E		•	
Course c	ode	24UBES1101R	Total credits: 2	L	T	P	S	R	O/F	С
		274	Total hours: 30T	2	0	0	0	0	0	2
Pre-requ		Nil	Co-requisite	4. (D)		T 1	Ni			
Program			Bachelor of Opera							
Semest	er		Fall/ II semester of f							1.1
		1.To understand and address complex environmental issues from a problem- oriented, inter-disciplinary perspective								obieiii-
			world population th		awa	re of	and	concer	ned abou	t the
Cours	e	_	its associated prob							
Objectiv		attitudes, motiva	-						_	
, and the second		towards solutions	of current problem	s and p	preve	ntion o	of new	ones	•	
		3.To explore strates	gies for sustainable	develop	ment	and 1	iving,	includ	ling	
		conservation, ren	ewable energy, wast	e reduc	ction,	and r	espons	ible co	onsumptio	n
CO1		•	ance of Environmen					•		eness.
CO2		·	source, its importance				on th	e envi	ironment	
CO3			owledge on concept of							
CO4			of biodiversity an	nd the	var	ious m	nethods	s of	conservati	on of
CO5		Biodiversity.	vironmental pollution	n and i	to in	anat a	n hun	10n 0n	d accernet	om
Unit-		Conte		Contac			arning			KL
No.		Conte		Hour		LC	ai iiiig	Guic	Offic	IXL
I	Mu	ltidisciplinary natu	re of			Explain	the de	efinitio	on, scope,	
		ironmental studies:				nd		ortance	_	
		<ul> <li>Definition</li> </ul>			e	nvironi	_			1,2
		Scope and impo	rtance	6	d	liscuss	the n	eed fo	or public	
		• Need for public	awareness		a	warene	SS.			
II	Nat	ural Resources:			Ι	Describe	e diff	erent	types of	
	Ren	ewable and non-re	newable		n	atural	resour	ces (r	enewable	
	reso	ources:					non-rei		-	
		<ul> <li>Forest resources</li> </ul>		5		xplain	thei		ses and	
		• Water resources			e	nvironi	nental	ımpac	ts.	1,2
		• Mineral resourc	es							
		• Food resources								
		• Energy resource								
TTT	17	• Land resources	<u> </u>		Т	ا دانسه می داد	. 41			
III	Eco	systems Concept of	nction- Producers,						onents of in energy	
			•	7		n ecos; low	and	_	ecological	
		<ul><li>consumers, and</li><li>Energy flow</li></ul>	decomposers.	,		uccessi		and	compare	
		<ul><li>Energy now</li><li>Ecological succ</li></ul>	ession						systems.	
		<ul> <li>Food chains, foo</li> </ul>					. 1		•	
		ecological pyrai								1,2
			pes, characteristic							
		-	re, and function of							
			cosystem: - Forest							
		ecosystem, Gras	ssland ecosystem,							
		Desert ecosyste	m, Aquatic							
		ecosystems								

IV	Biodiversity and its conservation		Discuss, explain	
	Introduction –		biodiversity's value and	
	Definition	5	threats, and describe methods	1.0
	Value of biodiversity		for its conservation.	1,2
	Threats to biodiversity			
	Conservation of biodiversity			
V	Environmental Pollution		Discuss, explain about the	
	<ul> <li>Definition Cause, effects, and</li> </ul>		cause, effects of	
	control measures of: - Air		environmental pollution.	
	pollution, water pollution, soil			
	pollution, marine pollution, noise	5		1,2
	pollution, thermal pollution,			
	nuclear hazards			
	Solid waste management			
	Disaster management			

- T1. HaruchaE.B, Text book of Environmental Studies, Orient Blackswan Publishing
- T2. Tiwari V. K A Textbook of Environmental Studies, Himalaya Publishing House3. Chatwal G. R. & Sharma H. Environmental Studies, Himalaya Publishing House

#### **REFERENCEBOOKS:**

- R1. TrivediR.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Stadards, Vol I and II, Enviro Media(R)
- R2. TrivediR.K.andP.K.Goel,Introductiontoairpollution,Techno-SciencePublication(TB)
- R3. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner. Bharucha Erach,the Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad 380 013, India, <a href="mail:mapin@icenet.net"><u>Email:mapin@icenet.net</u></a>(R).

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Discuss the importance of Environment Studies and the need for public awareness.	1,2,8				
2	Identify natural resource, its importance, and its impacts on the environment	1,2,8				
3	Explore in-depth knowledge on concept of ecosystem	1,2,8				
4	Discuss the value of biodiversity and the various methods of conservation of Biodiversity.	1,2,8				
5	Explain various environmental pollution and its impact on human and ecosystem	1,2,8				

	SEMESTER – II								
Course Title		FIELD	TRA	ININ	G				
Course code	24BOTTFT102	T102 Total credits: 1 L T P S R						O/F	С
Course code		Total hours: 120T	0	0	0	0	0	8	1
Pre-requisite	Nil	Co-requisite				Ni	il		
Programme		Bachelor of Operat	ion T	'heatr	e Tech	nolog	y		
Semester		Fall/ II semester of fi	rst ye	ar of t	the pro	ogram	me		
Course Objectives	healthcare s  2. Understand system.  3. Learn to de medical fiel	the roles and responsible velop innovative solution.	oilities ons ar	withi adaj	n diffe	rent le	vels of	the health	ncare e
CO1	Understand the theo during the visit.	retical concepts and fo	undat	ional k	cnowle	dge re	levant	to the field	d
CO2	Comprehend the pra	actical applications of t	heore	tical co	oncept	s in rea	al-worl	d settings.	ı
CO3	Exposure to diverse situations to enhance skills in patient management and care.								
CO4	Evaluate the effective	veness of different appr	oache	es and	metho	ds seei	n durin	g the field	trip.
CO5	Develop innovative	strategies or solutions	inspir	ed by	enhanc	ced pro	fessio	nal practic	e.

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Understand the theoretical concepts and foundational knowledge relevant to the field during the visit.	2,5,6,7,9					
2	Comprehend the practical applications of theoretical concepts in real-world settings.	1,2,3,7,8					
3	Exposure to diverse situations to enhance skills in patient management and care.	1,2,3,5,8					
4	Evaluate the effectiveness of different approaches and methods seen during the field trip.	5,7,8					
5	Develop innovative strategies or solutions inspired by enhanced professional practice.	5,6,7,8					

			SEMESTER – I	I									
Cours	e Title		FUNCTIONA	L ENG	LIS	H							
Cours	e code	24UBPD1201R	Total credits: 1		L	T	P	S	R	O/F	4	3	
			Total hours: 30P		0	0	2	0	0	0	1	1	
	quisite	Nil	Co-requisite					Ni	1				
	amme		achelor of Operation										
Sem	ester		/ II semester of first										
Cou	ırse	<ol> <li>To enable students to learn and understand the different types of sentences.</li> <li>Tostrengthenthevocabularyofthestudentswhichwillhelpintheirwritingandspeaking.</li> </ol>											
Obje	ctives		m with the Time Mar			_		IWII	unga	naspea	ikiii	g.	
C	<del>)</del>	Utilize various tenses app						tion	dist	inonisl	nino	г	
		their differences.	propriately in versus	ana wiit	.011 C		umcu		, <b>u</b> ist	mgaisi	mig	,	
		Demonstrate proficiency	in recognizing and u	sing hon	nony	ms aı	nd ho	mor	hone	es accu	rate	lv	
CC	17.	in language contexts.		8	- 3			1				,	
CC	22	Summarize paragraphs, s	Summarize paragraphs, stories, or articles effectively, refining pronunciation skills for										
CC	14	clearer communication.		•		- •							
CO	)4	Implement time manager			-		categ	orize	e the	m usin	g the	e	
		Time Management Matri											
CO	15	Develop a professional re								_	aloı	ng	
	1	with creating and manag	ing a profile on Linke								-		
Unit-		Content		Contac	t	Le	arniı	ng O	utco	me		K	
No.	Mod	ule1-Grammar		Hour		Differ	ontio	to be	otruo	<u> </u>	I	L	
1	Mou		ve and										
		Interchange Interrogative and Assertive Sentences, Exclamatory				interrogative, assertive, and exclamatory sentence							
		and Assertive Sentences		10		types to enhance					1.	1,2	
	•	Types of Tenses				comm				ity.			
	•	Common Errors											
II	Mod	ule2-Vocabulary				Identi	fy	and	c	lassify			
	•	Homonyms				homonyms in context							
	•	Homophones		10		demoi	nstrat	te			1,	,2	
		-			1	under	stand	ing	of	word			
						meani							
III	Mod	ule3-ReadingSkills				_		e im		nce of			
	•	Techniques of Effective		40		effect				eading		2	
	•	Gathering ideas and inf	formation from a	10			_		_	roving		,2	
		text				compi inforn				and			
IV	Mod	ule4–ConflictManagem	ent							ets of			
1	•	Definition		8		differ		110		onflict			
	•	Type of Conflict Mana	gement			manag	geme	nt	style			1,2	
	•	Effects of conflict Man	-			relatio	nshi	ps	and	team			
						dynan	nics.						
V	Mod	ule5-Time-Managemen	tSkills			Demo				fective			
	•	Introduction To Time N	_	planning and scheduli					_				
	•	Importance of Time Ma	_	7			_		_	timize		,2	
	•	Basic Tips to Maintain	Time.					_	orofes	ssional			
	]				]	produ	ctivit	y.					

- T1. Wren, P.C and Martin, H.1995. High School English Grammar and Composition, S Chand Publishing. Barrett, Grant.2016. Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speaking, Zephyros Press.
- T2. Swan, Michael.,(2014)Practical English Usage, Cambridge University Press Taylor J. and Wright, J., IELTS Advantage Reading Skills: A step-by step guide to a high IELT Sreading score, Delta Publishing by Klett

### **REFERENCES:**

R1.https://clockify.me/time-management-techniques

R2.https://www.peoplehum.com/glossary/conflict-management

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Utilize various tenses appropriately in verbal and written communication, distinguishing their differences.	7,8				
2	Demonstrate proficiency in recognizing and using homonyms and homophones accurately in language contexts.	7,8				
3	Summarize paragraphs, stories, or articles effectively, refining pronunciation skills for clearer communication.	7,8				
4	Implement time management strategies to organize daily tasks, categorize them using the Time Management Matrix, and solve problems efficiently.	7,8				
5	Develop a professional resume and understand the dos and don'ts of resume writing, along with creating and managing a profile on LinkedIn to build professional networks.	7,8				

			SEMESTER – II	[							
Cour	se Title	CO CU	JRRICULAR/ EXTRA	CU	JRRICU	ULAF	RAC	TIVI	TIES		
Cour	se code	24UBEC1101/	Total credits: 1	L	T	P	S	R	O/F		С
Cour	sc couc	24UBCC1101	Total hours: 60T	0	0	0	4	0	0		1
	equisite	Nil	Co-requisite					Nil			
Programme Bachelor of Operation Theatre Technology											
Sen	iester		Fall/ II semester of first								
Obje C	ourse ectives O1 O2 O3	curricular activitie 2. To learn about tea events and compe 3. To provide oppor academic curricul Explore different photography, drama Develop confidence competitions, accor-	amwork and leadership all etitions. tunities for personal grow tum. activities organized by	bili wth	and pravarious	engag ectical clubs	learrs, suc	tudenting becharach	eyond to dance	b-le he e, r	music,
C	03	level competitions.									
	O4	•	m to learn from invited e	_			espect	ive fi	elds.		
	O5		owth alongside academic	dev							
Unit-		Conte	ent		Contac	et		earn	_		KL
No.	- 40	TI I			Hour	Т		Outco			
I	the lear I the socion dev Kee met diff viz. etc. The regular freprint studies Remains work studies to the studies of the studi	regular curriculum in mer's interest.  see activities are aimedial and soft skills and elopment of the learn eping in mind the 360 hodology the studenterent activities headed Dance, music, photoe estudents are encourable club activities, where their interest and its estudent members of resent AdtU in various dent and national level newed personalities are ekshops that benefit to	ed to develop the dipromote a holistic mers. O degree learning ts are engaged in ed under different clubs ography, drama, literary aged to participate in vorkshops, competitions ho. If the club are trained as inter University el competitions re invited to conduct the members and the platform to learn		60	e T e e p r a a v c c ti	explai The stencount particities activities works compe	n and udent raged pate i r club ies, hops, etition	to in		1,2,3, 4,5

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Explore different activities organized by various clubs, such as dance, music, photography, drama, and literacy	5,7,8				
2	Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests	5,7,8				
3	Apply knowledge and skills to represent ADTU in inter- university, state, and national level competitions.	5,7,8				
4	Explore new platform to learn from invited experts in their respective fields.	5,7,8				
5	Evaluate overall growth alongside academic development.	5,7,8				

	SEM	IESTER – III	[						
<b>Course Title</b>	INTRODUCTION	TO OT & PO	ST OI	PERA	TIV	E CA	RE U	NIT	
Course code	24BOTT2101R Total credi	its: 5	L	T	P	S	R	O/F	C
	Total hour	s:45T,60P	3	0	4	0	0	0	5
Pre-requisite	e Nil Co-re	equisite		-		N:	il		
Programme	Bachelor	of Operation	Theat	re Te	echn	ology			
Semester	Fall/ III seme	ster of second	l year	of the	e pro	gram	me		
Course	1. To understand the role and fur	nction of the o	peratir	ng the	atre	in heal	thcare		
Objectives	2. Introduce the postoperative ca	re unit enviro	nment,	inclu	ıding	equip	ment a	and pers	sonnel.
	3. To understand the workflow a	nd processes	within	the op	perat	ing the	eatre a	nd	
	postoperative care unit.								
CO1	Describe the physical structure a	nd zones of O	T Con	nplex					
CO2	Explain about the requirement of								
CO3	Describe fundamental knowledge	e of OT settin	gs and	equip	men	t inclu	ding t	he tech	niques
	of fumigation								
CO4	Apply skill and knowledge about	t post operativ	e care						
CO5	Demonstrate knowledge on the f	unctioning an	d mon	itorin	g dev	ices in	ı ICU	setting.	
Unit-No.	Content	Con	ntact		Lear	ning (	Outco	me	KL
		Н	our						
I	Introduction to OT Complex		5	_		he im			
	<ul> <li>Definition</li> </ul>			OT	zone	and cl	assify	the	
	<ul> <li>Zones of OT Complex</li> </ul>					d mair	itain s	afety	1,2
	<ul> <li>Importance of each Compl</li> </ul>	ex		and	hygi	ne.			
	<ul> <li>Aims of Planning</li> </ul>								
II	Physical facilities of OT Comple	ex	10	Iden	tify	and ex	plain t	he	
	<ul> <li>Location</li> </ul>			requ	iirem	ents fo	or OT		
	• Size of the OT room				_	materi			
	<ul> <li>OT Flooring</li> </ul>							ygiene	1.2
	Space requirement					y and			1,2,
	<ul> <li>Ventilation of OT</li> </ul>					s for p	_		3,4
	HEPA Filter					on to n	ninimi	ze	
	• Pressure, Humidity and			infe	ction	risks.			
	Temperature								
III	Basic Knowledge of OT setting	-	10	Exp	lain i	ts ben	efits a	nd	
	Modular OT			_		alities			
	<ul> <li>Staffing of OT</li> </ul>			OT	and (	OT equ	iipmei	nt.	1,2,
	Basic Equipment in OT					•			3,4
	<ul> <li>Monitoring of OT Asepsis</li> </ul>								
	<ul> <li>Fumigation of OT</li> </ul>								
IV	Introduction to post operative	e care	10	Desc	cribe	wha	at a	post-	
	unit		-					and its	
	<ul> <li>Definition</li> </ul>			_	ifica			patient	
	• Functions			_				in and	
	<ul> <li>Location, Bed Strength, Pa</li> </ul>	ntient		mon	-			ptimal	1,2,
	space, Nursing station,			tem	perat	ure a		midity	3,4
	Temperature and Humidity	,			ditio			patient	
	• Staffing			reco	very				
	• Equipment				•				
V	Introduction to ICU		10	Defi	ine w	hat an	ICIT	s and	1,2,
▼	Induduction to ICO		I V	ווייכו	111C N	mai all	100	o unu	1,4,

Practical	<ul> <li>Definition</li> <li>Functions of ICU</li> <li>Criteria for selection of patients</li> <li>Types of ICU</li> <li>Location, Bed Strength, Patient space, Nursing station, Temperature and Humidity</li> <li>Staffing</li> <li>Equipment in ICU</li> </ul>		its critical importance in healthcare and apply criteria for selecting patients for ICU admission.	3,4
Practical	<ul> <li>Understanding the role of each zone in maintaining hygiene, safety, and efficiency.</li> <li>Requirements for OT flooring material and design for hygiene and safety.</li> <li>Standards for proper ventilation to minimize infection risk</li> <li>Steps and importance of fumigating the OT to maintain sterility.</li> <li>Primary roles and tasks performed in the post-operative care unit.</li> <li>Maintaining optimal conditions for patient recovery.</li> <li>Roles and responsibilities of ICU personnel.</li> <li>Critical equipment and machinery used for patient monitoring and treatment.</li> <li>OT equipment checklist.</li> </ul>	60	Describe, illustrate, explain different practical procedure and apply their knowledge and skilled to perform all practical procedure.	1,2, 3,4, 5

- T1. Text book of operation theater technology by Dr. B.C .Bhagavan, Prof .P.V . Ramachandran and Prof .Nisha Clement
- T2. Text Book of Operation theatre Technology, Manjushree Ray & MM Ray, CBS Publisher & Distributors Pvt. Ltd. New Delhi, First ebook Edition 2020

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Describe the physical structure and zones of OT Complex	2,3,5				
2	Explain about the requirement of OT environment.	2,3,5				
3	Describe fundamental knowledge of OT settings and equipment including the techniques of fumigation	2,3,5				
4	Apply skill and knowledge about post operative care.	2,3,5				
5	Demonstrate knowledge on the functioning and monitoring devices in ICU setting.	2,3,5				

			SEMESTE	R – III								
Course	Title	INTRODUC	CTION TO ANAES	STHES	SIA .	AND	BASI	C LI	FE SU	JPPOI	RT	
Course	code	24BOTT2102R	Total credits: 5		L	T	P	S	R	O/F		C
			Total hours: 45P,		3	0	4	0	0	0		5
Pre-req		Nil	Co-requisite						Nil			
Prograi			Bachelor of Ope									
Semes	ter		Fall/ III semester o									
Cour	Se	1. To understand the		•								
Object		2. To learn essential			-			-	-			
		3. To develop effect					oilities	for e	emerge	ncy sit	uati	ons
CO	1	Describe the princip										
CO2	2	Classify different dr	ugs used in general	anaestl	nesia	proc	edures	incl	uding p	ost su	rger	y and
		recovery.										
CO3	5	Identify the regional										
CO ₂	ļ	Demonstrate knowle		gases	used	in ge	neral a	anaes	thesia	and mo	onite	oring
GO	-	anaesthesia machine		C1	. 1.0			11				
COS	•	Demonstrate knowle	-	Conta			_		4			
Unit-		Content				L	earnii	ng O	utcom	e	K	ΚL
No. I	T 4	oduction of Anaesth	<b>•</b> -	Hou	ır	Dage		ا امسم	unders	40.04		
1	mtre		esia oal of Anaesthesia			basic		ana nowl		of		
	_	History of anaestl							-			
	_	oxide, ether, chlo	•			anaesthesia and its history, classify different type of anesthesia				-	1,2,3	
		Intravenous Anas		5							1,	2,3
		Anastthesia, Muscle Relaxant.				anestnesia						
		Types of anaesthe										
II	Intro	duction to General				Defi	ne gen	eral				
	-	component of ger					_		ntify it	ts		
	-	stages of Anaesth							ages, a			
	-	Complication of (					_		They w			
		Anaesthesia							describ			
	-	Drug use in GA							rug us			
	-	•	ndication, type of			_	ral ana		-			
		drugs used for pre	• •	40		_			nedicat	ion	1.0	
		doses and side eff		10			cation				1,2	2,3,4
	-	Pre and post Aest	hetic assessment			drug	s, dose	es, ar	nd side			
	-	Recovery from A				effec	cts), ar	nd wi	11			
	-	Arrangement of a	naesthesia trolly			unde	erstand	l the j	proced	ures		
		for general anaest				for p	re- an	d pos	st-			
	-	Pain management				anae	sthetic	asse	essmen	t,		
		C				reco	very, a	and p	ain			
						man	ageme	nt.				
III	Intro	duction to Regiona	l Anaesthesia&			Und	erstand	d and	apply	the		
	Inha	lation agents				princ	ciples	of reg	gional			
	-	Local anaesthetic	agents used in						luding			
		regional anaesthe	sia: indications,			spina	al and	epidı	ural			
		contraindications	, dosage,	15					ey will		1,2	2,3,4
		complications, ro	ute of				be pro					
		administrations.					tifying		_			
	_	gional anaesthesia: sp							c agen	ts,		
	in all	age group of patient	s: indications,			inclu	ıding t	heir				

	contraindications, commonly used local anaesthetics.  -Epidural anesthesia Inhalation agents  - Classification and Mechanism of action of inhalation agents.  - Indication and contraindication, Advantage and disadvantages of each agents.  • Colour code and aesthetic properties of inhalation agents		indications, contraindications, dosages, and potential complications. Classify different inhalation agents, understand their mechanisms of action, and evaluate their indications, contraindications, advantages, and disadvantages. They will also be able to identify the colour codes and aesthetic properties of	
117	Conso OF Array 41 1 9 41 1		these inhalation agents.	
IV	Gases OF Anaesthesia & anaesthesia delivery machine  - Components, Indication and contraindication of each Gas  - Oxygen deficiency, excessive O2, hyperbaric O2,  - Pin index, color code, Size and pressure of All Gases Cylinder.  - Part and component of cylinder  - Recommendation of piping system  - Aerosol therapy Nebulization  - His story of boyles's machine  - Part of the anaesthesia workstation. (function and importance of each part)  - Maintenance, filling and draining	10	Describe the different gases used in anaesthesia, including their indications and contraindications and identify the parts of an anaesthesia workstation, describe the function and importance of each part, and understand the maintenance, filling, and draining processes for anaesthesia equipment.	1,2,3,4
Practi	Basic Life Support  Introduction to CPR/resuscitation-BLS  Chain of survival ABCs Assessment CPR and Ventilation Technique Choking for adult and children	5	Understand how to perform basic life support (BLS) and CPR, including the assessment of airway, breathing, and circulation (ABCs). They will also be able to manage choking in both adults and children, following the chain of survival principles.  Describe, illustrate,	1,2
cal	<ul> <li>types of anaesthesia (general, regional, local).</li> <li>Perform pre- and post-anaesthetic assessments.</li> <li>Arrange and organize an anaesthesia trolley.</li> <li>Administer common anaesthetic</li> </ul>	60	explain different practical procedure and apply their knowledge and skilled to perform all practical procedure	1,2,3,4,5

0.00		
age		
<ul> <li>Identify and understand the use of</li> </ul>		
anaesthesia gases.nts and		
understand their use and Manage		
gas cylinders (pin index, color		
code, size, pressure).		
• Identify parts and functions of the		
anaesthesia workstation.		
<ul> <li>Perform CPR and resuscitation</li> </ul>		
techniques and manage choking in		
adults and children.		
Conduct ABC (Airway, Breathing		
and Circulation) assessments.		
·		

T1: Short textbook of anesthesia by Ajay Yadav MD (Anesthesiology) <u>Ajay Yadv Short Textbook of Anesthesia 1st Edition' with you.pdf</u>

T2:American Academy of Orthopaedic Surgeons (AAOS): Emergency Care and Transportation of the Sick and Injured 12th edition, Burlington, Massachusetts, USA; 2021.

CO PO Mapping0						
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Describe the principle, history and types of anaesthesia.	1,2,3				
2	Classify different drugs used in general anaesthesia procedures including post surgery and recovery.	1,2,3,4				
3	Identify the regional anesthesia and inhalation agents.	1,2,3,4				
4	Demonstrate knowledge on the types of gases used in general anesthesia and monitoring anaesthesia machine.	2,3,4				
5	Demonstrate knowledge and techniques of basic life savings kills .	1,2,3,4				

			SEMESTER – I	II						
Course T	Title		BASIC MICI	ROBIOL	OG	Y				
Course c	ode	24BOTT2103R	Total credits: 3	L	T	P	S	R	O/F	С
			Total hours: 45T	3	0	0	0	0	0	3
Pre-requisite		Nil	Co-requisite				N	il		
Program			Bachelor of Operation							
Semest	er		Fall/ III semester of 2 nd year of the programme							
Course Objectives		<ol> <li>Introduce the students to the concepts related to the microorganisms and some importation disease caused by microorganisms.</li> <li>Understand the staining process to identify the microbes.</li> <li>Understand the immune system.</li> <li>Ability to gain the knowledge about the concept of microbiology.</li> </ol>						portant		
CO2		Demonstrate about var		_						
CO3		Get the knowledge abo	~ ~					igent.		
CO4		Get the knowledge abo					8			
CO5		Ability to gain the kno	•	ture and f	unct	ion o	f the i	mmuı	ne syster	n.
Unit-		Conte		Contac				g Out		KL
No.				Hour						
I	Intı •	roduction to Microbio General concept of Ba Fungi and Parasite	••	5	Describe and expanded about the history classification microbiology.				explain ory and of	1 2
II	Stai	<ul> <li>Stains in microbiology:</li> <li>Classification of stains and staining Preparation of smear,</li> <li>Gram staining</li> <li>Acid fast staining</li> </ul>			Describe, illustrate and classify about the stains in microbiology.					1,2
III				10	i	dentif	y the	diseas	and and se- anisms.	1,2
IV	Im	<ul> <li>munology</li> <li>Introduction to ir immunity and its classification.</li> <li>Antigenand Antil Abreactions</li> <li>hypersensitivity</li> </ul>	types and	7	knowledge about immunology and classif				•	
V	Serological tests  - (WIDAL,VDRL,ASO,CRP,RIA,RFELISA)  - Rapid test for HIV and Hbs Ag  - Vaccine and its types.			13	s u		gical stand	test ar its	type of ad	1,2

- T1. Apurba Sankar Sastry, Sandhya Bhat K, 'Essentials of Medical Microbiology', Jaypee Brothers Medical Publishers, 1st Edition, 2016.
- T2. Satish Gupta."<u>The Short Textbook of Medical Microbiology (Including Parasitology)</u>".Jaypee Brothers Medical Publishers, 10th Edition, 2010

#### **REFERENCE BOOKS:**

- R1. Ananthanarayan, CK Jayaram Paniker. 'Ananthanarayan and Paniker's Textbook of Microbiology, Universities Press (India) Pvt. Ltd.11th edition, 2020.
- R2. Jawetz, Melnick & Adelberg's Medical Microbiology. Norwalk, Conn.: Appleton & Lange, 1991.

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Ability to gain the knowledge about the concept of microbiology.	1,2,3					
2	Demonstrate about various staining process and its interpretation.	1,2,3					
3	Get the knowledge about the general introduction of disease- causing agent.	1,3					
4	Get the knowledge about serological test.	1,2,3					
5	Ability to gain the knowledge about the structure and function of the immune system.	1,2,3					

~		T	SEMESTER			. ~==	_					
Cours	e Title		PHARN					1	1	1		
Cours	se code	24BOTT2104R	Total credits: 2	L		T	P	S	R	O/F	C	
Pre-requisite		NI21	Total hours: 30T	2		0	0	0	0	0	2	
		Nil	Co-requisite	tion	The	otwo '	Faahn	Nil				
	ester		Bachelor of Opera Fall/ III semester of						30			
Sem	ester	1 Evolain the mech	nanism of drug action, s							and there	neutic	
	urse	_	used to treat various di			s, auv	CISC C	niccis,	uose a	and thera	peutic	
Obje	ctives	_	the emergency drugs.	50140	10.							
C	01	_	ot of Pharmacology inc	cludin	ıg E	merge	ency I	Medici	nes an	nd the ro	utes of	
		administration.	27		U	υ	J					
CO	<b>D2</b>	Recognize different	t drugs that affect the A	utono	mic	Nerv	ous S	ystem.				
CO	<b>D3</b>	Classify sedative ar	nd antiepileptic drugs al	long v	vith	their	mecha	nism (	of action	on.		
CO	<b>D4</b>	Discuss different di	rugs used to treat cardio	vascu	ılar a	and re	spirat	ory co	nditior	ıs		
CO	<b>D5</b>	Identify different ty	pes of IV fluids and the	eir pre	epara	ations	as we	ell as a	nti dia	betic dru	gs.	
Unit-		Cor	itent	Contact Learning Outcome					tcome	KL		
No.					H	our						
Ι	G	eneral Pharmacolo	==					-	olain a			
	•		ition and classification	of				-		rugs and		
	d	rugs					the r	5				
	•	Routes of drug adı	ninistration			6	administration.					
	•	Pharmacokinetics				Ü						
•		Pharmacodynamic										
	•	Factors modifying	drug response									
Adverse effects						Describe, classify and						
II	Auto	onomic Nervous System: General Considerations							•			
	•					_	explain the drugs used to					
	•	_	nti – Cholinergic drugs			5	manage disorders in the nervous system					
	•	•	drenergic blocking drug	;S								
***	•	Skeletal musclere	laxants				- D	*1	1	1		
III	Neur	opharmacology:	D D 12						lassify	and used for		
	•		e Drugs: Barbiturates,			4	_	1,2				
		Benzodiazepines	ra manastia analoggias					ageme	ıd pain			
IV	Cand		gs, narcotic analgesics.  Spiratory Pharmacolog	~~~					lassify	and	+	
1 V	Caru		t failure –Digitalis,	gy:					•	used to		
		Diuretics, vasodila	-				_		-	ar and		
	•	•	Orugs – ACE inhibitors						disord			
		Drugs for ischemic	-	•								
		Nitrates, Beta bloc			1	10					1,2	
		channel blockers.	,			-					-,-	
	•	Vasopressors, Inot	Propicagents									
	•	Anticoagulants and										
		Thrombolytics										
	•	•	nd Mucokinetic agents.									
V	Othe		<u> </u>				Desc	ribe, c	lassify	and		
	•	IV Fluids with diff	Ferent preparation.			5	expla	ain the	differ	ent types	1,2	
	•	Anti Diabetic drug	s-Insulin, Steroids			J			s inclu	•	1,4	
							antid	liabetio	e drugs	S.		

- **T1.** Essentials of Medical Pharmacology Dr KD Tripathi
- **T2**. Comprehensive medical Pharmacology

### **REFERENCE BOOKS:**

- R1. Clinical Pharmacology: A Comprehensive Drug Reference PubMed (nih.gov)
- R2. medical Pharmacology references Bing images

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Explain the concept of Pharmacology including Emergency Medicines and the routes of administration.	2.3.4						
2	Recognize different drugs that affect the Autonomic Nervous System.	1.2.3						
3	Classify sedative and antiepileptic drugs along with their mechanism of action.	2,3						
4	Discuss different drugs used to treat cardiovascular and respiratory conditions	1,2,3						
5	Identify different types of IV fluids and their preparations as well as antidiabetic drugs.	1,2,4						

			SEMESTE	R – III	[								
Course T	itle	INFECTION CO	NTROL AND STE	RILIZ	ZAT	ION T	ECH	NIQ	UES	S PI	ROCE	<b>DU</b> I	RE
Course c	ode	24BOTT2105R	Total credits: 4		L	T	P	S	F		O/F		C
			Total hours: 45T,	30P	3	0	2	0	0	)	0		4
Pre-requi		Nil	Co-requisite						lil				
Program			Bachelor of Oper										
Semest	er	1 77 1 1 1 6	Fall/ III semester o										
C	_		tion control principl		_			egies	•				
Course Objectiv			rilization methods a		•	•		20001	roc f	or r	aointoi	nin	~ 0
Objectiv	ves	safe healthcare en	l skills in implement	ung m	iecu	on con	1101 11	ieast	168 1	.01 1.	nannai	111115	ga
CO1		Describe fundament		enital e	acani	ired inf	ectio	n (H	Δ T)				
CO2		Explain principal an	<u>.</u>	_	acqui	irea iiii	ectio	11 (11.	<b>A1</b> ).				
CO3		Classify different ty			riliza	tion te	chnia	1168					
CO4		Demonstrate the known					cining	ucs.					
CO5		Apply skills and tec	•	•			uinm	ent.					
Unit-		Conte		Cont			Leari		Out	com	e	I	KL
No.				Ho		_		8		-			
I	Hos	spital acquired infe	ction (HAI)	5		Desc	ribe a	nd u	nder	stan	d		
			s and prevention			hospi	tal-ac	cquir	ed in	fect	ions		
		<ul> <li>Definition and p</li> </ul>	-			(HAI		_					
		nosocomial infe			types The learner will also be					lso be			
		infection (SSI), ventilation				able to identify and					1.	,2,3	
		associated evets( VAE), central				imple	ement	effe	ctive	•			
		line associated blood stream					prevention strategies for each						
		infection (CLA)	BSI) , CAUTI,	type of infection.									
		UTI.											
II	Iso	olation precaution a	and used of PPE	1(	)	Ident	Identify and apply						
		<ul> <li>Types and sign</li> </ul>	ificant of			appro	priat	e iso	latio	n			
		isolation				preca							
		<ul> <li>Definition and</li> </ul>	equipment of			signi							
		PPE				demo							
		• Definition 2 ste	eps of donning			proce			donr	ning	and		
		and doffing.				doffii	ng PF	E.					
		<ul> <li>standard preca</li> </ul>										1	1,2
			ased precaution										
		(Direct contact	, droplet,										
		indirect)											
		• Steps of hand l	nygiene										
		techniques											
		• Gowning and g											
777	D.	distributing of	<u> </u>	4.	10 Understand the principles								
III				10	,				_	_			
		Principles and disinfaction	i method of			and n					uon		
		disinfection	and allie and the			and sterilization and					1	1,2	
		Disinfection to     and chemical	by boiling method										
		Principles and	i types of										

	4 11 7 71 71 71			
	<ul> <li>sterilization (dry, wet, hot)'</li> <li>Autoclaving Techniques (air gases, radiation &amp; chemical)</li> <li>Special sterilization for rubber articles</li> </ul>			
IV	<ul> <li>Introduction and objective of the guideline</li> <li>Layout of CSSD         (size, receiving area, disinfection area, washing area, dry area, folding area, ironing area, issue area)</li> <li>Pressure and humidity, temperature</li> <li>activities at CSSD in each area</li> <li>Maintenance hygiene and handling dirty and clean linen as well as equipment.</li> </ul>	10	Describe the objectives and layout of the CSSD, including the functions of different areas (receiving, disinfection, washing, drying, folding, ironing, and issue areas). They will also understand the importance of CSSD.	1,2
V	<ul> <li>Classification of instrument</li> <li>General care testing and cleaning of instrument</li> <li>Fabrication of metal instruments</li> <li>Use and handling of instrument</li> <li>sterilization of each equipment in OT</li> <li>sterilization of OT room</li> <li>Sterilization of Ventilation, arthoscope, gastroscope, endoscope.</li> <li>precaution in sterilization</li> <li>Demonstrate procedures for preventing and managing HAIs, including proper hand hygiene and environmental cleaning.</li> <li>Practice proper gowning and gloving techniques and distribute sterile goods appropriately.</li> <li>Demonstrate and practice disinfection and sterilization methods.</li> <li>Demonstrate proper maintenance and hygiene practices for handling dirty and clean linen and equipment.</li> <li>Demonstration of sterilization techniques for OT equipment and rooms.</li> </ul>	10	Classify OT instruments, perform general care, testing, and cleaning of instruments, and understand the specific handling and sterilization procedures for various types of OT equipment  Describe, illustrate, explain different practical procedure and apply their knowledge and skilled to perform all practical procedure	1,2

Identify and apply precautions to		
ensure effective sterilization.		

- T1. Equipment, Drugs and Waveforms in Anesthesia, Pramod kumar
- T2. Handbook for CSSD Technicians, Joan M.Losper

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Describe fundamental knowledge of Hospital acquired infection (HAI).	1,2,3
2	Explain principal and knowledge about PPE.	2,3,4
3	Classify different types of disinfection and sterilization techniques.	1,2,3
4	Demonstrate the knowledge and techniques of CSSD.	2,3,5,7
5	Apply skills and techniques of sterilization of different equipment.	1,2,3

	SEMESTER – III								
<b>Course Title</b>		FIEI	D V	SIT					
Course code	24BOTT2106R	Total credits: 1	L T P S R O/F C						
Course code		Total hours: 120T	0	0	0	0	0	8	1
Pre-requisite	Nil	Co-requisite				N	il		
Programme		Bachelor of Operat	ion T	heatro	e Tech	nolog	y		
Semester	F	all/ III semester of sec	ond y	ear of	f the p	rogra	mme		
Course Objectives	healthcare s  2. Understand system.  3. Learn to demedical fiel	the roles and responsible velop innovative solution.	ilities ons ar	withi	n diffe	rent le	evels of	the health	icare
	Understand the theo during the visit.	retical concepts and for	undati	ional k	nowle	dge re	levant	to the field	l
CO2	Comprehend the pra	actical applications of the	neoret	ical co	oncepts	s in rea	al-worl	d settings.	
CO3	Exposure to diverse	re to diverse situations to enhance skills in patient management and care.							
CO4	Evaluate the effective	veness of different appr	oache	es and	metho	ds seei	n durin	g the field	trip.
CO5	Develop innovative	strategies or solutions	nspir	ed by	enhanc	ed pro	ofession	nal practic	e.

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Understand the theoretical concepts and foundational	2,5,6,7,9				
1	knowledge relevant to the field during the visit.	2,3,0,7,3				
2	Comprehend the practical applications of theoretical concepts	12378				
4	in real-world settings.	1,2,3,7,8				
3	Exposure to diverse situations to enhance skills in patient	1,2,3,5,8				
3	management and care.	1,2,3,3,0				
4	Evaluate the effectiveness of different approaches and methods	5,7,8				
<b>-</b>	seen during the field trip.	3,1,0				
5	Develop innovative strategies or solutions inspired by	5678				
3	enhanced professional practice.	5,6,7,8				

	R 0	O/F	C		
Course code Total hours: 30P 0 0 2 0	0		C		
Total hours: 30P					
Pre-requisite   Nil   Co-requisite   Ni	: 1	0	1		
	Ш				
Programme Bachelor of Operation Theatre Technology					
Semester Fall/ III semester of second year of the program		. ,.			
Course 1. ToimpartknowledgeofthefundamentalsofHospitalityindustryandit					
Objectives  2. Students will be able to familiarize with the cooking equipment's Students will be able to handle different modes of reservations.	s & Ui	tensiis.			
CO1 Students will have basic knowledge of cooking methods.					
CO2 Students will gain the knowledge of organizing & Cleaning of Rooms	2				
CO3 Students will be able to gain the travel management concept.	••				
Students will be able to acquire the knowledge of basic households an	nenitie	es for day	/- to-		
day use.		•			
Students will develop an understanding of personal financial manager	nent a	nd budge	eting		
skills.					
Unit- Content Contact Learning O	utcon	ne	K		
No. Hour			L		
I Introduction to Accommodation Describe, understa					
Management knowledge about		hniques, rooms,			
<ul> <li>Telephone handling technique</li> <li>Organizing of Rooms.</li> <li>Telephone handling technique</li> <li>organization of Rooms.</li> </ul>			1.2		
<ul> <li>Organizing of Rooms.</li> <li>Cleaning agents.</li> <li>Tunderstand the use cleaning agents are</li> </ul>			1,2		
Cleaning agents.     Cleaning equipment's and uses.     and demonstrate					
Bedmaking Process     making process.					
II Fundamentals of Cooking Describe, understa	and an	d apply			
-Definition of cookery—Aim & knowledge of cool		а арргу			
Objectives of cooking. proficiently use ba	_	oking			
-Personal Hygiene and Safety personal hygiene a	and sat	fety			
-Use of Fire & Fuels     standards, including	_	proper			
use of fire and fue	ls.				
III Methods of Cooking Describe, understa					
Different Cuts.     knowledge of herb		_			
• Use of Herbs and Spices.  10 basic food and bev	_		1,2		
Basic Food and Beverage     preparation, and w	_				
	egiona	ai ioou			
<ul> <li>Regional food Habits</li> <li>IV Forms &amp; Format's</li> <li>Describe, understa</li> </ul>	and an	nd apply			
• C –form knowledge to un					
• Reservation form purpose of var		forms,			
Registration form     Registration form			1,2		
Passport Application forms, registrate		forms,	1,2		
form passport application	on for	ms, and			
Legal Rent Agreement legal rent agreeme	ents.				

- T1. AroraK (2011). Theory of cookery, Frank brothers & company (pub) pvtltd-NewDelhi.
- T2. BruceH.Axler, CarolA. Litrides (2010) Food and Beverage Service Volume 1 of Wiley Professional Restauranteur, Guides.

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Students will have basic knowledge of cooking methods.	7,8
2	Students will gain the knowledge of organizing & Cleaning of Rooms.	7,8
3	Students will be able to gain the travel management concept.	7,8
4	Students will be able to acquire the knowledge of basic households amenities for day- to-day use.	7,8
5	Students will develop an understanding of personal financial management and budgeting skills.	7,8

		SEMESTER – III								
Course T	Title		EXECU	TIVE E	NGI	LISH				
Course c	aho	24UBPD2101R	Total credits: 1	L	T	P	S	R	O/F	C
			Total hours: 30p	0	0	2	0	0	0	1
Pre-requ		Nil	Co-requisite				Ni			
Program			Bachelor of Oper							
Semest	er		all/ III semester of s						- · · ·	
			ts to learn and compr	rehend al	bout	the prof	icienc	y of th	e English	
Cours		language.	vriting skill of the lea	rnore en	don	abla tha	m to n	ronoro	CV and a	N.O.
Objectiv		_	onal development.	uners an	u en	able thei	пюр	гераге	C v and co	ovei
Objectiv	ves	•	in attributes in a cand	didate th	at ca	n be oth	erwise	diffic	ult or time	
		consuming to asc			at ca		.01 11151	dillie	un or time	
CO1			ency in writing struc	tured pa	ragra	aphs and	forma	al appl	ications.	
CO2		•	positions and conver			_				e.
CO3		•	et various types of bo							
CO4		Initiate, participate i	n, and summarize gr	oup disc	ussic	ons effec	tively			
CO5		Apply writing, gram	nmar, non-verbal con	nmunica	tion,	and gro	up dis	cussio	n skills in	real-
	ı	world contexts.								T
Unit-		Conte	nt	Contac		Lea	arning	<b>Outc</b>	ome	KL
No.	<u> </u>			Hour		Describe and explain abo				
I	Gra	mmar		-				_	ın about	1.2
		<ul> <li>Use of Prepositions</li> </ul>	ons	5	ľ	the preposi		osition.		1,2
II	Cno	• Tag questions			T	Describe	. illus	roto or	nd.	
111	Gra	• .Active and Pass	siva Voica			explain a				
		<ul> <li>Direct and India</li> </ul>		5		oassive v				1,2
		• Direct and man	rect speech		_	ndirect	cet and			
III	Wri	iting Skills					_		nd apply	
		• The Basics of W	Vriting; avoid			he basic			11 0	
		ambiguity and v	-	5	Ţ	paragrap	h writ	ing , re	esume,	1,2
		Paragraph Writi	ng		(	CV.				
		• Resume, CV ar	nd Cover Letter							
IV	Self	-Management Skill	ls		I	Describe	and	analy	se about	
		<ul> <li>SWOT Analysis</li> </ul>	S	5	S	self man	ageme	nt skil	ls.	1,2
		<ul> <li>Goal Setting</li> </ul>		3						1,2
		<ul> <li>Personal Hygie</li> </ul>	ne							
V	Nor	-Verbal Communi	cation-Sciences of			Describe			xplain	
	Bod	ly Language				about no				
		• What is Non-Ve							s of body	
		Communication	& Body			anguage	•			
		Language,	,	4.0		_	-	_	age and	
		• Types of Body l		10		apply pla skills ass	-		anu	1,2
		-	Impact of Body			SKIIIS ASS	csseu.	•		
		Language,	omination that 1							
			nunication through							
		Body Language								
		<ul> <li>Body Language</li> </ul>	Do's and Don'ts,							

Doubt Clearing Session.		
Group Discussion (Theory)		
Importance,		
Planning, Elements, and Skills		
assessed;		
<ul> <li>Effectively disagreeing,</li> </ul>		

- T1. Lata, P., Kumar, S. (2015). Communication Skills, Second Edition. India: Oxford University Press.T2.Barrett, Grant. 2016. Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speaking, Zephyros Press.
- T3. McDowell, Gayle Laakmann. 2008. Cracking the Coding Interview (Indian Edition).

#### **REFERENCE BOOKS:**

- R1. Zinsser, William. (2006)On Writing Well: The Classic Guide to Writing Nonfiction ,HarperPerennial
- R2. Lacinai, Antonio. (2016)Understanding Body Language: 51 gestures and what they signal,

## OTHER LEARNING RESOURCES:

- 1. https://learning.shine.com/talenteconomy/career-help/top-group-discussion-skills/
- 2. https://www.thoughtco.com/what-is-nonverbal-communication-1691351

	CO PO Mapping							
SN	Course Outcome (CO)	<b>Mapped Program Outcome</b>						
1	Demonstrate proficiency in writing structured paragraphs and formal applications.	7,8						
2	Learn the use of prepositions and convert sentences between active and passive voice.	7,8						
3	Identify and interpret various types of body language and their meanings.	5,7,8						
4	Initiate, participate in, and summarize group discussions effectively.	5,6,7,8						
5	Apply writing, grammar, non-verbal communication, and group discussion skills in real-world contexts.	5,6,7,8						

SEMESTER – III										
Course T	itle		BASIC DIGIT	AL PRO	FIC	IENC	Y			
Course co	ode	24UCDL2101R	Total credits: 2	L	T	P	S	R	O/F	C
			Total hours: 60p	0	0	4	0	0	0	2
Pre-requi		Nil	Co-requisite					Vil		
Program			Bachelor of Operat							
Semeste	er		II/ III semester of sec						C	1
Course Objectives		their uses.  2. Students will  3. Students will information a	2. Students will be able to use MS-Office suite for various purposes.							
CO1			mputer Hardware, Sof					dling.		
CO2			solve basic information							
CO3		_	social media and e-co				ently	and eth	nically.	
CO4		, ,	imes on digital payme							
CO5		•	ality and use of credit							T77
Unit-		Conte	nt	Contac Hour		Lea	ırnin	g Out	come	KL
No. I	Fu	ındamentals of Com	nutor Systems	Hour		vnloin	tho	fundor	nental of	
	Components of a Computer and their functions. Different Types of Computers and their applications.  Lab Experiment:  1. Identify the Components of a Computer and their Functions and different types of Computers and their Applications.  2. Demonstrate the usage of various storage devices and identify various operating system file management									1,2
II Introduction to MS-Office: Components of the MS-Office suite Creating documents with MS-Word. Creating Presentations with MS- PowerPoint. Creating Spreadsheets MS-Excel. Lab Experiment: 1. Demonstrate how a document prepared and formatted in MS Word. 2. Create casual applications for 3 leave because of family man ceremony using Word Processor. 3. Create a curriculum vitae using Word. 4. Creating a time table with MS-W 5. Design PPT on Computer Compo- using different effects such as I Design, Record etc., on slides.		S-Office suite.  th MS-Word.  with MS- Spreadsheets with  a document to be sted in MS Word.  cations for 3 days family marriage ord Processor.  a vitae using MS-  with MS-Word.  aputer Components sets such as Insert,		d C	ifferen	t too ike N		ons on ficrosoft cel, MS-	1,2	

	( D : DDT C : C			1
	6. Design PPT on Computer Components	1 4		
	using different effects such as	14		
	Transitions, Animations etc., on slides.			
	7. Creating the time table with MS-Excel.			
	8. Creating the 10 student's Marksheet			
	include total, grade, percentage and			
	results using MS-Excel's formulas.			
III	Introduction to Internet & Cyber World:		Explain the importance and	
	Introduction to Computer Networks and		use of internet along with its	
	Internet. World Wide Web, Websites and		adverse side.	
	Web portals, Web browsing. Web			
	Searching, Search engines, Introduction to			
	Google Search Engine; How to search			
	using Keywords, topics of Interest, etc.			
	Creation and use of Email Accounts.	6		
	Cyber Crimes.			1,2
	Lab Experiments:			
	1. Creating a professional google account			
	and use various products of google			
	like drive, photos.			
	2. Study of computer network and internet			
	and demonstrate how to search			
	information using keywords in			
	different search engines.			
IV	Introduction to social media:		Explain the power of social	
	The Power of social media, Relevance of		media their relevance and	
	social media in present scenario.		adverse effects to over	
	Creating accounts and using some popular		using it.	
	social media portals and Apps like			
	WhatsApp, Facebook, Twitter, Instagram,	_		
	LinkedIn. Social Media Etiquettes.	4		
	Lab Experiments:			1,2
	1. Creating an account of some popular			
	social media portals and Apps like			
	LinkedIn, Facebook, Twitter, and			
	Instagram.			
	2. Creating an accounts of digital			
	payment systems like credit cards,			
₹7	debit cards, net banking, UPI.		Til	
V	Introduction to Digital Payment Systems.		Illustrate the types of digital	
	Creating accounts and using Digital		payment and their risks.	
	Payment Systems like Credit Cards, Debit			
	Cards, Net banking, UPI.			
	Lab Experiments:	4		
	1. Create online google form and learn	4		1,2
	how to give online test.			
	2. Creating an account of Online			
	Shopping sites like Amazon, flip kart,			
	eBay etc. Understand the journey of			
	customer to buy and sell on online			
1	shopping sites.			

- T1.Sinha Pradeep K.and Priti Sinha. Computer Fundamentals: Concepts Systems Applications. 3rd ed. New Delhi: BPB Publications.
- T2.Goel, A, 2010.Computer Fundamentals, Pearson India.

### **REFERENCE BOOKS:**

- R1. Balaguruswamy, E.2009 Fundamentals of Computers, Tata Mc Grew-Hill Education.
- R2. Balaguruswamy, 2014.E. Fundamentals of Computers & Programming (Updated EdSem.I, Au) Tata Mc Graw-Hill Education.
- R3. Lawson, C. 2022. Introduction to Social Media, Oklahoma State University.

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Understanding of Computer Hardware, Software and Computer handling.	3,8				
2	Apply MS-Office to solve basic information Management issues.	3,8				
3	Operate the Internet, social media and e-commerce sites efficiently and ethically.	3,7,8				
4	Analyse the cyber crimes on digital payments application	3,7,8				
5	Explore the functionality and use of credit cards, debit cards, net banking, and UPI	3,7,8				

SEMESTER – III										
Cours	se Title		URRICULAR /EXTI	RA CU	RRIC	ULAI	RAC	TIVI	TIES	
Cours	se code	24UBCC2101/	Total credits: 1	L	T	P	S	R	O/F	C
Cours	se coue	24UBEC2101	Total hours: 60T	0	0	0	4	0	0	1
	equisite	Nil	Co-requisite					Nil		
Progr	amme		Bachelor of Opera	ation T	heatre	Tech	nolog	gy		
Sem	ester		all/ III semester of se	•						
		•	and interests through	particij	pation	in div	erse e	extraci	urricular	and co-
		curricular activiti								
	urse		amwork and leadershi	p abilit	ies by	engag	ing st	udent	s in club	-led
Obje	ectives	events and comp								
			rtunities for personal g	growth a	and pra	actical	learr	ning b	eyond th	e
		academic curricu								
C	01	_	activities organized	by va	arious	club	s, su	ch as	s dance.	music,
		photography, drama	<u>*</u>							
C	02	_	e to participate in reg	-	lub ac	tivities	s, inc	luding	g worksh	ops and
		-	ding to individual inte				•.		1	
C	03		and skills to represent A	ADTU:	ın ınte	r-univ	ersity	, state	e, and nat	ional
04	0.4	_	evel competitions.  Explore new platform to learn from invited experts in their respective fields.							
	04 05		owth alongside acaden				especi	1ve 116	eias.	
Unit-	U5 	Conten		Conta			min	g Out	00220	KL
No.		Conten	ıı	Hou		Lea	1111118	g Out	come	KL
I	• AD	TU encourages a ra	ngo of activities	1100		Descril	he ill	netrati		
1		-	-							
		side the regular curriculum intended to et learner's interest.			explain and apply The students are encouraged					
					to participate in regular				_	
		ese activities are aimed to develop the cial and soft skills and promote a				lub ac	_		Burn	
		istic development of the learners.							etitions	
		eping in mind the 36				s per t	•	•		
		hodology the stude			h	obbie	s.			
		erent activities head	0 0							
		os viz. Dance, music								
	dra	ma, literary etc.								
		e students are encou	raged to participate	60						1,2,3,
	in r	egular club activitie	s, workshops,							4,5
	con	npetitions as per the	ir interest and ho.							
• The		student members o	f the club are							
trai		ned represent AdtU	in various inter							
	Uni	versity student and	national level							
cor		npetitions								
	• Rer	newed personalities	are invited to							
	con	duct workshops tha	t benefit the							
		mbers and students l								
	_	form to learn from	experts in the							
	resp	pective fields.								
		·			·					· <u> </u>

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Explore different activities organized by various clubs, such as dance, music, photography, drama, and literacy	5,7,8				
2	Develop confidence to participate in regular club activities, including workshops and competitions, according to individual interests	5,7,8				
3	Apply knowledge and skills to represent ADTU in inter- university, state, and national level competitions.	5,7,8				
4	Explore new platform to learn from invited experts in their respective fields.	5,7,8				
5	Evaluate overall growth alongside academic development.	5,7,8				

Course T				R – IV								
	Course Title MANAGEMENT OF MEDICAL & SURGICAL EMERGENCIES								RGEN	CIES		
Course co	aho	24BOTT2201R	Total credits: 5		L	T	P	S	R	O/F	(	7
			Total hours: 45	Г+60Р	3	0	4	0	0	0	5	;
Pre-requi	isite	NIL	Co-requisit						IL			
Program	me		Bachelor of Ope									
Semeste	er		all/IV semester of									
			d the principles of i					tabiliz	ation (	of patie	ents	
Course	e		with medical and s	_	•	_						
Objectiv			orate knowledge, sk				s in tl	he mai	nagem	ent of	certai	n
<b>.</b>			es including IV flui									
~~1		<del>-</del>	sight into gynaecol		_				ncy sco	enarios	5.	
CO1		Understand the fund										
CO2		Acquire knowledge								•		
CO3		Develop skills and	<u> </u>									
CO4		Understand the diff	• • •		_							
CO5		Develops skills to p	erform advance an	way tech	ınıqu	ies an	id rea	id ima	ging c	liagnos	stic	
TT '4 NT	l	results.	,	<b>C</b> 4	4		•		4		TZT	
Unit-No.		Content	t	Contac	t	Le	earni	ng Oı	itcom	e	KL	•
I	TAITTI	RODUCTION TO I	MEDICAL AND	Hour	Т	Jamas	n atma	to on				
1						Demonstrate an understanding of the initial				itio1		
								_	uie iii	itiai		
								ecnira	torv			
		~			-			_	iory,			
	_	•								ies		
							-		- 50-110	,		
					-							
		_	r & neurological			Ü						
	syste											
	-Hea	rt failure		10							1 2 2	1
	-AM	I	10							1,2,3	,4	
	-Caro	liac arrest										
	-Stro	ke (ischemic and her	morrhagic)									
-sho		zure & Coma										
		ek										
		ocrine and gastroint	testinal									
		-	-									
			erglycaemia									
		•										
	-GI b	pleeding										
	- Defemer Resp - Rev - Asth Card emer - Rev syste - Hear - Stro - Seiz - shoot Endo disor - Basi Endo - hyp - Elect	rt failure I liac arrest ke (ischemic and her zure & Coma ek ccrine and gastroint	system eax logical r & neurological morrhagic) testinal iology of stinal system	10	a n c n e	ssess nanag ardio	ment gemen vascu ogica rine d	and nt of rular & al eme & tinal	espira	tory,	1,2	2,3

II	Obstetric and Gynecological Emergencies -Physiological changes in pregnancy -Normal delivery, LSCS -Ectopic pregnancy and post-partum hemorrhage -Pre-eclampsia/eclampsia and obstetric emergencies during labor  Pediatric Emergencies -Common pediatric medical and surgical emergencies -Pediatric trauma and injury preventionResuscitation of the new born , APGAR score	10	Apply skills in managing life-threatening obstetric emergencies, pediatric emergencies including ectopic pregnancies and postpartum hemorrhage, and understanding the implications of physiological changes during pregnancy and common pediatric medical & surgical emergency condition.	1,2,3,4
III	COMMON SURGICAL EMERGENCIES  -Trauma emergencies (e.g., fractures, lacerations, burns)  -Abdominal emergencies (e.g., appendicitis, perforation, bowel obstruction, Acute cholecystitis)  -Vascular emergencies (e.g., arterial injuries, hemorrhage)  -Soft tissue emergencies (e.g., abscess drainage, wound debridement)  -Head and Neck Emergencies (e.g., Traumatic brain injury, Airway compromise)	10	Classify common surgical emergencies and describe management skill.	1,2,3,4
IV	Blood Products and IV Fluids Administration -Fluid distribution in the body -Types of IV fluid and composition -Medication dosage & calculation -Iv access and fluid administration - Blood Transfusion types, purpose and its adverse effects.	5	Understand the distribution of body fluids and its clinical significance in fluid therapy and identify and choose the appropriate type of intravenous fluid based on its composition and patient needs.	1,2,

V	<ul> <li>Advanced Techniques</li> <li>Techniques for difficult airway management</li> <li>Use of advanced airway adjuncts: supraglottic airways, video laryngoscope</li> <li>Airway management, wound management, splinting, bandage.</li> <li>Defibrillation, pacing</li> <li>ECG, X-ray, CT scan, ultrasound</li> <li>invasive blood pressure monitoring, central venous catheterization</li> <li>Use of emergency medications and resuscitation fluid</li> </ul>	10	Demonstrate proficiency in assessing and managing difficult airways using a structured approach such as the difficult airway algorithm.	1,2,3,4
Practical	<ol> <li>1.Perform rapid assessment and manage to Medical and Surgical Emergencies</li> <li>2. Conduct a comprehensive respiratory examination and administer inhalers, nebulizers, and measure peak expiratory flow.</li> <li>3. Perform needle decompression and chest tube insertion and conduct a thorough cardiovascular examination.</li> <li>4. Perform high-quality CPR and defibrillation and identify signs of stroke and initiate appropriate management.</li> <li>5. Apply skill and knowledge to mange gynaecological emergencies.</li> <li>6. Perform pediatric assessments and Perform newborn resuscitation and calculate APGAR scores.</li> <li>7. Gaining venous access (Intravenous cannulation) drugs administration techniques intravenous (IV), Intramuscular (IM), Intraosseous (IO).</li> <li>8. Calculate medication dosages and administer IV fluids and Perform blood transfusions and manage adverse effects.</li> <li>9. Manage difficult airways using advanced techniques.</li> <li>10. Perform airway management, wound care, and splinting.</li> <li>11. Perform invasive blood pressure monitoring and central venous catheterization.</li> </ol>	60	Describe, illustrate and explain and apply skill & techniques to perform all practical techniques.	1,2,3,4,

T1: Nancy L. Caroline, Bob Elling, Kirsten M. Elling, and Michael Colleran: Emergency Care in the Streets 8th edition, Burlington, Massachusetts, USA; 2018.

### **REFERENCE BOOKS:**

R1: American Academy of Orthopaedic Surgeons (AAOS): Emergency Care and Transportation of the Sick and Injured 12th edition, Burlington, Massachusetts, USA; 2021.

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Understand the fundamental of medical and surgical emergencies.	1,2,3				
2	Acquire knowledge on gynaecological and padiatric emergencies.	1,2,3,4				
3	Develop skills and knowledge on management of common surgical emergencies.	1,2,3,4				
4	Understand the different types of IV fluids along with their route of administration.	2,3,4				
5	Develops skills to perform advance airway techniques and read imaging diagnostic results.	1,2,3,4				

SEMESTER – IV										
Course Title MEDICAL LAW AND ETHICS										
Course co	odo	24BOTT2202R	Total credits: 3	L	T	P	S	R	O/F	С
Course C	oue		Total hours: 45T	3	0	0	0	0	0	3
Pre-		NIL	Co-requisite				N	IIL		
requisit	te									
Program	me		Bachelor of Oper							
Semeste	er		Fall/IV semester of se							
Course	e	_	ehend legal principles							
Objectiv			e awareness of patien	-	_		onal 1	espon	sibilities.	
			the impact of laws or							
CO1			ws and ethics along w							
CO2			Legal system binding				5			
CO3			oles of personal and pr							
CO4			cal code of conduct ar				1		1	11.0
CO5		• •	's rights, including the	eır auto	nomy	, their	abilit	y to ma	ake end-of	-lite
	1		r advance directives.	<b>C</b> . 1	<u> </u>	<b>T</b>		- O 1		TTT
Unit-No.		Conte	nt	Contac		Lea	arnın	g Outo	come	KL
I	INT	RODUCTION		Hour		v.nloin	and	,,,,,,d,,,,,	atand tha	
1	1111	<ul><li>Introduction to N</li></ul>	Madical law and	8		•			stand the the laws	
	'	Ethics.	viedicai iaw and	0			ethics		nd the	
		<ul><li>Similarities and</li></ul>	difformos						cal ethics	1,2,3
	`	between law & e				or parai			eur etines	
		<ul> <li>Moral Issues</li> </ul>	atines			or puru	inourc	•		
II	Med	lical legal issues and	d Ethical issues	12	I	nderst:	and th	ne stud	lent about	
11	IVICU	irear regar issues and	a Etinear issues	12					and the	
		<ul> <li>Introduction of I</li> </ul>	MCI			nportai	_			
		• Legal system in				•				
		<ul> <li>Legal accountab</li> </ul>								1,2,3,
		paramedic.								
	,	<ul><li>common medica</li></ul>	l law							
	(	• Introduction of I	MLC cases							
III	ETE	IICS			D	evelop	ar	ıd u	nderstand	
		Types of Ethics			M	Iedical	etl	nics	and its	
		• Personal vs. Pro	fessional Ethics	10	ir	nportai	nt.			
		<ul><li>Medical Ethics</li></ul>								1,2,3,
		• Ethics for Health	ncare Professionals							
		Role and Respon	nsibility of							
		healthcare.	-							
IV	CO	DE IN LAW		6	U	ndersta	and th	ne stud	lent about	
		• Code of Cor	nduct		C	ode o	of co	nduct	and the	
		• Misconduct			m	alprac	tices.			1,2,3,
		<ul> <li>Negligence</li> </ul>								
		Malpractices	s							
	I.		L							ı

V	RIGHT & AUTONOMY	8	understand the patient's	
	Crime scene and emergency scene		rights including autonomy,	
	responsibilities.		end life decisions and the	
	Basic Ethical Principles in Critical		moral and	
	Care			1.2.2
	Patient's rights.			1,2,3
	• autonomy			
	End of Life in the ICU			
	Withholding or withdrawing			
	resuscitation			

T1: Nancy Caroline's Emergency care in the streets, Andrew N. Pollak, MD, FAAOS, 7th Edition

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Explain medical laws and ethics along with its differences.	6,7,8				
2	Discuss the Indian Legal system binding healthcare workers	5,6,7,8				
3	Explain the principles of personal and professional ethics.	6,7,8				
4	Describe the medical code of conduct and malpractices.	6,7,8				
	Identify the patient's rights, including their autonomy, their					
5	ability to make end-of-life decisions and other advance	6,7,8				
	directives.					

Course Title Pharmacology II  24BOTT2203R Total credits: 2 L T P S R O							
24BOTT2203R Total credits: 2 I T P S R O							
rrse code 24BOTT2203R Total credits: 2 L T P S R O/F							
Total hours: 30T   2   0   0   0   0	2						
Pre-requisite NIL Co-requisite NIL							
Programme Bachelor of Operation Theatre Technology							
Semester Fall/IV semester of second year of the programme							
1. To describe how sedative-hypnotic drugs (barbiturates, benzodiaze	•						
antianxiety drugs (benzodiazepines) work and differentiate their clinical	uses based						
Course on how they are processed in the body.  2. To develop a treatment plan for heart failure using digitalis, diuretics, values of the body.	andilatora						
Objectives  2. To develop a treatment plan for heart failure using digitalis, diuretics, value and ACE inhibitors, considering their mechanisms and possible interactions.							
3. To assess the effectiveness and safety of antihypertensive and justify the							
based on patient-specific factors and conditions.	i selection						
CO1 Differentiate between the mechanisms of action of barbiturates and benzodia	renines						
CO2 Evaluate the appropriate use of antiepileptic drugs in managing anxiety disor	•						
Apply pharmacological principles in the use of drugs for heart failure							
diuretics, vasodilators) and ACE inhibitors.	(uigituiis,						
Evaluate the efficacy and safety of antihypertensive drugs such as calciu	n channel						
	blockers, central acting alpha agonists, peripheral alpha antagonists, and direct acting						
vasodilators.							
CO5 Integrate pharmacological treatments for vascular disease and ischemic heart	disease.						
Unit-No. Content Contact Learning Outcome	KL						
Hour							
I Neuro pharmacology: Explain the differences in							
- Sedative-Hypnotic Drugs: Barbiturates, 5 the mechanism of action	1,2,3						
Benzodiazepines between barbiturates and							
- Antianxiety Drugs: Benzodiazepines, benzodiazepines.	C						
II Other Anxiolytics 5 Assess the effectiveness of	t						
- Antiepileptic drugs, Narcotic analgesics antiepileptic drugs in	224						
treating anxiety disorders	2,3,4						
compared to benzodiazepines.							
III Cardiovascular pharmacology: Develop a treatment plan	for						
- Drugs used in the treatment of Heart heart failure using digital							
Failure(Digitalis, Diuretics, 5 diuretics, vasodilators, an	1						
Vasodilators)  Vasodilators  ACE inhibitors, consideri	1734						
- ACE inhibitors their mechanisms and							
potential interactions.							
IV Antihypertensive drugs 6 Critically assess the							
- Calcium channel Blockers advantages and							
- Central acting Alpha agonists disadvantages of differen							
- Peripheral Alpha Antagonists antihypertensive drug							
- Direct acting vasodilators classes, and justify drug	2,3,4,						
selection based on patient							
characteristics and co							
morbidities and central							
acting alpha agonists.							

V	Drugs used in the treatment of vascular	9	Design a comprehensive	
	disease and tissue Ischemia		treatment plan for vascular	
	- Vascular Disease		disease and ischemic heart	
	- Lipid lowering agents		disease using lipid lowering	
	- Antithrombotic		agents, antithrombotic	
	- Anticoagulants and Thrombolytics		agents, anticoagulants,	3,4,5,
	- Ischemic Heart Disease		thrombolytics, nitrates, beta	
	- Nitrates, Beta Blockers, Calcium		blockers, and calcium	
	channel Blockers		channel blockers, tailored to	
			patient-specific factors and	
			guidelines.	

T1: Dr. K. D. Tripathi: Essentials of Medical Pharmacology 8th edition, New Delhi, India; (2019)

### **REFERENCE BOOKS:**

R1: Nancy L. Caroline, Bob Elling, Kirsten M. Elling, and Michael Colleran: Emergency Care in the Streets 8th edition, Burlington, Massachusetts, USA; 2018.

CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Differentiate between the mechanisms of action of barbiturates and benzodiazepines.	1,2,8				
2	Evaluate the appropriate use of antiepileptic drugs in managing anxiety disorders.	1,2,8				
3	Apply pharmacological principles in the use of drugs for heart failure (digitalis, diuretics, vasodilators) and ACE inhibitors.	1,2,8				
4	Evaluate the efficacy and safety of antihypertensive drugs such as calcium channel blockers, central acting alpha agonists, peripheral alpha antagonists, and direct acting vasodilators.	1,2,8				
5	Integrate pharmacological treatments for vascular disease and ischemic heart disease.	1,2,8				

SEMESTER – IV										
Course 7	Γitle	PATIENT SAFETY AND QUALITY CARE								
Course code		24BOTT2204	Total credits: 3	L	T	P	S	R	O/F	C
		R	Total hours: 45T	3	0	0	0	0	0	3
Pre-requ		NIL	Co-requisite					IL		
Progran			Bachelor of Opera							
Semest	ter		Fall/IV semester of se							11 1
Cours Objecti		<ol> <li>To understand basic pharmacological concepts, including emergency medicines and their properties.</li> <li>To identify various drugs used in medicine and discuss their mechanisms of action.</li> <li>To report on clinical applications, side effects, and toxicities of drugs, and translate pharmacological principles into clinical decision-making.</li> </ol>								
CO1	-	and healthcare qu								safety
CO2		measurement and	e tools and approaches quality system improv	vement	s.					
CO3		that will solve the								
CO4		Recognize causes into practice.	of medical errors and	harm;	then i	ncorpo	orate p	revent	ative meas	sures
CO5		Describe the healthcare data and analytics to measure healthcare quality and patient safety								
Unit-No.		Conte	nt (	Contac Hour		Lea	arning	g Outc	ome	KL
I		Safety History context a of Patient Safety Importance and a organization on Culture Tools and technic	oncepts of Patient and development role of Patient Safety	10	de pa w de pr pa ro in ut	efinition tient so ith its levelope inciple atient so promotilize to or identification.	on and cafety, historiment, es and cafety, organizating spools artifying	impor be fan ical con grasp t conce recogn zationa safety,	ntext and the pts of nize the il culture and niques tial	1,2,

II	Medical Errors and Prevention	8	Describe and classify	
	- Types and classification of medical		different types of medical	
	errors		errors, identify factors	
	- Factors contributing to medical		contributing to these errors,	
	errors		conduct risk assessments in	
	- Risk assessment in healthcare		healthcare settings,	
	settings		comprehend the impact of	
	- Impact of medical errors on		medical errors on patients and	1,2,3
	patients and healthcare		organizations, respond	
	organizations		appropriately to adverse	
	- Responding to adverse events		events, manage patients	
	- Management of patients affected		affected by medical harm,	
	by medical harm		and implement effective	
	- Prevention strategies for medical		prevention strategies.	
	errors			
III	Healthcare Quality Management	10	Describe, illustrate and	
	- Definition and significance of		understand the definition,	
	healthcare quality management		significance, and evolution of	
	- History and evolution of quality		healthcare quality	
	management in healthcare		management, apply key	
	- Key concepts and principles of		concepts and principles of	1.0
	quality management		quality management, utilize	1,2
	- Metrics and indicators used to		metrics and indicators to	
	measure healthcare quality		measure healthcare quality,	
	- Relationship between quality		and analyze the relationship	
	management and patient outcomes		between quality management	
	,		and patient outcomes.	
IV	Quality Improvement in Healthcare	10	Describe, illustrate and	
	- Plan-Do-Study-Act (PDSA) cycle		explain about the Plan-Do-	
	- Continuous quality improvement		Study-Act (PDSA) cycle,	
	(CQI) processes		engage in continuous quality	
	- Root cause analysis (RCA)		improvement (CQI)	
	techniques for identifying quality		processes, apply root cause	
	issues		analysis (RCA) techniques to	1,2
	- Utilization of quality improvement		identify quality issues, use	1,4
	tools		quality improvement tools	
	- Implementation of evidence-based		effectively, implement	
	practices		evidence-based practices, and	
	- Clinical guidelines to enhance		follow clinical guidelines to	
	quality of patient care		enhance the quality of patient	
			care.	

V	Incident Reporting and Documentation	7	Describe and apply	
			knowledge about the	
	- Principles and purpose of Incident		principles and purpose of	
	reporting in healthcare setting		incident reporting in	
	- Documentation requirements for		healthcare, meet	
	adverse events		documentation requirements	
	- Utilization of incident reporting		for adverse events, utilize	
	tools and systems		incident reporting tools and	1,2,3
	- Role of incident reporting in		systems, appreciate the role	
	promoting transparency and		of incident reporting in	
	accountability		promoting transparency and	
	- Training and education on incident		accountability, and participate	
	reporting for healthcare		in training and education on	
	professionals		incident reporting for	
			healthcare professionals.	

- T1. Rahul k. Shah, "patient safety and quality improvement in health care system"
- T2. Barbaraj. Youngberk "patient safety Hand Book"

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Explain and Implement the concepts of quality management	1,2,3,5,7						
1	pertaining to patient safety and healthcare quality.	1,2,3,3,7						
2	Utilize appropriate tools and approaches required for systematic	2,3,5,7						
	evaluation, measurement and quality system improvements.	4,3,3,1						
3	Identify gaps in quality and safety in healthcare organizations and	2,5,7						
3	develop strategies that will solve them.	2,3,1						
4	Recognize causes of medical errors and harm; then incorporate	2,3,5,7						
•	preventative measures into practice.	4,3,3,1						
5	Describe the healthcare data and analytics to measure healthcare	2,5,7						
	quality and patient safety	49391						

			SEM	ESTER – 1	IV						
Course 7	<b>Title</b>	CLINICA	AL PATHOI	OGY, HE	CMAT	OLO	OGY	AND	BLOG	DD BANK	
Course	aho	24BOTT2205R	R Total credits: 3		L	T	P	S	R	O/F	С
Course	Loue		Total hour	s: 45T	3	0	0	0	0	0	3
Pre-requ		NIL	Co-requ						IL		
Progran				of Operat					<b>.</b>		
Semest	ter		Fall/IV semes								
		1. Understand the	he basic prin	nciples of	patho	ology	, san	nple o	collect	ion proce	ss and
Cours		hematology.	a								
Objecti	ves	2. Demonstrate	-	-	_		od ty	pıng,	cross	matchin	g, and
G01		compatibility				_					
CO1		Understand the fu					11	· ·			
CO2		Understand the pr				_			. <b>1</b> 4 -		
CO3		Develop fundame									
CO4		Acquire compreh								<b>.</b> .	
CO5		Demonstrate skill matching.	s and knowle	age on blo	od bar	nkıng	g, bloc	a groi	iping a	and cross	
Unit-No.		Content		Contact		1	Lagrn	ing ()	utcon	10	KL
Omt-No.		Content		Hour			Learn	ing O	utcon	ic	KL
I	Clini	cal Pathology		Hour	Exp	lain	and de	escribe	the		
_	•	Introduction to c	linical	10	_					clinical	
		pathology	11111041				_	_	nstrat		
	•	Collection, trans	port.		_	_			ollectio		
		preservation and	•		trans	sport	, pres	ervatio	on, and	1	
		of various clinic			proc	cessii	ng of	variou	s clini	cal	1,2,3
	•	Urine examination	on-		spec	cimei	ns, inc	luding	g the a	bility to	1,2,3
		collection and pr	eservation,				_		ive ur		
		Physical, chemic	cal and						•	onormal	
		microscopic exa	mination for					_	physic		
		abnormal constit	uent					micro	scopic		
			5 1 0 11	~		lysis.				• ,•	
II	•	Examination of 1	Body fluids	5		• •				mination	
	•	Examination of	-: 1 (CCE)					-		luding sputum,	
		Cerebrospinal fl					_			ne ability	1,2,3,
	•	Sputum examina							_	sts to aid	1,2,3,
	•	Examination of	reces.		_			-		gement of	
							isease			,•• 01	
III	Hema	atology							f hem	atology,	
	•	Introduction to h	ematology			_			re and		
	•	Normal constitu		10		-	-	ormal			
		Blood, their stru	cture and		cons	stitue	ents, a	nd wil	l demo	onstrate	1 2 2
		functions			skill	l in tl	ne col	lection	of blo	boo	1,2,3
	•	Collection of Blo	ood samples			_	_	nizing			
					_				ate sa	_	
					hanc	dling	in dia	agnost	ic prod	cedures.	

IV	<ul> <li>Various anticoagulant used in Hematology</li> <li>Hemoglobin estimation, different methods and normal values</li> <li>Packed cell volume</li> <li>Erythrocyte sedimentation rate</li> <li>Normal Haemostasis</li> <li>Bleeding time. Clotting time, prothrombin time, Activated partial Thromboplastin</li> </ul>	10	Explain the use of various anticoagulants in hematology, perform hemoglobin estimation using different methods, measure packed cell volume, determine erythrocyte sedimentation rate, and assess normal hemostasis through tests such as bleeding time, clotting time, prothrombin time, and activated partial thromboplastin time.	1,2,3,
V	<ul> <li>Blood Bank-</li> <li>Introduction blood banking</li> <li>Blood group system</li> <li>Collection and processing of blood for transfusion</li> <li>Compatibility testing</li> <li>Blood transfusion reactions</li> </ul>	10	Understand knowledgeable about the principles of blood banking, including the blood group system, and will be adept in the collection, processing, and compatibility testing of blood for transfusion, as well as understanding the management and prevention of blood transfusion reactions.	1,2,3

T1: A text book of Clinical pathology by de Gruchy

T2: Modern Blood Banking & Transfusion Practices by Denise M. Harmening 7th Edition.

**T3**: A Text book of pathology by Harsh Mohan

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Understand the fundamental of clinical pathology.	1,2,3					
2	Understand the process of different types of sample collection.	1,2,3					
3	Develop fundamental knowledge on blood components and phlebotomy.	1,2,3					
4	Acquire comprehensive knowledge on different techniques of hematology.	1,2,3					
5	Demonstrate skills and knowledge on blood banking, blood grouping and cross matching.	1,2,3					

	SEMESTER – IV									
Course	Title									
Course	code	24BOTT2206R	Total credits: 3 Total hours: 45T	L 3	$\frac{\mathbf{T}}{0}$	P 0	S 0	R	O/F 0	C 3
Pre-rec	misite	Nil	Co-requisite	_   3	U	U		<u> </u>	U	3
Progra		1411	Bachelor of Ope	ration T	Thea	tre Tec				
Seme		1	Fall/IV semester of						<u> </u>	
Beine	5001		ehend the types of bi							osal
		methods.	enema the types of or	omourou	. ,, ,,	ste ana		0101 €	oded disp	osui
Cou			ntiate between biom	edical wa	aste	types ar	nd und	lerstan	d their ass	ociated
Objec	tives	hazards.				71				
		3. To illustra	ate the disposal proce	ess for hu	ıman	waste	and co	ontami	nated shar	ps.
CO	1	Understand the di	fferent types of Bion	nedical w	vaste	and dis	sposal	of me	dical wast	e using
		color coding.								
CO	2	Differentiate biom	nedical waste and und	derstandi	ng tl	he hazaı	rds of	each v	vaste.	
CO	3	**	of human waste, co			•			•	
CO	4	_	ental knowledge on	modern	tec	hnology	and	prote	ctive devi	ces for
		handling biomedic								
CO	5		ples of bioethics and		-					1
Unit-		Conter	nt	Contac		Lea	rning	g Outo	come	KL
No.				Hour						
I	Introd	luction & Waste S				Describe	•	llustra		
	•	Definition of Bio			-			dge about		
		General and Haz		7	waste se	grega	tion			
		waste.		10						1,2
	•	Color Coding and types of containers for disposal of medical								
			-							
		waste, Segregation	on, Collection &							
	/ID	Disposal				<b>.</b> 1	'11		1	
II		of Biomedical Wa			Describe	1				
		ectious waste, Gen aste Sharps Catego				expiaiii oiomedi			type of	
			7	١	Homeur	cai wa	isic.		1,2,3	
		tegorization, and composition of omedical waste.		,						1,2,3
			aste - Radioactive							
		stes, Metals, Chem								
III		ital Generated Wa			I	Describe	e. i	llustra	te and	
	_	n Blood and Blood				explain		U	und	
		ogical wastes, Con		10		Knowle		and	skill to	1,2,3
	P	8	<b>F</b>			dentify	•		generated	_,_,_
						waste	•		C	
IV	Types	of Waste Disposa	ıl		I	Describe	e, illus	strate a	ınd	
		sinfections unit cor			$\epsilon$	explain	and ap	ply kr	nowledge	
		toclaving.			a	and skill	the d	ifferer	nt types	
		arp waste containe	rs for storage &	10	(	of waste	dispo	sable		122
	trai	nsportation,	-	10						1,2,3
	• Au	toclaving, Incinera	tion, Plasma							
	Pyı	olysis /Gasificatio	n systems,							
	Co	mposting								
V	Recen	t Trends and Bio	ethics	10	I	Describe	e, illus	strate a	ınd	1,2

Protective Devices	explain the basics knowledge	
Bioethics and Handling of Waste	about bioethics	
Management.		

- T1. Shyam Divan, Environmental law and policy in India, Oxford India Press, 2004.
- T2. C.harles A Wentz, Hazardous Waste Management, McGraw Hill Inc, Newyork, 1995

#### **REFERENCEBOOKS:**

- R1.V. J. Landrum, Medical Waste Management and disposal, Elsevier, 1991, ISBN: 978-0-8155-1264-6
- R2. S A Tabish, Principles of Hospital Management, OUP, Jaypee Publishers.6th Edition 2000.
- R3. S L Goel, Dr. R. Kumar, Encyclopedia of Hospital Management Text and Case Studies Hospitals in Community Health Care, ISBN (Hardbound): 8184502273, 9788184502275. 2010.

	CO PO Mapping							
SN	Course Outcome (CO)	Mapped Program Outcome						
1	Understand the different types of Biomedical waste and	2,3,8						
	disposal of medical waste using color coding.	2,3,0						
2	Differentiate biomedical waste and understanding the hazards	2,3,8						
	of each waste.	2,3,0						
3	Illustrate the types of human waste, contaminated sharps and its	2,3,8						
3	process of disposal.	2,3,0						
4	Develop fundamental knowledge on modern technology and	2,3,8						
"	protective devices for handling biomedical wastes.	2,3,0						
5	Identify the principles of bioethics and handling of waste	2,3,6,8						
3	management	4,5,0,0						

			SEMESTE	R – IV							
Course	Γitle	ACLS (Advanced Cardiovascular Life Support)									
Common		24BOTT2207R	Total credits:	1	L	T	P	S	R	O/F	C
Course	coae		Total hours: 3	30P	0	0	2	0	0	0	1
Pre-requ	isite	NIL	Co-requ	iisite				N	IL		
Progran	nme	Bachelor of Operation Theatre Technology									
Semest	ter		ll/IV semester of								
		Demonstrate proficiency in recognizing and managing life-threatening medical									
		emergencie									
Cours	se		the basic princip	_			iopul	mon	ary re	suscita	ıtion
Objecti			g with advanced a	•	-			,			
			S algorithms and	-			-				
		emergencies including the use of automated external defibrillators (AEDs),									
CO1		Synchronized cardio version and pacing.									
COI	-	Understand the principles of ACLS along with the management of respiratory arrest.									
CO2		Develop skills and knowledge on the management algorithms of certain medical emergencies.									
CO3		Acquire skills of electrical therapy including defibrillation, cardio-version and pacing.									
CO4		Develop knowledge on the different pharmacological drugs used in ACLS.									
		Understand the importance of team dynamics and knowledge on the roles of each									
CO5		members along with triaging.									
Unit-No.		Content	Contact	Learning Outcome						KL	
				Hour							
I		duction			Apply		_	rinci	_	of	
		urse objectives and ex		Advar			rdiac		Life		
		erview of ACLS algo		Support (BLS) to perform							
	protoc		5	CPR, ventilation, and use an AED correctly in emergency					1,2,		
		R Quality.				ctly 1	ın en	nerge	ncy	-,-,	
		of an automated external		scenar	10S.						
		rillator(AED) agement of respirate	ory arrest								
II		algorithms	ory arrest		Demo	nstra	te th	ie a	ccura	telv	
		iac Arrest Algorithm								-	
-Post -Post -Brac		t - Cardiac Arrest Alg	orithm		apply the Cardiac Arrest Algorithm and Post-Cardiac						
		resuscitation care pri			Arrest					ling	
		lycardia Algorithm		5	princi	_		of		ost-	1,2,3,
		hycardia Algorithm			resusc	_		care	•	and	4
					effecti	ively	mar		-	ents	
					using	the	Brac	dycai	rdia	and	
							a alg	-			

III	Electrical Therapy & Special Circumstances in ACLS - Defibrillation: indications, energy levels, safety considerations -Return of spontaneous circulation(ROSC) - Cardio version: synchronized cardio version for stable tachyarrhythmias -Cardiac arrest in special populations (pediatric, pregnant) -Stroke management in the context of ACLS	10	Analyze the indications, energy levels, and safety considerations for defibrillation, manage return of spontaneous circulation (ROSC), perform synchronized cardio version for stable tachyarrhythmias, and address cardiac arrest scenarios in special populations such as pediatric and pregnant patients, as well as manage stroke in the context of ACLS.	1,2,3,
IV	ACLS Pharmacology -Medications used in ACLS protocols -Indications, dosages, and administration routes -Pharmacological management of cardiac emergencies -Drug interactions and contraindications	5	Evaluate knowledgeable about the medications used in ACLS protocols, including their indications, dosages, administration routes, pharmacological management of cardiac emergencies, and will understand potential drug interactions and contraindications.	1,2,3, 4,5
V	Effective high-performance team dynamics -Introduction -Role of the team leader -Role of the team member -Element of Effective high performance team dynamics - What to communicate -How to communicate Triage system -Definition and purpose of triage - Primary goals - Different triage systems -Triage categories and criteria	5	demonstrate the ability to function effectively within a high-performance ACLS team, including understanding the roles of team leaders and members, elements of effective team dynamics, and methods of communication essential for team success and purpose of triage,	2,3,4,

T1: Nancy L. Caroline, Bob Elling, Kirsten M. Elling, and Michael Colleran: Emergency Care in the Streets 8th edition, Burlington, Massachusetts, USA; 2018.

### **REFERENCE BOOKS:**

R1: American Academy of Orthopaedic Surgeons (AAOS): Emergency Care and Transportation of the Sick and Injured 12th edition, Burlington, Massachusetts, USA; 2021.

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Understand the principles of ACLS along with the management of respiratory arrest.	1,2,3,4,7,				
2	Develop skills and knowledge on the management algorithms of certain medical emergencies.	2,3,4,7				
3	Acquire skills of electrical therapy including defibrillation, cardioversion and pacing.	2,3,4,5,7				
4	Develop knowledge on the different pharmacological drugs used in ACLS.	2,3,4				
5	Understand the importance of team dynamics and knowledge on the roles of each members along with triaging.	2,3,4,5,7				

SEMESTER – IV								
Course Title ENHANCED PROFESSIONAL	SKILLS	_						
Course code	P S R	O/F	C					
Total hours: 30P 0 0 2	2 0 0	0	1					
Pre- NIL Co-requisite	NIL							
requisite								
	Bachelor of Operation Theatre Technology							
Semester Fall/IV semester of second year of t			d lattan					
1. To enhance the writing skills in different areas include writing.	nng Paragrapn	i writing an	id letter					
2. To understand and enhance the Self-management skil	1e							
Course  3. To familiarize students with the use of Contextual		nd Use of	nhracal					
Objective verbs and idioms in a conversation	vocabulary al	ild OSC 01	pinasai					
4. To understand the dress code ethics and interview ski	11s							
5. To enhance the analytical skill and problem-solving s		lents.						
Identify and effectively utilize key elements of public sn								
associated fears.	C							
CO2 Demonstrate the ability to use non-verbal cues to enhance	ce their public	speeches.						
CO3 Produce and submit a polished, professional resume suit	Produce and submit a polished, professional resume suitable for job applications.							
CO4 Understand different interview types, including telephor	Understand different interview types, including telephonic, virtual, and face-to-face.							
CO5 Learn to answer common interview questions and adher	Learn to answer common interview questions and adhere to appropriate dress code							
ethics.								
	Learning Out	come	KL					
No. Hour		1 .						
	e a technical							
	ntroduces the							
	of pipes and cisterns, while explaining the concept							
presentation	ly and illusti	concept 1,2,						
- 1 reparation of a good presentation	cation through	•						
	rent types of qu	_						
	ain the impor							
	ucting a	SWOT						
Understanding and Overcoming Fear of analy	vsis for	personal						
	lopment and	setting						
Confidence and Control,  SMA	RT goals, as v	vell as the						
Thysiology and sucss-condol/Troccss,	ficance of	personal						
• Tips for Presentations and Public hygie	ene in profess	ional and	1 2 2 4					
Speaking, person	onal settings.		1,2,3,4					
Tips for Using Visual Aids in								
Presentations,								
Process for Preparing and Creating								
Process for Preparing and Creating Presentations,								

III	Practical session on Resume, Curriculum		Explain various strategies	
	Vitae, Writing cover letter &LinkedIn		for developing vocabulary,	
	Profile Preparation, submission &		including contextual	
	screening of Resume	3	learning and the use of	1 2 2 4
	Practical session on cover letter screening		phrasal verbs and idioms in	1,2,3,4
	session		conversation.	
	Creating profile in LinkedIn			
	How to utilize it			
IV	Leadership & Management Skills		Explain common interview	
	Concepts of Leadership		questions and effective	
	Leadership Styles	3	answering strategies, as well	1.2
	Manager VS Leader	3	as the importance of dress	1,2,
	How to be an Effective Leader		code ethics during	
	Mock/Practice Session		interviews.	
V	Interview Skills & Dress code Ethics		Identify common grammar	
	• Types of interview-telephonic, virtual&		errors related to word stress	
	face to face		and syllable division.	
	Online interview, personal interview o			
	Panel interview, o Group interview, o			
	JAM session,			
	Types of interview questions-			
	traditional/common interview questions,			
	Case interview questions,			
	General Strategies for answering			
	questions,			
	Marketing your skills and experiences,	3		1,2,3,4
	Preparation before the interview,			, , ,
	How to dress up for an interview,			
	How to maintain eye contact and positive			
	body language,			
	How to be presentable,			
	• Interview dos and don'ts,			
	• Introduction to Dress Code Ethics,			
	Purpose and Importance     Harman Malan EXPORTINAPPESSION			
	How to Make FIRSTIMPRESSION,			
	What to Wear During Interviews or Any			
	Other			
	Formal Meetings – Male & female			

T1: Nancy L. Caroline, Bob Elling, Kirsten M. Elling, and Michael Colleran: Emergency Care in the Streets 8th edition, Burlington, Massachusetts, USA; 2018.

### **REFERENCE BOOKS:**

R1: American Academy of Orthopaedic Surgeons (AAOS): Emergency Care and Transportation of the Sick and Injured 12th edition, Burlington, Massachusetts, USA; 2021.

	CO PO Mapping						
SN	Course Outcome (CO)	<b>Mapped Program Outcome</b>					
1	Identify and effectively utilize key elements of public speaking while overcoming associated fears.	5,7,8					
2	Demonstrate the ability to use non-verbal cues to enhance their public speeches.	5,7,8					
3	Produce and submit a polished, professional resume suitable for job applications.	5,7,8					
4	Understand different interview types, including telephonic, virtual, and face-to-face.	5,7,8					
5	Learn to answer common interview questions and adhere to appropriate dress code ethics.	5,7,8					

			SEMESTER – I	$\overline{\mathbf{V}}$						
Cour	Course Title PERSONAL FINANCIAL PLANNING									
Course code		24UUFL2201R	Total credits: 2	L	T	P	S	R	O/F	C
			Total hours: 60P	0	0	4	0	0	0	2
	requisite	NIL	Co-requisite				NIL			
	gramme	Bachelor of Operation Theatre Technology								
Ser	mester	I .	ll/IV semester of seco							
~			eness among students a	about t	he need	d for	possess	ing fin	ancial	
	ourse	literacy education.								
Obj	jectives		of money as a working							
		_	ity to make better finar							
	C <b>O</b> 1		be able to understand t	_					_	nd
			ans and budgets and pla							
	CO2		be able to understand t	he nee	d and v	varioi	is kind	of ban	kıng	
			ent and their utilities			• • •		•		. 1
	CO3		be able to describe the i	mporta	ance of	insu	rance se	ervices	as socia	ai
	704	security measures.	a abla to mana a 41	20025	ond 4.1	h+	no off	41.v.a1		
	CO4		be able to manage the n							
	CO5	Students will learn how to assess and compare different investment options to make informed financial decisions.						e		
Unit					Cont	oot	Learning			T/I
-No.		Conte	ent		Hot			earnn Outcon	_	KL
-110. I	Introduct	ion:			1100	11	Define			
_			portance of Financial				literac			
		Meaning, need and importance of Financial Literacy; Different components of Financial Literacy; Pre requisites of financial literacy; Savings—Meaning and Difference between avings and investment; Types of Financial Institutions and the services provided-Banking and Non-Banking; Different investment a venues.								
							importance in personal finance management and			
							Identify			
					5		components such			1,2,
							as savi			3,4
							investments,			
	_						financ	ial		
		officient investment a venues.					institu	tions, a	and	
							investi	nent		
							avenue			
II	Financial	Planning					Explai			
							signifi			
		-	ce for financial planning	g,			financ	•	nning	
	_	-	in financial planning;				in achi	_	_	
	_	o involved in Financia	~				financ	-	is and	1,2,
	_		ets, budget surplus and		10	)	unders		, 1	3,4
	_	deficit, avenues for sa	vings from surplus,				budget	-		
		for meeting deficit.					for ma		5	
	• morma	l Society funds and cr	lowa runaing				incom			
							expens	SCS		
	1									

III	<ul> <li>Banks &amp; Post Office - As financial service provider:</li> <li>Meaning and evolution of money,</li> <li>Banks—meaning, types &amp; functions; types of accounts; Formalities to open various accounts.</li> <li>Different types of Post Office saving schemes: Recurring deposit, savings, term deposit; NSC; Kisan Vikas Patra; Monthly Income scheme (MIS) Account,</li> <li>Public Provident Funds(PPF),Senior citizen savings scheme(SCSS),Sukanya Samriddhi Accounts,</li> <li>Indian Postal Order;International Money transfer service;Forex Services;</li> <li>Money remittance services; Jansuraksha Scheme</li> </ul>	10	Define different types of banks, their functions, and account opening formalities and Understand services like international money transfer, forex, and insurance offered by banks and post offices.	1,2, 3,4
IV	<ul> <li>Insurance-As financial service provider:</li> <li>Different types of Risks and their Management, Diversification of risk;</li> <li>Meaning, need and importance of Insurance</li> <li>Pension and retirement policies;</li> <li>Post office life insurance schemes, Postal life insurance and rural postal life insurance.</li> </ul>	10	Identify types of insurance policies such as life insurance and retirement plans and learn about post office insurance schemes like Postal Life Insurance and Rural Postal Life Insurance.	1,2, 3,4,
V	<ul> <li>Transformations in Digital Money market:</li> <li>Various functions &amp; innovative services of Banks; Mobile Banking, NEFT, IMPS, RTGS,</li> <li>Money transfer, Different types of cards-Debit &amp; Credit, E-Banking, Unified payment interface(UPI),</li> <li>Credit Scoring-CIBIL, Digital Banking, crypto currency and related transactions,</li> </ul>	10	Explore innovative banking services like mobile banking, NEFT, IMPS, RTGS, and digital wallets and understand digital transactions, security measures, and credit scoring systems like CIBIL.	1,2, 3,4

## **Text Books:**

- T1. The Young Adult's Guide to Financial Success- How To Manage Your Money & Live Better On Less By Edward M. Wolpert
- T2. Financial Freedom with Financial Control by Jagmohan Singh Pen down Press

# **REFERENCES:**

- R1. The Richest Man in Babylon (Deluxe Hardbound Edition) by George S. Clasonixia Press Garden City, New York, Ships from and sold by MG BOOKS.
- R2. Financial literacy to financial planning by Dr.Purvi Kothari and Mr. Keyur Mehta Nexus Publications Surat Gujarat

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	The students would be able to understand the importance of financial Knowledge and prepare financial plans and budgets and plan and manage personal finances.	5,7,8							
2	The students would be able to understand the need and various kind of banking institutions' instrument and their utilities	5,7,8							
3	The student would be able to describe the importance of insurance services as social security measures.	5,7,8							
4	The student would be able to manage the money and debt more effectively	5,7,8							
5	Students will learn how to assess and compare different investment options to make informed financial decisions.	5,7,8							

	SE	EMESTER – IV							
Course Title	EXTRA	-CURRICULAR/C	CO-CU	J <b>RRI</b>	CUL	AR			
Course code	24UBEC2201/	Total credits: 1	L	T	P	S	R	O/F	C
Course code	24UBCC2201	Total hours:	0	0	0	4	0	0	1
Pre-requisite	NIL	Co-requisite	NIL						
Programme	Bachelor of Operation Theatre Technology								
Semester	Fall/IV semester of second year of the programme								
Course	To develop writing abilities through various exercises and assignments.								
Objectives	2. To develop innovative thinking and creative ideas.								
Objectives	To develop skill and knowledge to explore different activities.								
CO 1	Explore different activities organized by various clubs, such as dance, music,								
CO I	photography, drama, and literacy								
CO 2	Develop confidence to participate in regular club activities, including workshops and								
	competitions, according to individual interests								
CO 3	Apply knowledge and skills	to represent ADTU	in inte	er-uni	versi	ty, sta	ite, ar	d natior	nal
003	level competitions.								
CO 4	Explore new platform to lea	rn from invited expe	rts in	their	respe	ctive	fields		
CO 5	Evaluate overall growth alo	ngside academic dev	elopn	nent.					

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Explore different activities organized by various clubs, such as	5,7,8
	dance, music, photography, drama, and literacy	5,7,0
	Develop confidence to participate in regular club activities,	
2	including workshops and competitions, according to individual	5,7,8
	interests	
3	Apply knowledge and skills to represent ADTU in inter-university,	5,7,8
3	state, and national level competitions.	3,7,0
4	Explore new platform to learn from invited experts in their	578
4	respective fields.	5,7,8
5	Evaluate overall growth alongside academic development.	5,7,8

	SEMESTER – IV								
Course Title		India	n Her	itage					
Course code	24BOTTIH201	Total credits: 1	L	T	P	S	R	O/F	C
Course code		Total hours: 15T	1	0	0	0	0	0	1
Pre-requisite	Nil	Co-requisite				N	il		
Programme		Bachelor of Operat	ion T	heatro	e Tech	nolog	y		
Semester	F	all/IV semester of seco	ond y	ear of	f the p	rogra	mme		
Course Objectives	online content.  2. To provide h projects.	ands-on experience the	nrougl	n inte	ractive	e exer	cises a	and real-v	vorld
CO1	Demonstrate a stro	ng grasp of key princip	oles ar	nd the	ories c	overed	l in the	course.	
CO2	Apply learned cor exercises.	ncepts to solve real-wo	orld p	robler	ns thro	ough p	oractica	al projects	and
CO3	Analyze and eval making abilities.	uate information, imp	rovin	g thei	r prot	olem-s	olving	and deci	sion-
CO4	Develop their ideas	s clearly and effectively	y in bo	oth wr	itten a	nd ver	bal for	ms.	
CO5	Demonstrating stro	ong collaboration and te	eamw	ork sk	ills.				

	CO PO Mapping								
SN	Course Outcome (CO)	<b>Mapped Program Outcome</b>							
1	Demonstrate a strong grasp of key principles and theories covered in the course.	7,8							
2	Apply learned concepts to solve real-world problems through practical projects and exercises.	7,8							
3	Analyze and evaluate information, improving their problem- solving and decision-making abilities.	7,8							
4	Develop their ideas clearly and effectively in both written and verbal forms.	7,8							
5	Demonstrating strong collaboration and teamwork skills.	7,8							

			SEMESTE	$\mathbf{E}\mathbf{R} - \mathbf{V}$								
Course T	'itla		CLINICAL	L OBSE	RVA	TIO	ΝI					
Course	itte		(OT Proce	edure & 1	Patie	nt ca	re)					
Course c	ode	24BOTT3101R	Total credits: 4	L	T	P	S	R	O/F		C	
			Total hours: 120P	0	0	8	0	0	0		4	
Pre-requi		Nil	-									
Program			Bachelor of Ope									
Semest	er	1 77 1	Fall/ V semester of								11	
			1. To demonstrate proficiency in set up and prepare an operating room, ensuring all instruments and equipment are ready for various surgical procedures.									
Cours	Δ	2. To develop skill in perform basic procedures and assist in monitoring patients										
Objectiv		during surg	-	asic proc	caure	es and	a ass	131 111	momtom	ig pa	ıtıcınıs	
Objectiv	v Co		o skill in provide esse	ential pre	and	post-	onera	ntive o	eare, ensur	ing n	atient	
		comfort and	-	Pro		Post	op • i ·		, 011801	8 P		
CO1			and techniques to efficient	ciently se	et up	and p	repai	e an c	perating r	oom		
002			l techniques to ensur								ly for	
CO2		various surgical pro	ocedures					-				
CO3		Demonstrate profic	iency to perform bas	sic proced	lures	such	as ca	thete	rization, C	annu	lation	
		etc.										
CO4			and skills on assisting									
CO5			ledge and techniques	s to provi	de es	sentia	al po	st-ope	erative care	e, ens	suring	
TT24	1	patient comfort and		C44		T -	•		-4		TZT	
Unit- No.		Conte	nt C	Contact Hour		Le	arnı	ng Ot	ıtcome		KL	
I I	On	erating Room Se	tun	Hour	Des	scribe	illu	ctrate	, explain,			
•	Op	<ul> <li>Preparation of</li> </ul>	-						nd skill to			
		instruments, e				-		-	pare and			
		surgical instru			arrange the operating room by correctly setting up anaesthetic							
		equipment, an										
		according to the	**		inst	trume	nts, s	surgic	al			
		requirements	-	24	equipment, and supplies						1,2, 3,4	
		surgical proce		24	specific to different surgical							
					procedures, ensuring proper					1		
		Ability to prepareting roots			positioning of lights, tables, ar necessary tools.					na		
		operating room			пес	essar	y 100	18.				
		surgery, ensur	0.1									
ı		=	lights, tables,									
II	Ch	and other nece	<u> </u>		Δn	nlv la	2011/1	odgo o	ınd skill to			
11	Cn	ecklist of OT equ						_	and descri			
			oring Systems				-	-	ential OT			
		Operating Tab							ng patient			
		• Surgical Lights		24	_	_			s, operating	g	1,2,	
		• Anesthesia Ed	• •		tables, surgical lights,					3,4		
		• Electrocautery	y machine				_	_	ent, electro			
ı		<ul> <li>Crash Cart</li> </ul>				-			crash carts	,		
		<ul> <li>Suction Equip</li> </ul>	oment					quipm				
III	Pro	cedures						-	ınd skill to		1 2	
		<ul> <li>Cannulation</li> </ul>		proficiently perform various					1,2,			
		<ul> <li>Catheterizatio</li> </ul>	n		procedures such as can nulation,						Э. т	

IV	<ul> <li>central venous catheterization</li> <li>Ryle's tube</li> <li>IV lines</li> <li>Arterial line</li> </ul> Patient Preparation <ul> <li>Explaining the upcoming procedures to the patient and obtaining consent.</li> <li>Preparing the patient for certain procedures and administration of preoperative drugs.</li> <li>Knowledge of patient positioning techniques.</li> <li>Ability to ensure patient comfort and safety during transfer to the operating table</li> </ul>	24	catheterization, central venous catheterization, Ryle's tube insertion, IV line establishment, and arterial line insertion, demonstrating proper techniques and maintaining sterility.  Apply knowledge and skill to effectively communicate with patients to explain upcoming procedures and obtain consent, prepare patients for surgery by administering pre-operative drugs, and apply patient positioning techniques to ensure comfort and safety during transfer to the operating table.	1,2, 3,4
	and positioning for the procedure.			
V	Assisting with patient transfer to the recovery area and ensuring their comfort and safety post-operation.  Providing wound care, dressing changes, and monitoring for any signs of complications post-operation.	24	Apply knowledge and skill to assist in the safe transfer of patients to the recovery area post-operation, provide appropriate wound care and dressing changes, and monitor patients for signs of complications, ensuring their comfort and safety during the recovery period.	1,2, 3,4

	CO PO Mapping								
SN	Course Outcome (CO)	Mapped Program Outcome							
1	Apply knowledge and techniques to efficiently set up and prepare an operating room	2,3,5,8							
2	Illustrate skills and techniques to ensuring all instruments and equipment are ready for various surgical procedures	2,3,5,7,8							
3	Demonstrate proficiency to perform basic procedures such as catheterization, Cannulation etc.	1,2,3,6,7,8							
4	Apply knowledge and skills on assisting and monitoring patient during surgery.	2,3,6,8							
5	Demonstrate knowledge and techniques to provide essential post-operative care, ensuring patient comfort and safety.	1,2,3,5.6,7,8							

	SEMESTER – V											
Course	Title			AL OBS								
Course			(Sterilizat					1	T	I		
Course	code	24BOTT3102R	Total credits: 4	L	T	P	S	R	O/F	C		
		N.T.*1	Total hours: 12		0	8	0	0	0	4		
Pre-requ		Nil	Co-requisite		7D1 4			Nil				
Program Semes			Bachelor of O					<b>U</b>				
Semes	ter			'all/ V semester of third year of the programme								
Cour	se		<ol> <li>To learn about basic sterilization techniques and CSSD procedure.</li> <li>To develop skills in aseptic techniques competently within the OT.</li> </ol>									
Object	ives	_	effective commun	_	_	-			01.			
CO	1	Apply knowledge a							vironmen	 f		
		Demonstrate profici										
CO2	2	control.	ioney in eddb pro	seess to e	isare c	pillia	i sterr	nzuno	n ana qua	iii		
		Apply knowledge a	and skill of aseptic	principle	es to pr	event	conta	minati	on during	surgical		
CO3	}	procedures.		r	F-				5-1-11-1-18	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~		
~~		Illustrate proper har	nd hygiene, gowni	ng, and g	loving	techni	ques 1	o min	imize the	risk of		
CO4	ļ	infections.	, 6	<i>5,</i> - 8	0							
00.	,	Develop effective c	ommunication and	d teamwo	rk skill	s to er	sure	smoot	h coordina	tion and		
COS	,	optimal patient care										
Unit-		Content	Contact		Lear	ning	Outco	ome	KL			
No.			Hour									
I	Steri	dization				-		-	skill to			
	•	Understanding a	nd			erstand		_				
		implementing va							nethods			
		sterilization metl	_			-			ts and			
		instruments and	24				-	1,2,3,4				
	•	Knowledge of autoclaving,					•		•	, ,- ,		
			al sterilization, and chemical sterilization, and									
		sterilization mon	sterilization monitoring procedures to maintain a									
		procedures to ma		_	ile env			II a				
***	CCC	environment.			a1=:11 4 a							
II	CSS		. D			-	skill to					
		Decomanimication				cuvery cesses,		-	e CSSD			
		Inspection, Asse Packaging	mbry, and		•			_	ection,			
	_	0 0	nitoring and					_	ing of			
		<ul><li>Sterilization Mor Quality Control</li></ul>	intornig and	24		rumen	_	_	-	1,2,3,4		
	•	g. 15:	ribution			itor st	-			_,_,_,		
		Documentation a							storage			
		Keeping	ina Record						naintain			
		Recping			accı	ırate d	ocum	entatio	on and			
					record-keeping.							
III	Asep	otic Technique :			App	ly kno	wled	ge and	skill to			
	•	<ul> <li>Mastery of aseptic principles to</li> </ul>			_				n during			
		prevent contamin	-		_	_		_	racticing			
		surgical procedu	res.	24		er har				1,2,3,4		
	•	Practicing proper	r hand hygiene,				-		for hand	1,2,5,		
	•	Moment of hand	washing			_		-	ng basic			
	•	Basic techniques	to minimize			niques			e the			
					risk	of info	ection	S.				

	the risk of infections.			
IV	Management of Biohazard material:  Types & selection of PPE.( gowning Gloving methods)  Donning and Doffing.  Spillage kit Mercury spillage Blood, body fluid, vomit		Apply knowledge and skill to accurately select and use appropriate PPE, demonstrating correct donning and doffing techniques, and effectively manage biohazard materials, including handling spillage kits for mercury, blood, body fluids, and vomit.	1,2,3,4
V	Effective communication with members of the surgical team to ensure smooth coordination during procedures.     Collaboration with nurses, surgeons, anesthesiologists, and other healthcare professionals to provide optimal patient care	24	Apply knowledge and skill to effective communication skills to ensure smooth coordination with the surgical team, collaborating efficiently with nurses, surgeons, anesthesiologists, and other healthcare professionals to provide optimal patient care.	1,2,3,4

	CO PO Mapping	
SN	Course Outcome (CO)	Mapped Program Outcome
1	Apply knowledge and techniques of sterilization to maintain a sterile environment.	2,3,7,8
2	Demonstrate proficiency in CSSD process to ensure optimal sterilization and quality control.	2,3,5,7,8
3	Apply knowledge and skill of aseptic principles to prevent contamination during surgical procedures.	2,3,4,5,7,8
4	Illustrate proper hand hygiene, gowning, and gloving techniques to minimize the risk of infections.	2,3,4,8
5	Develop effective communication and teamwork skills to ensure smooth coordination and optimal patient care with the surgical team.	5,6,7

	SEMESTER – V											
Course T	itle			L OBSERVATION III								
		A 4 D O F F 2 4 0 4 D	(Anaesthesia							0.75	. 1	
Course c	ode	24BOTT3103R	Total barrer 120		L	T	P	S	R	O/F	'	C
Due ne sur	:a:4a	NT21	Total hours: 120p	<u>'</u>	0	0	8	0	0	0		4
Pre-requirement		Nil Co-requisite Nil Bachelor of Operation Theatre Technology										
Semest			Fall/ V semester of									
Semest	CI									s and r	rov	idino
		<b>1.</b> To learn about administering sedative drugs, monitoring vital signs, and providing support to anaesthetists throughout all surgical phases										
Cours	e	2. To develop proficiency in administering oxygen therapy and efficiently anticipate										
Objectiv		_	ocedural needs.		υ	, ,		13		,		1
		_		mana	agem	ent a	nd equ	ipped	l with e	ssential	ski	lls
		<b>3.</b> To expertise in emergency drug management and equipped with essential skills and knowledge.										
CO1		Apply knowledge a	nd skill to effectivel	y adn	ninis	ter dı	ugs, m	onito	r vital s	signs an	nd as	ssist
		anesthetists.										
CO2			edge and proficienc									
CO3		Illustrate proficientl process.	y assist surgeons and	d the	surgi	cal te	eam thi	rough	out the	surgica	ıl	
CO4		Apply comprehensi	ve knowledge and sl	cill in	eme	rgeno	cy drug	g man	agemei	nt.		
CO5		Apply equipped pro	ficiency and skill to	rapid	lly ar	nd eff	ectivel	y res	pond to	emerge	enci	es
Unit-		Content			ntact	t	Lea	rnin	g Outc	ome		KL
No.				He	our							
I	Ana	nesthesia Support :					escribe		illustrat		nd	
		• Understanding the basics of					plain			historic		
		sedative drugs, its administration					-		nd the	basics	of	
		and assisting anaesthetists during				an	aesthe	sıa				1.0
		induction, maintenance, and			24							1,2
		emergency phases.										
		<ul> <li>Proficiency in monitoring vital signs and responding to changes in</li> </ul>										
		-										
II	Oxy	patient's vitals during surgery.  ygen therapy				De	escribe	illns	strate ar	nd		
	OA	<ul><li>Types of Oxygen Delivery devices</li></ul>							ysiolog			
		<ul> <li>Techniques for a</li> </ul>	•				_	_	d the m			
		oxygen					anaest	-				
		<ul> <li>Oxygen Therapy</li> </ul>	y in Special									
		Populations		2	24							1,2
		• flow rate and hu	midification									•
		Assessment and	Monitoring									
		Safety Measures										
		Hypoxemia Management										
	Complications and Side Effects											
III	Sur	rgical Assistance:					escribe		illustrat	e ai	nd	
		Assisting surgeons and other					plain t			_	.	
		members of the surgical team					uipme		used		ıle	1.0
		during procedur	-	2	24	pa	tient is	ın ar	naesthe	81a		1,2
		Anticipating the										
		surgical team ar										
		support efficien	tly throughout the									

	procedure.			
IV	<ul> <li>Medication:</li> <li>Emergency Drug</li> <li>Sound-alike-look-alike(LASA), high risk ,high alert,</li> <li>Narcotic Drug</li> <li>Drug Selection and Stocking</li> <li>Dispensing and Administration</li> <li>Storage and Handling</li> <li>Documentation</li> </ul>	24	Describe, illustrate and explain the basics of general anaesthesia along with different stages and complications	1,2
V	<ul> <li>Emergency Preparedness</li> <li>Emergency codes</li> <li>Being prepared to respond quickly and effectively to emergencies in the operating room, such as massive bleeding, malfunction of instrument.</li> <li>BLS &amp; ACLS</li> <li>Fire Safety</li> </ul>	24	Describe, illustrate and explain the basics of in operation theatre room	1,2

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Apply knowledge and skill to effectively administer drugs, monitor vital signs and assist anaesthetists.	1,2,3,8				
2	Demonstrate knowledge and proficiency in administering oxygen therapy.	2,3,8				
3	Illustrate proficiently assist surgeons and the surgical team throughout the surgical process.	1,2,3,8				
4	Apply comprehensive knowledge and skill in emergency drug management.	2,3,8				
5	Apply equipped proficiency and skill to rapidly and effectively respond to emergencies	2,3,4,8				

	SEMESTER – V								
<b>Course Title</b>	SUMMER INTERNSHIP								
Course code	24BOTTSI01	Total credits: 3	L	T	P	S	R	O/F	С
Course code		<b>Total hours:</b>	0	0	0	0	0	24	3
Pre-requisite	Nil	Co-requisite				N	il		
Programme		Bachelor of Opera	tion T	heatr	e Tech	nolog	y		
Semester		Fall/ V semester of th	ird ye	ar of	the pr	ogran	ıme		
Course Objectives	path. 2. To gain a c network. 3. To identify mentorship		nding	of the	indust	ry and	l build	a professio	onal
CO1	Understand and bed	come familiar with the	work e	enviro	nment.				
CO2	Understanding and	practicing workplace p	rofess	ionalis	sm.				
CO3	Develop specific skills like communication, teamwork, or technical abilities								
CO4	Develop a clear sco	pe of career aspect.							
CO5	Develop practical k	nowledge and skills for	appli	cation	in rea	l time.			

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Understand and become familiar with the work environment.	2,5,6,7,8				
2	Understanding and practicing workplace professionalism.	2,3,5,6,7,8				
3	Develop specific skills like communication, teamwork, or technical abilities	5,6,7,8				
4	Develop a clear scope of career aspect.	2,5,6,7,8				
5	Develop practical knowledge and skills for application in real time.	1,2,3,5,6,7,8				

	SEMESTER – VI								
Course Tit	Course Title CLINICAL APPLICATION							_	
Course co	code 24BOTT3201R Total credits: 3 L T P S R O/F						C		
D .		Total hours: 30T+30	)P 2	0	2	0	0	0	3
Pre-requis		Co-requisite	4. (D)		T 1		il		
Programn		Bachelor of Opera							
Semester		Fall/ VI semester of the						1	
		n patient positioning te entation.	cnnique	S, 10	ocusing	on mo	nitorin	g and	
Course	2 To iden	ntation. Itify equipment needed	for sure	eri.	ec and u	nderete	and the	ir maint	enance
Objective	AC .	n how to management	_						chance.
		rsonal communication			•		•	Zing	
	-	t techniques of patient						onitorin	g and
CO1	documentation.	1 · · · · · · · · · · · · · · · · · · ·	1	0	,,	<i>8</i> F ···			8
CO2	Identify various equ	ipment required for di	fferent s	urgi	ical prod	cedures	8		
CO3		e and maintenance of va							
CO4	Demonstrate skills i	n management of unco	onscious	pat	tients ac	cording	g to dif	ferentia	.1
CO4	_	the significance of inte	_						
CO5	Apply knowledge o	n legal and ethical issu	es that b	oind	ls OT Te	echnici	an.		
Unit-No.	Cont	tent	Contac		Lea	rning (	Outcor	me	KL
			Hour						
I	positioning and mor	nitoring in the			Underst		-		
	operation theatre				guidelin	_		_	
		and general guideline			and app	-			
	•	positioning.			differen	_			
		positions for various	4		surgery patents			_	1,2,3
	procedure	es and tests.			patents	whene	vei ieg	unea.	
	<ol><li>Equipment</li></ol>	nt for positioning							
	4. Patient m	onitoring devices							
	5. Documen	tation							
II	Instrument planning	for various			Describ	e, illus	trate a	nd	
	surgical procedure				apply ki	nowled	lge on	how	
	1. Special	instrument in			to use th	ne instr	ument	s in	
	general	surgery			differen	t proce	dures.		
	2. Orthope								
	•	copic surgery	5						1,2,3
		d surgical instrument							-,-,-
		nt stapler in surgical							
	procedu								
	6. Day care								
	CT,ME	location- MRI,							
III	Other Equipment	<b>U</b> 1		+	Underst	andino	and o	nerate	
	1. Electrocauter	·v			and mai	_		Peruic	
	2. ABG machin	•			essentia				
	3. Suction Devi		•		equipme	_		;	100:
	4. Fluid /blood		8		electroc		_		1,2,3,4
	5. Heat and Mo				ABG m	•			
	exchanger				devices.	, fluid/	blood		
	6. Ultrasound				warmer	s, heat	and		

	<ul><li>7. Intra-aortic ballon pump (IABP)</li><li>8. Transoesophageal Electrocardiography</li></ul>		moisture exchangers, ultrasound machines, intra-aortic balloon pumps (IABP), and	
	(TEE)		transesophageal echocardiography (TEE) devices.	
IV	Fundamental of medical nursing  1. Assessment, prevention and replacement therapy for fluid and electrolyte balance  2. Medical and surgical management of unconscious patients and neurological patients.  3. Standards pre-operative nursing practice  4. Duties of nurses and OT technician  5. Importance of teamwork and anticipating the need for surgeon	8	Describe, illustrate, explain and apply knowledge & skill to assess, prevent, and manage fluid and electrolyte imbalances, provide medical and surgical care for unconscious and neurological patients, adhere to pre-operative nursing standards, perform duties of nurses and OT technicians, and work effectively as part of a surgical team.	1,2,3,4
V	Legal , Regulatory and Ethical issues  1. Surgical ethics 2. Informed consent 3. Legal right and issues in OT 4. Legal aspects of surgery 5. Ethical and personnel responsibility of OT personnel	5	Describe, illustrate and explain legal things and different types of ethics.	1,2
Practical	<ul> <li>Practice standard patient positioning techniques and various surgical positions (supine, prone, lithotomy).</li> <li>Set up and use patient monitors (ECG, pulse oximeter, BP monitor) and document details accurately.</li> <li>Identify and use basic surgical tools and handle properly.</li> <li>Operate all type instruments and use powered surgical tools safely.</li> <li>Operate electrocautery devices and perform arterial blood gas</li> </ul>	30	Describe, illustrate and explain and apply skill & techniques standard patient positioning techniques, set up and use patient monitors accurately, identify and handle basic surgical tools, operate all types of surgical instruments safely, perform arterial blood gas tests with an ABG machine, and manage fluid/electrolyte balance	1,2,3,4

tests with an ABG machine.	through assessment and	
Access and manage	replacement therapy.	
fluid/electrolyte balance,		
including performing replacement		
therapy.		
Manage medical and surgical care		
for unconscious and neurological		
patients following pre-operative		
nursing protocols.		
Perform roles of nurses and OT		
technicians, collaborate		
effectively in the surgical team,		
and apply ethical principles,		
informed consent, and understand		
legal aspects in the OT.		

	CO PO Mapping					
SN	Course Outcome (CO)	Mapped Program Outcome				
1	Explain the different techniques of patient positioning, including patient monitoring and documentation.	1,2,3,6,7,8				
2	Identify various equipment required for different surgical procedures	2,3,5				
3	Explain the purpose and maintenance of various surgical equipment.	2,3,8				
4	Demonstate skills in management of unconscious patients according to differential diagnosis including the significance of interpersonal communication.	2,3,4,5,7				
5	Apply knowledge on legal and ethical issues that binds OT Technician.	6,7,8				

			SEMESTER	– VI										
Cours	Course Title ADVANCED ANAESTHESIA TECHNIQUE													
Cour	se code	24BOTT3202R						O/F	1	C				
Cours	sc couc		Total hours: 30T+3	80P	2	0	2	0	0	0		3		
	equisite	Nil	Co-requisite						Nil					
	ramme		Bachelor of Oper											
Sem	iester		Fall/ VI semester of											
Co	urse		out advanced technic	•			_							
	ectives	_	proficiency in specia			_								
_			e knowledge and skill								aric	S.		
C	<b>O1</b>	· ·	hetics and muscle rel											
C	O2	Demonstrate know intubation.	ledge and skills on ba	sic and	i manı	ıal an	way	man	oeuvre	es incli	ıdın	ıg		
C	03		ciples, considerations	and ec	minm	ent of	vent	ilatic	n					
	<del>03</del> <del>04</del>		nowledge on monitori							urgery	,			
			se and value of anaes											
C	<b>O</b> 5	ventilation	and , and or andor		., 51115			۰۰۰۱۰ ق						
Unit-		Conte	nt	Cor	ntact	L	earn	ing (	Outco	me	J	KL		
No.					our			8						
I	Intrave	enous Anaesthetic	s & Muscle			Uno	lersta	ınd d	oses,					
	Relaxa	nts				med	chani	sms,	routes	of				
	-	Classification				administration, and								
	-	Barbiturates and N	on barbiturates agents	8			elimination of							
	-	- Does, Mechanism of action, routes of				intravenous anaesthetics								
		administration, elin	mination of life,		5		and differentiate				1,2,3,4			
		advantages and dis	advantages,					_	olarizii	-				
		contraindication.				and non-depolarizing muscle relaxants and								
	-	Classification of M								ıd				
		(Depolarizing and	-				their clinical uses.							
	-	Indication & contr												
II		Management and							basic					
		Airway Managemer							gemen	t				
	-Manua	al airway maneuvers	S	techniques and use airway adjuncts										
	-	Airway Adjuncts Continuous Positiv	za Aimway Draggura				-	-	cis id perf	orm				
	_	(CPAP) and BiPA	•				otrac	-	iu peri	OHH				
	_		herapy and delivery						nd mai	าลงค				
		devices	nerapy and denivery						gencies	•				
	_	Suctioning					id sec	_						
	_	Endo tracheal intul	bations	-	10	_	batic	_			1,2	2,3,4		
	-	Kings lt Airway												
	-	Digital intubations												
	-	Laryngeal mask ai	rways and Combitube											
		intubations												
	-	Rapid sequence in	tubations											
	-	Tracheostomy												
	-		traindication of all.											
	-		T tubes-types and size			1								
III	Breath	ing systems			4.0		-	-	onent					
	-		ions; humidity and		10		•	- •	tems a	nd	1,2	2,3,4		
		heat			under			understand their						

F				
	- Common components -connectors,		humidification methods	
	adapters, reservoir bags		and describe different	
	- Methods of humidification		types of breathing	
	- Classification of breathing system		circuits and their	
	- Mapleson system -A B C D E F *		applications in	
	Jackson Rees system		anesthesia	
	- Bain circuit			
	<ul> <li>Non rebreathing valves -ambu valves</li> </ul>			
	- AMBU BAG			
	- The components of circle system			
	- Soda lime, indicators			
IV	Equipments and Monitoring under		Describe, illustrate and	
	Anaesthesia		explain how to monitor	
	- Monitoring (ECG ,SPO2 ,NIBP		vital signs and	
	,Temperature ,IBP ,CVP ,Etco2)		anesthesia parameters	
	- arterial blood pressure monitoring		accurately and perform	
	- Intravenous cannulation & I.V.Cannula	15	intravenous annulations	1,2,3,4
	(Size, colour and flow rate)		and manage difficult	
	- Difficult intubation cart		airway scenarios.	
	- Humidification: 1. Goals of		•	
	humidification, 2. Advantages of			
	humidification, 3. Types of humidifiers			
V	Anaesthesia workstation and ventilation		Describe, illustrate and	
	-Definition and purpose of anaesthesia		explain the components	
	workstations		and functionalities of	
	-Components and functionalities of		anesthesia workstations	
	modern anaesthesia workstations		and monitor ventilation	
	-Vaporizers and Types of vaporizers	5	parameters and	1,2,3,4
	-Modes of mechanical ventilation		understand safety	7 7- 7
	-Monitoring ventilation parameters: tidal		mechanisms during	
	volume, minute ventilation, peak airway		mechanical ventilation.	
	pressure, and plateau pressure			
	-Alarms and safety mechanisms			
Prac	Identify and classify intravenous		Describe, illustrate and	
tical	anaesthetics and muscle relaxants		explain and apply skill	
	(barbiturates, non-barbiturates,		& techniques for all	
	depolarizing, non-depolarizing).		practical procedure.	
	Demonstrate dosing, mechanisms of		r r	
	action, routes of administration,			
	elimination, advantages, disadvantages,			
	and contraindications for each agent.			
	Practice basic airway maneuvers and			
	techniques for manual airway control.	30		1,2,3,4
	<ul> <li>Use airway adjuncts like CPAP, BiPAP,</li> </ul>			
	and supplemental oxygen therapy			
	devices effectively.			
	-			
	Demonstrate techniques for endotracheal     intubation Vinga I T circum digital			
	intubation, Kings LT airway, digital			
	intubations, and use of laryngeal mask			
	airways and Combitube.			
	<ul> <li>Understand rapid sequence intubations</li> </ul>			

	and indications for tracheostomy, considering contraindications.		
•	Identify components of breathing		
	systems, connectors, adapters, and		
	reservoir bags.		
•	Perform intravenous cannulation,		
	selecting appropriate cannula sizes,		
	colors, and understanding flow rates.		
•	Familiarize with the difficult intubation		
	cart and its contents for emergency		
	airway management.		
•	Define and understand the purpose of		
	anaesthesia workstations, including their		
	components and functionalities.		

	CO PO Mapping						
SN	Course Outcome (CO)	Mapped Program Outcome					
1	Classify IV Anaesthetics and muscle relaxants used in surgical procedures.	1,2,3,8					
2	Demonstrate knowledge and skills on basic and manual airway manoeuvres including intubation.	1,2,3,4,8					
3	Recognize the principles, considerations and equipment of ventilation.	1,2,3,4,8					
4	Apply skills and knowledge on monitoring patient and equipment during surgery.	2,3,4,7,8					
5	Describe the purpose and value of anaesthesia workstation along with techniques of ventilation	2,3,4,8					

	SEMESTER – VI											
Cour	se Title	SURGIO	CAL PROCEDURE AN	ND EQ	UIP	MEN	T U	SE I	N TH	ЕОТ		
Cour	se code	24BOTT3203R	Total credits: 3		L	T	P	S	R	O/F		C
			Total hours: 30T+30	P	2	0	2	0	0	0		3
Pre-requisite		Nil	Co-requisite					l	Nil			
Prog	ramme		Bachelor of Operat									
Sen	nester		Fall/ VI semester of th									
			various surgical procedu									
	urse		participants with a range		-				_	_		
Obje	ectives		oficiency in assisting	-				-	-	and	ensu	rıng
			unctionality for safe and							1		
C	O1		principle, classification		dica	tion o	t sur	gical	proce	dures		
<u> </u>	O2		reparation and positioni		ita n	omor	o1					
	02		and technique of suturi and skills on operating a					20010	lizad a	aninn	ont	in
C	О3	the operation theat		ınu IIIdl	mei	iance	OI S]	JULIA	nzeu e	quipii	CIIL	111
C	O4	*	rgical procedures and ic	lentify	the	equin	meni	rear	iired a	ccordi	nglv	,
	<del>04</del> 05		ole, procedure and types					requ	incu a	ccorui	g. y	•
Unit-		Conte		Conta				ing (	Outcor	ne	K	L
No.		2.222		Hou								
I	Basic o	of surgery:				Des	cribe	, illu	strate	and		
	>	Historical develop	ment and principle of			expl	lain a	bout	the ba	asic		
		surgery.				knov	wled	ge ab	out			
	>	Surgical terminolo	gy, types of incision			_	ery a					
			the use of particular						of sur	gical		
		procedure				proc	edui	e.				
	>		argical procedure and	8							1	,2
		surgeries.										
	>	• •	ent positioning and									
		draping.	nost amountive some of									
		the surgical patient	post -operative care of									
		procedure	chergency									
II	Sutur	e Materials:				Des	cribe	illu	strate	and		
		Classification of su	iture materials						ommoi			
	>					_			ods o			
	>	Common suture te	~						rials a			
	>	Suture sizing and p	-	10		reme	oval	techi	niques		1	,2
	>	Suture removal.										
	>	Physical preparation	on and draping									
		surgical site										
	>		paring and draping									
III	· ·						-	ıstrate				
	Equip		0.41.5			_			knowl	_		
			ce of all the surgical					_	erate			
	_	instrument.		10			ntain			erent	1	,2
			ument & accessories			surg	gical	ınstrı	ıment			
	<b>&gt;</b>	6	noscony									
	Dr.	Endoscope & colo	noscopy.									
1	➤ Br	onchoscope				1						

	➤ Microsurgery, Laser surgery & Ultrasonic			
	surgery			
IV	Surgical requirement in various surgical		Describe, illustrate and	
	speciality like		explain how to assist	
	<ul><li>Neurosurgery,</li></ul>		and mange different	
	<ul><li>Paediatric Surgery,</li></ul>		type of surgical	
	<ul><li>Thorasic &amp; Cardiovascular Surgery,</li></ul>		procedure	
	<ul><li>Orthopedic Surgery,</li></ul>			
	<ul><li>Gynecological Surgery,</li></ul>			
	<ul><li>Urological Surgery,</li></ul>	8		1,2,3,4
	<ul><li>Opthalmic Surgery,</li></ul>			
	<ul><li>Dental Surgery,</li></ul>			
	<ul><li>General Surgery</li></ul>			
	<ul><li>Plastic And Reconstructive Surgery,</li></ul>			
	<ul><li>Thyroid &amp; Vascular Surgery</li></ul>			
	Otorhinolarygnology And Head And			
	Neck Surgery.			
V	Organ procurement and transplantation		Describe, illustrate and	
	Types of transplant		explain the principles of	
	<ul><li>Organs and tissues transplanted</li></ul>		organ donation and	
	Types of donor	10	transplantation,	1.2
	<ul><li>Immunology of organ transplantation</li></ul>	10	including the ethical,	1,2
			legal, and social	
			considerations related to	
			the field.	
Prac	Learn surgical terms and types of		Describe, illustrate and	
tical	incisions practically.		explain and apply skill	
	Practice proper patient positioning and		& techniques for all	
	surgical draping.		practical procedure.	
	<ul> <li>Identify and handle different suture</li> </ul>			
	materials and Practice various suturing			
	techniques			
	Recognize common surgical instruments	20		1001
	and their roles.	30		1,2,3,4
	Familiarize with laparoscopic			
	instruments, surgical robots, and			
	endoscopes.			
	Understand and assist different types of			
	surgery.			
	<ul> <li>Learn about transplants and donor types</li> </ul>			
	practically.			
	practically.			

# **TEXT BOOKS:**

T1. Berry & Kohn's Operating room technique 12th edition

T2. Textbook on operation Theatre Technology  $1^{st}$  edition

	CO PO Mapping				
SN	Course Outcome (CO)	Mapped Program Outcome			
	Describe the basic principle, classification and indication of				
1	surgical procedures including patient preparation and	1,2,3,6,7,8			
	positioning.				
2	Demonstrate skills and technique of suturing and its removal.	1,2,3,8			
3	Apply knowledge and skills on operating and maintenance of	22578			
3	specialized equipment in the operation theatre.	2,3,5,7,8			
4	Classify various surgical procedures and identify the equipment	2278			
4	required accordingly.	2,3,7,8			
5	Explain the principle, procedure and types of organ transplant.	1,2,3,5,7,8			

			SEMESTE	R – VI							
Course T	itle	INT	RODUCTION TO	RESEA	RCH	METI	HODO	DLOGY	<i>T</i>		
Course code		24BOTT3204R	<b>Total credits: 3</b>	L	T	P	S	R	O/F		C
			Total hours: 45T	3	0	0	0	0	0		3
Pre-requisite		Nil	Co-requisite				N				
Program			Bachelor of Open					-			
Semest	er		Fall/ VI semester of								
		1. To gain a comprehensive understanding of foundational research concepts,									
Cours	e	_	including the research process, types of research, and ethical considerations.								
Objectiv	ves	2. Acquire knowledge of various research designs, methodologies, and data									
		collection techniques.									
001		<ol> <li>Develop knowledge about research ethics.</li> <li>Develop fundamental knowledge on the principles and types of research.</li> </ol>									
CO1		_	_				or rese	earcn.			
CO2			sive understanding of				a£ 1:4a				
CO ₃		-	ledge on the signific					rature r	eview.		
CO4			es of data collection					iam			
Unit-		Understand the diffe	erent types of research	Contac					<b></b>		KL
No.		Conte	ш	Hour		Lea	a1 111111 <u></u>	g Outco	me		ΝL
I I		Introduction to rese	arch	Hour		escribe	<u>.</u>	llustrate	e and	1	
1						cserro cplain	abo				
		<ul><li>Definition of research</li><li>Importance and purpose of research</li></ul>				•		esearch.			
					P						
		<ul> <li>Types of research (basic,</li> </ul>		5							1,2
		applied, qu									
		qualitative,									
		-	rocess overview								
II	Re	Research design			D	escribe	e. illus	trate an	d		
		<ul> <li>Formulating research questions and hypotheses</li> <li>Variables and operationalization</li> <li>Experimental, correlational, and</li> </ul>					*	ferent t			
						search					
				10							1,2
		descriptive res									
		• Choosing an a	-								
		research design									
III	Lit	erature review			D	escribe	e, illus	trate an	d		
		• Conducting a l	iterature search		ex	plain t	the bas	sic knov	wledge		
		• Evaluating and			ab	out lit	eratur	e reviev	V		
		research literat	•	5							1,2
		• Identifying res	earch gaps								
		• Importance of	literature review								
		in research									
IV	Da	ta collection method	ls		D	escribe	e, illus	trate an	d	T	
		• Surveys/questi	onnaires		ex	xplain 1	the dif	ferent t	ype of		
		<ul> <li>Interviews</li> </ul>		10	da	ıta coll	ection	metho	ds.		1.0
		<ul> <li>Observations</li> </ul>		10							1,2
		• Experiments									
		<ul> <li>Case studies</li> </ul>									
	l			<u> </u>						L	

	Secondary data analysis			
	<ul> <li>Sampling techniques</li> </ul>			
V	Research ethics  • Ethical considerations in research  • Informed consent		Describe, illustrate and explain the principles of research ethics.	1.0
	<ul> <li>Confidentiality and anonymity</li> <li>Institutional review boards         (IRBs)</li> <li>Avoiding plagiarism and other         forms of academic misconduct</li> </ul>	15		1,2

#### **TEXT BOOKS:**

- T1. Research methodology, Vivek Singh
- T2. Fundamental of research methodology, KitabMahal

# **REFERENCE BOOKS:**

- R1. Research methods the basic, Nichols walliman
- R2. Research methodology methods and techniques, C.R. Kothari

	CO PO Mapping				
SN	Course Outcome (CO)	Mapped Program Outcome			
1	Develop fundamental knowledge on the principles and types of research.	3,6,7,8			
2	Develop comprehensive understanding on research design.	3,6,7,8			
3	Acquire basic knowledge on the significance and conduction of literature review.	6,7,8			
4	Classify various types of data collection methods and techniques.	3,5,6,7,8			
5	Understand the different types of research ethics along with plagiarism.	3,6,7,8			



# **Assam down town University**

# Curriculum and Syllabus

# Master of Medical Laboratory Technology

# OUTCOME BASED EDUCATION FRAMEWORK CHOICE BASED CREDIT SYSTEM

Version: 2.2

# FACULTY OF PARAMEDICAL SCIENCES

July, 2024

**PREAMBLE** 

Assam down town University is a premier higher educational institution which offers

Bachelor, Master, and Ph.D. degree programmes across various faculties. These programmes,

collectively embodies the vision and mission of the university. In keeping with the vision of

evolutionary changes taking place in the educational landscape of the country, the university has

restructured the course curriculum as per the guidelines of National Education Policy 2020. This

document contains outline of teaching and learning framework and complete detailing of the

courses. This document is a guidebook for the students to choose desired courses for completing

the programme and to be eligible for the degree. This volume also includes the prescribed

literature, study materials, texts, and reference books under different courses as guidance for the

students to follow.

Recommended by the Board of Studies (BOS) meeting of the Faculty of Paramedical Sciences

held on dated 20/06/2024 and approved by the 51ST Academic Council (AC) meeting held on

dated 26/07/2024.

Chairperson, Board of Studies

Member Secretary, Academic Council

money

# **Vision**

To become a Globally Recognized University from North Eastern Region of India, Dedicated to the Holistic Development of Students and Making Society Better

# **Missions**

- 1. Creation of curricula that address the local, regional, national, and international needs of graduates, providing them with diverse and well-rounded education.
- 2. Build a diverse student body from various socio-economic backgrounds, provide exceptional value-based education, and foster holistic personal development, strong academic careers, and confidence.
- 3. Achieve high placement success by offering students skill-based, innovative education and strong industry connections.
- 4. Become the premier destination of young people, desirous of becoming future professional leaders through multi-disciplinary learning and serving society better.
- 5. Create a highly inspiring intellectual environment for exceptional learners, empowering them to aspire to join internationally acclaimed institutions and contribute to global efforts in addressing critical issues, such as sustainable development, Climate mitigation and fostering conflict-free global society.
- 6. To be renowned for creating new knowledge through high quality inter disciplinary research for betterment of society.
- 7. Become a key hub for the growth and excellence of AdtU's stake holders including educators, researchers and innovators
- 8. Adapt to the evolving needs and changing realities of our students and community by incorporating national and global perspectives, while ensuring our actions are in harmony with our foundational values and objectives of serving the community.

# **Programme Details**

#### **Programme Overview**

The Master of Medical Laboratory Technology programme provides focused instruction in critical areas of clinical laboratory science: Hematology, Blood Transfusion, Microbiology and Immunology. Students develop advanced skills in disease diagnosis, and prevention through indepth exploration of these fields. Hands-on laboratory work and rigorous coursework enable students to proficiently analyze blood samples, comprehend immunological responses, and identify microbial pathogens. Equipped with this specialized knowledge, graduates are prepared for diverse roles in healthcare, including clinical laboratories, research institutions, and blood banks. Their robust expertise in Hematology, Blood Transfusion, Microbiology, and Immunology positions students for success in advancing patient care and driving biomedical research forward.

#### I. Specific Features of the Curriculum

Well equipped with physical facilities such as spacious and well-furnished classrooms, laboratories, skill centers, library and hostels for enriching knowledge and to serve rural community and slums dwellers through this knowledge.

Qualified and trained faculty who can foster research in different disciple and well versed to scientifically formulae, implement and monitor community oriented programmes and projects especially where level of involvement in adoption of innovative and appropriate technology involved.

# II. Eligibility Criteria:

The students who have passed B.Sc. MLT Course from recognized Institutions with not less than 50% of marks in aggregate and have completed 6 months of compulsory rotating internship in recognized hospital. Candidates who have passed BMLT through Correspondence, Vocational or Distance Education programme are not eligible.

## **III. Programme Educational Objectives (PEOs):**

- **PEO 1:** AdtU MLT postgraduates will be prepared for successful careers in diverse laboratory technologies as biochemist, microbiologist, pathologist, health and safety officer, biomedical analyst, research analyst, operation manager with precision, ensuring accurate diagnostics in various clinical situations.
- **PEO 2:** Graduates of Medical Laboratory technology will be academically prepared to emerge as specialized and highly skilled professionals in medical laboratory settings, poised to make significant contributions to the advancement of healthcare and the well-being

of humanity.

**PEO 3:** MLT postgraduates will enhance skills and facilitate healthcare innovations may establish diagnostic labs, engaging ethically with patients while contributing to ongoing research.

# **IV.Programme Specific Outcomes (PSOs):**

- **PSO1:** Practice-In-Industry: Demonstrate clinical practice proficiency and laboratory testing efficiency in clinical posting and the healthcare industry.
- **PSO 2: Quality Control and Assurance**: Evaluating and auditing the compliance criteria of standard analytical and quality control procedures for assuring the quality analysis outcomes.
- **PSO 3: Global Competency:** Demonstrate global competency in the profession through international multidisciplinary and domain-specific certification courses.

### V.Programme Outcome (PO):

- **PO1 Integrated Domain Knowledge**: Apply integrated knowledge of human science, pathology, biochemistry fundamentals and specialization in haematology and blood transfusion, microbiology and immunology to the solution of medical laboratory problems.
- **PO2 Problem-Analysis:** Identify and analyse complex medical laboratory problems and formulate an array of tests reaching substantiated high-quality results.
- **PO3 Modern Techniques and Processes**: Apply standard procedures and contemporary techniques to operate modern analytical instruments, applying technical expertise and problem-solving skills to ensure accurate laboratory test reports.
- **PO4** Research: Apply analytical competency, critical thinking and statistical analysis using modern laboratory techniques in researching to overcome challenges in better identification of conventional/emerging diseases.
- **PO5** Communication: Demonstrate proficiency in communication skills with patients, and fellow healthcare professionals within diverse healthcare scenarios.
- **PO6** Teamwork: Function proficiently as an individual and a member/ leader in diverse healthcare teams.
- **PO7 Professional Ethics:** Adhere to ethical practices and professional conduct in the profession.
- PO8 Lifelong learning: Ability to engage in lifelong learning in the context of

technological and procedural advancement in medical laboratory technology.

**VI.Total Credits to be earned:** Total credit need to sore for the successful completion of Master in Medical Laboratory Technology degree programme is **93** credits.

#### **VII.Career Prospects:**

Introduction to patient care with proper diagnosis and with the use of clinical laboratory equipment in two years duration is known as Master of Science in Medical Laboratory Technology. The Master of Science in medical laboratory Technology includes molecular Biology, Biochemistry, hematology, blood banking and Microbiology. ThescopeofMasterofSciencemedicallaboratorytechnologyismentionedbelow:

- a) Students can apply for PhD degree once he/she completes Master of Science in medical laboratory technology and can increase their career options with decent salary packages.
- b) He/she can also apply for various posts such as lab technologist/technician, Senior Biomedical Analyst, Research scientist, Healthcare Administrator, Health and Safety Officer.
- c) After completion, one can also take on a teaching job (lecturer or Assistant Professor) offering Diploma, Bachelors, Master in MLT education or patient education programmes.

# **EVALUATION METHODS**

The student performance shall be evaluated through In-semester (Sessional) and semester-end examinations. A weight age of 40% or as prescribed by the Programmeme shall be added to the score of the end-semester examination.

# A. INTERNAL ASSESSMENT:

The teacher who offers the course shall be responsible for internal assessment by conducting insemester (sessional) examination and evaluating the performance of the students pursuing that course. The components for internal assessment are illustrated in the table given below.

SN	Components/ Examinations	Marks Allotted
1.	In-Sem Exam – I (ISE-I) (Written Examination)*	30
2.	In-Sem Exam – II (ISE-II) (Written Examination)*	30
3.	Assignment	10
4.	Presentation (SP)	10
5.	Quiz	5
6.	Class Performance based score*	5

*are compulsory

Note: Total Internal assessment should be out of 40

#### INSTRUCTION

- 1. If a student fails to appear in the any of the component without any valid reason he/she shall be marked zero in that component. However, the course teacher at his discretion may arrange for the missed test on an alternate date for the absentee students after determining ground with genuine/valid reasons for the absent.
- 2. The report of evaluation of an activity towards the in-semester (sessional) component of a course shall be duly notified by the concerned course teacher within a week of completion.
- 3. The programme coordinators should upload the in-semester marks to the ERP and forward acknowledgement of all the courses of the programme to the Controller of Examinations before the start of the End-semester examination.

#### **B. SEMESTER END EXAMINATION:**

Time table for end semester examination is published at least 25 days prior to the start of Examination.

# I. Pre-Examination:

# Eligibility Criteria for a student to appear in University Examinations:

The student shall only be allowed to appear in a University Examination, if:

- i) He/ She is a registered student of the University;
- ii) He/ She is of good conduct and character;
- iii) He/ She has completed the prescribed Programme of study with minimum percentage of attendance as laid down in the Regulations of the Programme concerned.

Under special cases, a student may be allowed to appear for an examination without being registered in the University but the result of the said student will be kept on hold till the registration of the concerned student is completed.

#### II. Admit Card:

Admit card for the examination may be downloaded through ERP where the system will generate a Unique ID Cards through online.

The University shall have the right to cancel admission for examination of any candidate on valid grounds.

# **III. Pattern of Question Papers**:

The question paper shall follow the principles of Bloom's Taxonomy. Table

S. N.	Level	Questions /verbs for test	
1	Remember	List, Define, tell, describe, recite, recall, identify, show who, when, where, etc.	
2	Understand	Describe, explain, contrast, summarize, differentiate, discuss, etc.	
3	Apply	Predict, apply, solve, illustrate, determine, examine, modify	
4	Analyze	Classify, outline, categorize, analyze, diagrams, illustrate, infer, etc.	
5	Evaluate	Assess, summarize, choose, evaluate, recommend, justify, compare etc.	
6	Create	Design, Formulate, Modify, Develop, integrate, etc.	

Note: No course is to be evaluated on basis of all 6 knowledge levels.

The format of the question paper across all the programme follow a unique pattern and the total marks is 60

Table 1: Question paper pattern for End semester examination

S.N.	Question pattern	Total marks
1	MCQs (10 Questions)	10
2	2 Marks questions (10 Questions)	20
3	4 Marks questions (5 Questions)	20
4	10 Marks questions (1 Question)	10

#### **IV. Examination Duration:**

Each paper of 60 marks shall ordinarily be of two hours duration.

# V. Practical Examinations, Viva-Voice etc.:

- i) Practical examination shall be conducted in the presence of one external expert and one or more internal examiners.
- ii) Viva-Voice, Oral examinations of the Project report, Dissertation etc. shall be undertaken by a Board of Examiners constituted by the respective Dean of Programme with the advice of Supervisor(s).

# VI. Procedure of Expulsion:

If any candidate is found to be using any unfair-means during the examination, the invigilator may cease his/her answer sheet and report it directly to the Officer-in-Charge. The Office-in-Charge of the center may take appropriate decisions as per the rules and procedure of the examination. The Officer-in-Charge may allow the students to write the exam with new answer sheet or may expel the student from appearing the paper depending on the nature of unfair-means. In case of Computer based test, the students may be directed to write an

apology letter and sign in the prescribe expulsion form. The student may not be allowed to write that examination.

# VII. Instruction to the Students:

- (i) The students shall not bring to the Examination Hall, any electronic gadget used as a means of communication or record except electronic calculator, if required.
- (ii) The students shall not receive any book or printed or hand written or photo copy (Xerox) or blank-paper from any other person while he/she is in the examination-room or in laboratory or in any other place to which he/she is allowed to have access during course of examination.
- (iii) The students shall not communicate with any other candidate in the examination room or with any other person in and outside the examination-room.
- (iv) The students shall not see, read or copy anything written by any other candidate, nor shall he/she knowingly or negligently permit any other candidate to see, read or copy anything written by him/her or conveyed by him/her.
- (v) The students shall not write anything on the Question Paper or in other paper or materials during the examination, or pass any kind of paper to any other candidate in the examination-room, or to any person outside the room.
- (vi) The students shall not disclose his/her identity to the examiner by writing his/her name or putting any sign / symbol in any part of his answer-script.
- (vii) The students shall not use any abusive language or write any objectionable remark or make any appeal to examiner by writing in any part of his answer-script.
- (viii) The students shall not detach any page from the answer-script or insert any authorized or unauthorized loose sheet into it. He /she shall also not insert any other answer-script / loose sheet by removing the pins of the origin answer-scripts and re-fixing it.
- (ix) The students shall not resort to any disorderly conduct inside the examination-room or misbehave with the invigilator or any other examination official.

# **VIII. Provision for an Amanuensis (writer):**

(i) A candidate may be provided with an Amanuensis (writer) to write down on dictation on his / her behalf on ground of his / her physical disability to write down by himself / herself due to accident or any other reason. The amanuensis may be provided till he / she recovers from the physical disability. The physical disability to write down by himself / herself must be supported by Medical Certificate from a competent Medical Officer.

- (ii) The qualifications of the amanuensis so provided must not be equal or higher than that of the candidate. This is also to be supported by Certificate from the Faculty of Study where the Amanuensis is provided.
- (iii) Such candidates are to be accommodated in a separate room under the supervision of an invigilator so that the fellow candidates are not disturbed in the process.

# **C.** Credit Point:

It is the product of grade point and number of credits for a course, thus,  $CP = GP \times CR$ 

# i. Credit:

A unit by which the course work is measured. It determines the number of hours of instructions required per week. 'Credit' refers to the weight age given to a course, usually in terms of the number of instructional hours per week assigned to it. Credits assigned for a single course always pay attention to how many hours it would take for an average learner to complete a single course successfully.

# ii. Grade Point:

Grade Point is a numerical weight allotted to each Grade Letter on a 10-point scale.

#### iii. Letter Grade:

Letter Grade is an index of the performance of students in a said paper of a particular course. Grades are denoted by letters O, A+, A, B+, B, C, P, F and Abs. Student obtaining Grade F / Grade Abs shall be considered failed/ absent and, will be required to appear in the subsequent ESE. The UGC recommends a 10-point grading system with the following (Table: 1) Letter Grades:

- (i) A Letter Grade shall signify the level of qualitative/quantitative academic achievement of a student in a Course, while the Grade Point shall indicate the numerical weight of the Letter Grade on a 10-point scale.
- (ii) There shall be 08 (eight) Letter Grades bearing specific Grade Points as listed in Table 1, where the Letter Grades 'O' to 'P' shall indicate successful completion of a course.
- (iii) Apart from the 08 (eight) regular Letter Grades listed in Table 1, there shall be 03 (three) additional Letter Grades, which shall be awarded if a Course is withdrawn or spanned over the next Semester or remains incomplete as stated in Table 2.

**Table 2: Letter Grades and Grade Points** 

Letter Grade	Grade Points	Description
О	10	Outstanding
A+	9	Excellent
A	8	Very Good
B+	7	Good
В	6	Above Average
С	5	Average
P	4	Pass
F	0	Fail
Abs	0	Absent
UFM	0	Unfair Means

# iv. Grade Point Average:

#### a. SGPA (Semester Grade Point Average)

The SGPA of a student in a Semester shall be the weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered in that Semester, irrespective of whether he/she could or could not complete the Courses. More specifically, the calculation of SGPA shall take into account the Courses graded with Letter Grades 'O' to 'F' as given in Table 1.

$$SGPA = \frac{\sum_{i=1}^{n} C_i G_i}{\sum_{i=1}^{n} C_i}$$
 (1.1)

The SGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.1) up to two decimal places, where n is the total number of Credit Courses registered by the student in that Semester, Gi is the Grade Point secured in the ith registered Course and Ci is the Credit (weight) of that Course.

# b. CGPA (Cumulative Grade Point Average)

(i) The CGPA of a student in a Semester of a Programme shall be the accumulated weighted average of the Grade Points secured by the student in all the Credit Courses (both Core and Elective Courses) he/she registered and successfully completed so far starting from the enrollment in the Programme. In other words, taking into account all the Courses graded with 'O' to 'P' as given in Table 1.1, generally the CGPA of a student shall be calculated starting from the first Semester of his/her enrolled

Programme, while the CGPA of a lateral-entry student shall be calculated starting from the Semester of his/her enrollment.

(ii) The CGPA of a student in a Semester shall be calculated on a 10-point scale using Equation (1.2) up to two decimal places, where N is the total number of Credit Courses registered and successfully completed so far by the student, Gi is the Grade Point secured in the ith completed Course and Ci is the Credit (weight) of that Course.

CGPA = 
$$\frac{\sum_{i=1}^{N} C_{i}G_{i}}{\sum_{i=1}^{N} C_{i}}$$
 (1.2)

(iii) The CGPA shall be convertible into equivalent percentage of marks using Equation Conversion of CGPA to percentage marks: = CGPA*10

# **D.** Post-Examination

# i. Transcript or Grade Card or Certificate:

A marking certificate shall be issued to all the registered students after every Semester. The Semester mark sheet will display the course details (code, title, number of credits, grade secured) along with total credit earned in that Semester.

#### ii. Grievance Readdress Mechanism:

Students with any dissatisfaction or grievance regarding the marks awarded in any of the Papers / Courses may appeal to the Controller of Examinations for remedial action such as Re-evaluation within 10 days of the declaration of result.

- (i) A student has options to appeal for re-evaluation of his /her answer script to the Controller of Examination.
- (ii) Application for re-evaluation / re-scrutiny of answer scripts shall be made in the definite Performa available with the Examination Office through the head of the respective departments within 10 days of declaration of the results of the respective examinations.
- (iii) The Controller of Examination may appoint an examiner for re-evaluation and will consider and recognize the evaluation done by a University appointed examiner.
- (iv) There shall be no provision for re-evaluation of the Practical Papers, Project Work, and Dissertation etc. However, the students fail in practical examination or viva voce and wish to appear again may apply to be evaluated can do so with the next schedule.
- (v) After screening the application for re-evaluation, the CoE may send the answer scripts of the student to the examiners appointed by the CoE with the approval of Vice Chancellor.

- (vi) The marks/grades achieved by the students after the re-evaluation shall be final and binding.
- (vii) Fresh Marks sheets / Grade Card shall be issued only if the candidate secures pass marks / passing grade in the re-evaluated paper.
- (viii) Revaluation of answer scripts shall be deemed to be an additional facility provided to the students with a view to improving upon their results at the preceding examination result for any reason whatsoever shall not confer any right upon them for admission to next higher class which matters always be regulated in accordance with the relevant rules or regulations framed by the University.
- (ix) If as a result of revaluation of the candidate attracts the provision of condonation of deficiency, the same may be applied to his/her only for fresh attempt.

# INSTRUCTION TO TEACHERS AND STUDENTS

(Teaching and Learning Methods)

In all the courses the teacher has to select topics for teacher-method which should not be less than 20 percent. The approach will be direct classroom teaching through a series of lectures delivering concepts using ITC facilities, white or blackboard. Notes may also be circulated to the students; however, the students are to be involved in the preparation of the notes. The teacher will be responsible for selecting the best note for circulation. The teacher-centric methodology has recently fallen out of favour because this strategy for teaching is seen to favour passive students.

#### 1. Student- centric / Constructivist Approach:

The topics of the courses may be selected at the start of the class and assigned one topic to each of the students for studying by themselves, prepare presentations, notes, etc., and present at respective class time after consultation and discussion with the course teachers. The teacher facilitates the learning of the students by guiding and providing input and explaining concepts. 60 percent of the course contents may be selected for this purpose. To avoid behaviour problems, teachers must lay a lot of groundwork in student-centric classrooms. Typically, it involves instilling a sense of responsibility in students. In addition, students must learn internal motivation.

- **a. Project-Based Learning:** The teacher may select 5 percent of topics for the purpose and may conduct visits to the laboratory for experiments or field surveys. The selection of the topic may be done considering the available facility for the purpose. However, in the final semester of each of the programme the student has to undergo project-based learning at least 4 months duration. This approach will help the student to think critically, evaluate, analyse, make decisions, collaborate, and more.
- **b. Inquiry-Based Learning:** The teacher/ students are supposed to list at least five questions in each contact hour and student solve these question or search for answer which becomes the home work for the students "question-driven" learning approach. The teacher may look for the correctness of the solution or the best possible answer and discuss in the successive class. This will help in the preparation for various competitive examination and develop a habit for search for solutions.
- **c. Flipped Classroom:** About 10 percent of the course content has to be completed by this method. In this approach the students are asked to watch video or lecture prepared by the teacher or any video available (relevant to the course). A set of questions may be given to the students for searching answers by the students. The idea is that students should have more time in-classroom focusing on achieving these higher levels of thinking and learning. The

Flipped classroom is also an acronym. The letters FLIP represent the four pillars included in this type of learning: Flexible environment, Learning culture shift, Intentional content, and Professional educator. As you can see, the second pillar refers to a culture shift from the traditional approach where students are more passive to an approach where students are active participants. As a result, this approach is also a student-centric teaching method.

d. Cooperative Learning: The remaining five percent has to be completed by cooperative learning approach. In this approach, the students are allotted problems. During library hours the students along with the teacher visit the library and search for probable solutions for the assigned problem. The same has to be done in groups so that the students discuss among themselves for the appropriate answers. Essentially, cooperative learning believes that social interactions can improve learning. In addition, the approach recreates real-world work situations in which collaboration and cooperation are required.

## The percentage categorization for the completion of a theory course

Teacher-centric or Direct Classroom Teaching: Delivery by series of lectures	20%
Student-centric Approach, Students present and deliver lectures in the presence of	6004
teacher and supervised by teacher	60%
Students visit fields or perform experiments or teachers perform demonstration	05%
Flipped Classroom approach	10%
Cooperative learning approach	05%

## Inquiry-based approach has to be followed in all of the classes

The teacher has to distribute the topics to be considered for teaching by the above-mentioned approaches and prepare a lesson plan for execution and maintain a file.

# **Breakdown of Credits**

S.N.	Category		Total number of Credits
		Skill Enhancement Course (SEC)	-
		Ability Enhancement Course(AEC)	6
1	University Core(UC)	Field Training	-
		Discipline Specific Elective (DSE)	-
		Value Added Course (VAC)	2
2	University Elective (UE)	Multidisciplinary Course (MDC)	2
2	University Elective (UE)	Value Added Course (VAC)	4
		Discipline Specific Core(DSC)	46
3	Programme Core(PC)	Field Training	2
3	riogramme Core(FC)	Research /Industry Internship	24
		Summer Internship	4
4	Programme Elective	Discipline Specific Elective (DSE)	-
4	(PE)	Value Added Course (VAC)	-
5	Faculty Core(FC)	Skill Enhancement Course (SEC)	3
	Faculty Core(FC)	Ability Enhancement Course(AEC)	-
		Total	93

# **Breakdown by categories of courses**

S.N.	Category	Credits	%
1	Paramedical	85	91.4%
2	Engineering	2	2.2%
3	Commerce and Management	-	-
4	Humanities and social science	6	6.5%
	Total	93	100%

## SEMESTER WISE COURSE DISTRIBUTION

	S.					Eı	ngag	eme	nt			Max	aimum	Marks	s for	
	N	Course Code	Course Title	Course Category	L	Т	P	S	R	o	C	IA*	SEE*	PIE*	PEE	Total
	1.	24MMLT1101R	Biochemistry	DSC (Minor)	2	0	4	0	0	0	4	40	60	0	100	200
	2	24MMLT1102R	Clinical Pathology	DSC (Major)	2	0	4	0	0	0	4	40	60	0	100	200
	3	24MMLT1103R	Histopathology and Cytopathology	DSC (Minor)	2	0	4	0	0	0	4	40	60	0	100	200
Semester I	4	24MMLT1104R	Introduction to Microbiology	DSC (Minor)	2	0	4	0	0	0	4	40	60	0	100	200
Sel	5	24UMPD1101R	Personal Development Programme I (Effective Communication)	AEC	0	0	4	0	0	0	2	0	0	0	100	100
	6	24UMFS1101R	Fundamental of Statistics	MDC	1	0	2	0	0	0	2	40	60	0	100	200
	7	24UBEC1101	Extra-Curricular Activities	Extra- Curricula	0	0	0	4	0	0	1	0	0	0	100	100
			Total		16	0	9	0	22	4	0	0	21	200	700	1200

	S.			Course			Eng	agen	nent			N	<b>Aaxim</b>	um Ma	rks fo	or
	N.	Course Code	Course Title	Category	L	Т	P	S	R	O	C	IA*	SEE*	PIE*	PEE	Total
	1	24MMLT1201R	Biomedical Techniques and Laboratory Management	DSC (Major)	1	0	4	0	0	0	3	40	60	0	100	200
	2	24MMLT1202R	Hematology	DSC (Major)	1	0	4	0	0	0	3	40	60	0	100	200
	3	24MMLT1203R	Introduction to Blood Banking	DSC (Major)	1	0	4	0	0	0	3	40	60	0	100	200
II	4	24MMLT1204R	Microbiology& Immunology	DSC (Major)	1	0	4	0	0	0	3	40	60	0	100	200
SEMESTER	5	24MMLT1205R	Molecular Biology	DSC (Major)	1	0	2	0	0	0	2	40	60	0	100	200
SEM	6	24UUHV101R	Universal Human values	VAC	1	0	2	0	0	0	2	40	60	0	100	200
	7	24MMLT1206R	Applied Laboratory Techniques (Techno Professional skills)	SEC	0	0	4	0	0	0	2	0	0	0	100	100
	8	24MMLT1207R	Postgraduate Teaching Practice	SEC	0	0	2	0	0	0	1	0	0	0	100	100
	9	24UMPD1201R	Communication Mastery(CLPP D)	AEC	0	0	4	0	0	0	2	0	0	0	100	100
	10	24UBCC1201	CO CURRICULAR ACTIVITIES	Co- Curricul ar	0	0	0	4	0	0	1	0	0	`100	,0	100
	11	24MMLT1208R	FIELD TRAINING	FT	0	0	0	0	0	8	1	0	0	0	100	100
	Total					0	30	4	0	8	23	240	360	100	900	1500

	S.						Eng	ager	nent	;		Maximum Marks for					
	N.	Course Code	Course Title	Course Category	L	Т	P	S	R	o	C	IA*	SEE*	PIE*	PEE	Total	
	1	24MMLTFT201	Field Training	FT	0	0	0	0	0	8	1	0	0	0	100	100	
	2	24MMLT2102R	Internship (Summer Training)	Internship	0	0	0	16	0	0	4	0	0	0	100	100	
	3	24MMLT2103R	Research/ Clinical Posting	Research	0	0	0	14	8	0	8	0	0	0	100	100	
III	4	24UMPD2101R	Corporate Proficiency (CLPPD)	AEC	0	0	4	0	0	0	2	0	0	0	100	100	
Semester		(To opt 1 Specialization from the following Group) Group - A: Haematology and Blood Transfusion															
Se	5	24MMLT2104R	Advanced Haematology	DSC (Major)	4	0	6	0	0	0	7	40	60	0	100	200	
	6	24MMLT2105R	Advanced Blood Banking	DSC (Major)	4	0	6	0	0	0	7	40	60	0	100	200	
		Group - B: Microbiology and Immunology															
	7	24MMLT2106R	Medical Microbiology	DSC (Major)	4	0	6	0	0	0	7	40	60	0	100	200	
	8	24MMLT2107R	Diagnostic Microbiology and Clinical Immunology	DSC (Major)	4	0	6	0	0	0	7	40	60	0	100	200	
	Total				9	0	18	14	8	8	31	80	120	0	700	900	

	S.			Course	Engagement							Maximum Marks for				
	N.	Course Code	Course Title	Category	L	T	P	S	R	0	C	IA*	SEE*	PIE*	PEE	Total
ter IV	1.	24MMLT2201R	Quality Control In Diagnostic Lab	DSC (Major)	3	0	0	0	0	0	3	40	60	0	0	100
Semester	2	24MMLT2202R	Research Ethics	DSC (Major)	0	0	6	0	0	0	3	0	0	0	100	100
Š	3	24MMLT2203R	Research	Research	0	0	20	4	8	0	12	0	0	0	100	100
	Total					0	26	4	8	0	18	40	60	0	200	300

				STER – I											
Course	Title			EMISTRY	Ι										
Course	Code	24MMLT1101R	Total Credits:		L	T	P	S	R	O/F	C				
			Total Hours:		2	0	4	0	0	0	2				
Pre-req		Nil	Co-req			TD 1			Nil						
Progra				Medical Laboratory Technology er of First Year of the Programme											
Seme	ster	1 The students of		the important biomolecules essential to life processes.											
Cour		2. To discuss as functions of in	pects of the print portant bio mole- will understand the	nciples of cules.	organic	cher	nistr	y in	the	struct	ure and				
СО	1	Describe the structure, function, classification and biological importance carbohydrates													
СО		Classify proteins a in biochemical pro	cesses.						es an	d invo	lvement				
CO	3	Discuss the clinica	l significance and	l diagnosis	of vario	us boo	dy flu	uids.							
СО	4	Demonstrate expecellular processes.	Demonstrate expertise in nucleic acids and enzymes, understanding their roles with ellular processes.												
СО	5	Explain the clinical effectively for diag	•	•	•	ze and	d inte	erpre	t bio	ochemi	cal data				
Unit- No.		Content		Contact Hour	L	earni	ng O	utco	me		KL				
I	CAR	BOHYDRATES		6	Explai	n or	1 c	arbo	hydr	ates'	1,2				
	- Ge	neral features			genera	and									
	- Cla	assification			classif		-			trate					
	- Re	actions of monosac	charides		monos					ions,					
	- Dis	orders of	Carbohydrate			explai									
		tabolism.			carboh										
II		ins and Amino Ac	ids	6	Descri			strat		and	1,2				
		eneral features			explain	_									
		assification of Amir			acid f		es, c			tural					
		operties of Amino a			organi		2	and s		ısma					
		ructural organization	-		abnorr				_						
	- At	onormalities of prote	eins in piasma.		unders				8	of					
					bioche	mistry	, a	nd	cliı	nical					
					implic	ations									
III	CHE	MISTRY OFLIPI	DS	6	Descri		_				1,2				
		eneral features			classif										
	<ul><li>Classification of Lipids</li><li>Properties of Lipids</li></ul>				of lipi				_						
					disord				-						
	- Disorders of plasma lipids and lipoproteins				lipids fosteri	an ng a		_	_	eins, isive					
	lipopi	roteins			unders	•		of		lipid					
					bioche		_			_					
				implic	-										

IV	NUCLEIC ACIDS AND ENZYMES	8	Describe, illustrate and	1,2,3
1 4	- Nucleotides and its bases	U	explain on nucleic acid and	1,4,0
	- RNA/DNA and its classification		enzyme basics, including	
			nucleotide structures,	
	- classification of enzymes		RNA/DNA classification,	
	- factors affecting enzyme activity		enzyme classification, factors	
	- specificity		affecting activity and	
	- enzyme kinetics enzymes in clinical		specificity, enzyme kinetics,	
	diagnosis		and their clinical diagnostic	
			relevance.	
V	Clinical significance, principle of	4	Explain the clinical	2,3,4
	estimation:		significance and principles of	
	- Glucose tolerance test		diagnostic tests like GTT,	
	(GTT)importance and principle and		insulin tolerance test, xylose	
	techniques of GTT		absorption test, calculi	
	- Insulin tolerance test		analysis, and blood gas/pH	
	- Xylose absorption test		measurements, advancing	
	- Analysis of calculi		their understanding of clinical	
	Blood gases and pH.		biochemistry and diagnostics.	
	1. Estimation of blood glucose by Folin	60	Estimate and analyze blood	1,2,3,4,5
	method, CHOD-POD method.		and urine parameters,	
	2. Estimation of protein by Biuret		enhancing skills in clinical	
	method, Lowry, UV method		biochemistry and laboratory	
	3. Estimation of serum creatinine by		diagnostics.	
	Jaffe's method			
	4. Estimation of urea in blood sample			
	by urease			
	5. Estimation of Total cholesterol by			
	CHOD/POD method.			
	6. Estimation of Triglycerides by			
	GOP/PA method			
	7. Estimation of HDL Cholesterol by			
[ca]	precipitation method			
Practical	8. Estimation of SGOT in blood			
Pr	sample by kinetic method			
	9. Estimation of SGPT in blood			
	sample by kinetic method			
	10. Estimation of alkaline phosphatase			
	in blood sample by kinetic method			
	11. Estimation of acid phosphatase in			
	blood sample by kinetic method			
	12. Estimation of bilirubin in blood			
	sample			
	13. by kinetic method			
	14. Estimation of Na+, K+ & Ca++ by			
	electrode analyzer			
	Estimation of common parameters in			
	urine through use of strips.			

- T1 Bishop M, Fody EP, Schoeff LE. Clinical Chemistry-Techniques, Principles, Correlations.
- T2 Chatterjea MN, Shinde R. Textbook of medical biochemistry.
- **T3** Vasudevan DM, Sreekumari S, Vaidyanathan K. Textbook of biochemistry for medical students. JP Medical Ltd; 2013 Aug 31.
- **T4** Jung K. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics, Carl A. Burtis, Edward R. Ashwood, and David E. Bruns, editors. St. Louis, MO: Elsevier Saunders.

#### **REFERENCE BOOKS:**

**R1** Godkar PB, Godkar DP. Text book of medical laboratory technology. Bhalani publishing house; 2006.

R2 Satyanarayana U. Biochemistry. Elsevier Health Sciences; 2013 Jun 15.

## **OTHER LEARNING RESOURCES:**

- 1. https://www.ncbi.nlm.nih.gov/books/NBK557845/
- 2. https://www.ncbi.nlm.nih.gov/books/NBK564343/
- 3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6822018/

	CO PO Mapping										
S.N.	Course Outcome (CO)	Mapped Program Outcome									
1	Describe the structure, function, classification and biological importance carbohydrates	1,2									
2	Classify proteins and amino acids, exploring their molecular structures and involvement in biochemical processes.	1,2									
3	Discuss the structures, functions of lipids and its effects on various disorders.	1,2									
4	Demonstrate expertise in nucleic acids and enzymes, understanding their roles within cellular processes.	1,2.3									
5	Explain the clinical biochemistry techniques to analyse and interpret biochemical data effectively for diagnostic and research applications.	1,2,3									

			SEM	ESTER – I	[											
Cours	se Title		CLI	NICAL PA	THOL	OGY										
Cours	se Code	24MMLT1102R	Total credits Total hours:		L 2	T 0	P 4	S 0	R 0	O/F 0	C 2					
Pre-re	equisite	Nil	Co-rec	quisite				Nil								
Progr	ramme		Master of 1	Medical La	aborato	ry Teo	chnolo	ogy								
Sem	ester		Fall/ I Semest	ter of First	Year o	f the I	Progra	amme								
	urse ectives	fluids for rout.  2. To teach the Microscopic e	fluids for routine analysis.  2. To teach the students about Physical examination, Chemical examination, Microscopic examination of Urine, stool and body fluids.  3. To teach the students about Gastric juice analysis													
C	01	To summarize hov	To summarize how to collect, preserve and transport various clinical samples.													
С	O2	To understand abo	Γο understand about Physical, chemical and microscopic examination of urine, sto													
C	O3	Discuss the clinica	clinical significance and diagnosis of various body fluids.													
C	O4	Outline the variou	s types of gast	tric juice analysis and its clinical significance.												
C	05	Illustrate the funda	amental princij	ples of preg	gnancy to	est.										
Unit- No.		Content		Contact Hour	Learning Outcome KL											
I	Collecti process: specime	-		3	Descri compo estima of urin	sition ting d	and liffere	met nt cor	hods npone	of	1,2					
II	and mice Urine at Stool Chemice examina Flotatio Test fo Sputum Physica	examination: Physicroscopic examination and stream and examination and ation Concentration in method roccult blood-Ben examination.  I, Chemical and ation of sputum.	on hod Macroscopic, Microscopic method and nzidine Test	8	Descri for laborat adequa princip	selec tory ate kn	ted tech	sopl niques	nistica s w	ted ith	1,2,3					
Ш	examina Synovia	l chemical and ation of Pleural, al, Ascitic and Perito ospinal fluid l, chemical, blogical and	8	Descri various which diagno	s kind can	l of cl	inical	samp	les	1,3						

IV	Gastric analysis Methods of collection Indications and contraindication. Macroscopic and microscopic examination.  • Fractional test meal  • Augmented Histamine test  • Hollanders test	7	Describe, illustrate and explain about Gastric analysis its clinical significance which can help in diagnosis of various kind of Cancer	2,3
V	Pregnancy-Test, Method Interpretation Semen analysis	4	Describe, illustrate and explain various method for estimating HCG value.	2,3
Practical	Urine examination: Physical, chemical and microscopic. Urine analysis by Strip method Stool Examination: Macroscopic Examination Concentration method, Flotation method Microscopic examination Chemical examination Test for Occult blood-Benzidine Test Pregnancy-Test, Method Interpretation Semen analysis	60	Describe, illustrate and explain to understand Urine examination, Stool examination, pregnancy test and Semen examination	1,2,3,4

**T1:** Sood, Ramnik. Concise book of Medical laboratory technology. New Delhi: Jaypee Brothers Medical Publishers, 2015

#### **REFERENCE BOOKS:**

**R1:** Nayak, Ramdas, Rai, Sharada. Essentials in Hematology and Clinical Pathology. New Delhi: Jaypee Brothers Medical Publishers, 2017

R2: Sanyal, Sabitri, Aparna, Bhattacharyya. Clinical Pathology. New Delhi: Elsevier, 2011

## **OTHER LEARNING RESOURCES:**

https://en.wikipedia.org/wiki/Clinical_pathology#Macroscopic_examination

	CO PO Mapping					
S.N.	Course Outcome (CO)	Mapped Program Outcome				
1	To summarize how to collect, preserve and transport various clinical samples.	1,2,3				
2	To understand about Physical, chemical and microscopic examination of urine, stool.	1,2				
3	Discuss the clinical significance and diagnosis of various body fluids.	1,2,3,4				
4	Outline the various types of gastric juice analysis and its clinical significance.	1,2				
5	Illustrate the fundamental principles of pregnancy test.	1,3				

			SEN	MESTER -	- <b>I</b>						
Cours	Course Title HISTOPATHOLOGY AND CYTOPATHOLOGY										
Cours	se Code	24MMLT1103R	Total cred	lits: 4 rs:  30T+6	$\frac{L}{2}$	T 0	P 4	S 0	R	O/F 0	C 2
Pre-re	equisite	Nil		requisite		U		Ni		U	
	ramme			f Medical I	Laborato	ry T	echnol	logy			
Sem	ester	Fa	all/ I Seme	ster of Firs	st Year o	f the	Progr	amme	<b>.</b>		
	urse ectives	<ol> <li>Students become</li> <li>Introduce fundar</li> <li>Proficiency in us</li> </ol>	mental con	cepts of co	mputer h	ardwa	are and	l softw	are.		
C	01	Explain the basic pri	nciples of	histopathol	ogy and	cytop	atholo	gy			
	O2	Identify and underst specimens and cytol	ogical prep	parations.							
C	O3	Demonstrate the pro	ocess invol	ve in tissue	processi	ng an	nd mici	oscopi	ic exar	ninatio	1.
C	O4	Discuss the properties and cytopathology, as the staining of pig	including							_	
C	O5	Understanding of imfor the establishmed quality control, safetensuring the provision research settings and	ent and ma ty protocol ion of reli	anagement ls, equipme iable and a	of a hist nt maint accurate	opath tenan diagr	nologic ce, and nostic	cal labe d regul service	oratory atory o	y, inclu complia	ding ince,
Unit- No.		Content		Contact Hour		Lear	ning (	Outcon	ne		KL
I	Introdu Cytopa	action Histopathol	ogy &	3	Describ Histopa Cytolog guidelin	athological	ogical test	as p	er	ain 1 and for	,2,3
II	Fixative mailing	es, Cytological fixa	tive and	8	Describ knowle Cytolog	dge	abo	ut l	Fixativ	es,	,3,4
III	I Tissue processing Decalcification Cell block preparation Microtome Frozen section  8 Describe, illustrate and explain understand Tissue processing Decalcification Cell bloop preparation Microtomy Frozen section for tissue processing						ing ock	3,4			
IV	Staining Dyes ,Routine staining, Special staining, Pigments and its staining  staining  Staining Dyes ,Routine staining, About various Staining techniques in his to and cytopathology laboratory.						ing and	,2,3			
V	Immund classifi histopa biology	cation Establishm thological laboratory	ent of	5	Describ the pro Immuno Cytolog about c	cedu o gy a	re and	impo histock	rtance hemist	of cry,	3,4,5

T1- Techniques in Histopathology Cytopathology: A Guide for Medical Laboratory Technology Students 1st Edition 2017 by Sadhana Vishwakarma

#### **REFERENCE BOOKS:**

- R1-Bancroft's theory and practice of Histological techniques by S.Kim Suvarna, Christopher Layton, John D. Bancroft.
- R2-Histopathology, A self-instructional text by FreidaL.Carson.
- R3-Textbook of pathology by Harsh Mohan.
- R4-Textbook of Medical Laboratory Technology-PrafulB. Godkar, Darshan PGodkar.
- R5- Medical Laboratory Technology Methods & District Pretation Ramnik Sood
- R6- Manual of Medical Laboratory Techniques by S.Ramakrishnan & Samp; KN Sulochana.

#### **OTHER LEARNING RESOURCES:**

https://www.ncbi.nlm.nih.gov/books/?term=HISTOPATHOLOGY+AND+CYTOLOGY

	CO PO Mapping						
S.N.	S.N. Course Outcome (CO)						
1	Explain the basic principles of histopathology and cytopathology	1,2,3					
2	Identify and understand the principles of fixatives and their use in different types of specimens and cytological preparations.	1,2,3					
3	Demonstrate the process involve in tissue processing and microscopic examination.	1,2,3					
4	Discuss the properties and applications of various staining dyes used in histopathology and cytopathology, including routine staining and special staining techniques, as well as the staining of pigments	1,2.3					
5	Explain the basic principles of histopathology and cytopathology	1,2,3					

				SEMEST	ER – I							
Course	e Title	]	INTROD	UCTION '	TO MICR	OBIC	)LO(	ΞY				
Course	Code	24MMLT1104R	Total Cı	redits: 4		L	T	P	S	R	O/F	C
				ours: 30T		2	0	4	0	0	0	4
Pre-rec		Nil		Co-requisi					Nil			
Progra					cal Labora							
Seme	ester	1 T- 41-1			First Year			_		1 -1	::C: 4: -	C
Cou Objec		microorganism 2. To teach about 3. To teach about										
CC	)1	Understand the Microscope and c		•		icrobi	ology	, the	e type	es an	d parts	s of
CO	)2	Acquire knowledg	ge and und	lerstand ba	cterial gene	etics.						
CC	)3	Explain on the cla	ssification	of parasit	es.							
CC	)4	Outline the basic l	knowledge	e of genera	l virology.							
CO	)5	Describe a compre	ehensive k	knowledge	on Immuno	ology,	, imm	unog	lobuli	ns and	l antige	ns.
Unit- No.		Content		Contact Hour		Lear	ning	Outc	ome			KL
I	Histo	rical back ground	•	4	Describe,	illus	strate	and	expl	ain t	he	1,2
		roscopy. ure methods and me	edia.		historical background of Microbiology, the types and parts of Microscope and culture methods and media.							
II	-Trans -Muta -Gene	rial genetics: scription and Trans ation and its type transfer tic Mechanisms ance.		7	Describe, bacterial			and	expl	ain t	he 1	,2,3
III		duction to parasite		6	Describe,	illus	strate	and	expl	ain t	he	1,2
	lifecy symbi	tism, direct and cles, hostsComme osis.  The contract of the	ensalism, gnosis		parasites	and cl	lassif:	icatio	n of p	arasite	es.	
IV		ral Virology		6	Describe,				_			1,2
	-Virus -Culti -Vacc	ohology and nomen s replication. vation of virus. ines andante viral o			general vi drugs.					antivi	ral	
V	-Histo and ac -Immo functi	enology:  ory of immunology equired immunity.  unoglobulin: Struct  on, classes and sub- gens and types of an	ture and classes.	7	Describe, immunolo immunog	ogy, ty	ypes	of	_			1,2

Practical	Instrumentation in microbiology.  - Code and conduct of laboratory personnel.  Laboratory diagnosis of blood parasites:  - Plasmodium, Leishmania Microfilaria Trypanosoes  - Stool examination for parasites (Wet mount preparation)	60	Describe, illustrate, explain instrumentation in Microbiology and apply staining techniques and carry out microscopic examination.	1,2,3,4
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T1.Textbook of Microbiology Immunology by Subash Chandra Parija 2nd edition.

## **REFERENCE BOOKS:**

- R1. C.P Baveja, "Textbook of Microbiology, 5th Edition.
- R2. Ananthanarayan and Paniker, "Textbook of Microbiology 8th edition.
- R3. Textbook of Essentials Microbiology Apurba Sankar Sastry Sandhya Bhat 4th edition.

## **OTHER LEARNING RESOURCES:**

https://www.ncbi.nlm.nih.gov/books/NBK7627/

	CO PO Mapping	
S.N.	Course Outcome (CO)	Mapped Program Outcome
1	Understand the Historical background of Microbiology, the types and parts of Microscope and culture methods and media.	1,3
2	Acquire knowledge and understand bacterial genetics.	1,4
3	Explain on the classification of parasites.	1,2
4	Outline the basic knowledge of general virology.	1,2
5	Describe a comprehensive knowledge on Immunology, immunoglobulin and antigens.	1,2 3

			SEMEST	ER –	I						
Cours	se Title	EFFEC	CTIVE ENGLISH			icativ	e Engl	ish &	Soft S	kills)	
Cours	e Code	24UMPD1101R	Total Credits: 2 Total Hours:		<b>L</b> 0	T 0	P 4	S 0	R 0	O/F 0	C 2
Pre-re	equisite	Nil	Co-requisite					N	il	l	
Progr	ramme			PG P							
Sem	ester		pring/ II semester						amme		
	Course Objectives  1. To introduce the types of sentences and their significance. 2. To strengthen the students vocabulary to enhance their speaking and writing skil 3. To familiarize the students with the importance of dress codes in variorganizations										
C	01	This course will sentences.	enable students t	to an	alysis	s and	ident	ify th	ne diff	erent ty	pes of
C	O2	Learners will be communication.	able to integrate th	ne ski	ills of	f read	ing an	id spe	aking	in profe	ssional
C	03	Dress code Etique	tte sessions will bo	osts tl	heir c	onfid	ence a	nd mo	orals.		
C	O4	Students will earn	about the effective	and e	effici	ent uti	ilizatio	on of t	ime.		
C	<b>O</b> 5	IntroductiontoPho	neticsanditsimporta	ancew	villim	prove	thelea	rners'	pronun	ciation	
Unit- No.		Content			ntact our		Lear	ning (	Outcon	ne	KL
I	i. Inter Asse Asse ii. Type	ertive Sentences, lertive Sentences es of Tenses amon Errors onyms	errogative and Exclamatory and		3			he di	nnalyse	and types	1,2
II	·				3	of re	eading	and s	rate the speakin mmuni	_	1,2
III	i. What is listening? ii. The Process of Listening iii. Factors that adversely affect Listening iv. Difference between Listening and Hearing, v. Purpose and Importance of Effective Listening How to Improve Listening Process			2	2		sions	code will e and		iquette their	1,2

IV	Module4-ConflictManagement  i. Definition  ii. Type of Conflict Management  iii. Effects of Conflict Management  iv. Methods to deal with Conflicts  (Negative)	3	Acquire knowledge about the effective and efficient utilization of time	1,2
V	i. Introduction To Time Management, ii. Purpose And Importance of Time Management, iii. Basic Tips to Maintain Time. Activity: Problem solving activity: A situation will be given to the students and they will have to tell us how to handle the situation or solve the problem	2	Introduction to Phonetics and its importance will improve the learners' pronunciation	1,2

- T1- Wren, P.C and Martin, H.1995. High School English Grammar and Composition, S Chand Publishing.
- T2- English Grammar in Use, Raymond Murphy4th edition, CUP.
- T3- Barrett, Grant. 2016. Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speaking, Zephyros Press.

## **REFERENCE BOOKS:**

- R1- English Vocabulary in Use (Advanced), Michael McCarthy and Felicity, CUP.
- R2- Effective Communication and Soft Skills, Nitin Bhatnagar, Pearsons.

## **OTHER LEARNING RESOURCES:**

https://www.classcentral.com/report/toefl-preparation/

https://brightlinkprep.com/10-best-toefl-prep-books/

			SEMESTER -	- I							
Course	e Title		FUNDAMENTA	L OF STA	TIST	TICS					
Course	e Code	24UMFS1101R	Total Credits: 2 Total Hours: 15T	'+30P	L 1	T 0	P 2	S 0	R	O/F 0	C 2
Pre-re	quisite	Nil	Co-requisi				1 1	Nil	101		
Progra	amme		All PG I	Programm	e						
Semo	ester	Fall	/ I Semester of Firs	st Year of	the P	rogran	nme				
Cou Objec	ırse ctives	<ol> <li>Understand key of and hypothesis tes</li> <li>Learn to analyse a</li> <li>Apply statistical informed decision</li> </ol>	ting. nd interpret data using reasoning to evalu	ng various	statist	ical ted	chnic	ques a	ınd to	ools.	
CO		Describe statistical poincluding scale of mea	surement.			•					
CO	<b>O2</b>	descriptive statistics.			o-~I				Υ		-
CO	<b>O3</b>	Compile and present including the prediction		l explain	it by	vario	us b	ivaria	ite a	nalys	sis,
CO	04	Compute probability is	ncluding events and	distributio	ns (no	rmal, t	oinor	nial, _J	poiso	on).	
CO	<b>O</b> 5	Explain the methods them to evaluate speci	• •	g, parame	tric a	nd non	ı-par	ametı	ric a	nd us	sed
Unit- No.		Content		Contact Hour	L	earnin	ıg Oı	utcon	ne	K	KL
I	Statisti sample Data: variabl	ical Methods: Definition of statistics. quantitative and quales, scales of measul, interval and ratio.	cal population and litative, attributes,	3	expla Basi		nowl	edge			,2
II	histogr Measu and po quartil	on, coefficient of varia	ncy: mathematical Dispersion: range, leviation, standard	3	expl: know	cribe, ain vledge leaning	gai of o	n organ	the		,2
III	Bivariate data: Definition, scatter diagram, simple, partial and multiple correlation (3variables only), rank correlation. Simple linear regression, fitting of polynomials and exponential curves.  3 Describe, illustrate and explain gain the Analytical Skill concept							,2			
IV	sample concer exhaus classic Discre	m experiment: trial, e space, event, Oper ots of mutually exclusive events. Definitional and relative free probability space of ility, Independence of experiments.	3	explain know Anal	cribe, ain vledge lysis l to-day	acqu of t Proc	iire basic	the Data	e 1	,2	

				1
	probability, total and compound probability rules, Normal probability, Distribution, Bionomial probability Distribution, Poisson Probability Distribution, Bayes'theorem and its applications			
V	Testing of hypothesis, parametric test: t-test, z-test, chi-square test. Non-Parametric test: One sample Kolmogorov test, wilcoxon Signed test, Mann- Whitney Test, Kruskal walis test	2	Describe, illustrate and explain acquire the Testing of hypothesis, parametric test: t-test, z-test, chi-square test. Non-	1,2
Practical	Introduction to RA programming language and environment for data analysis and graphics. Syntax of R expressions: Vectors and assignment, vector arithmetic, generating regular sequence, logical vector, character vectors, Index vectors; selecting and modifying subsets of data set.  1. Data objects: Basic data objects, matrices, partition of matrices, arrays, lists, creating and using these objects; Functions-Elementary functions and summary functions, applying functions to subsets of data. Data frames: The benefits of data frames, creating data frames, combining data frames, Adding new classes of variables to data frames; Data frame at tributes. Importing data files: import. Data function, read. Table function; Exporting data: export. Data function, cat, write, and write. Table functions, function, formatting output-options, and format functions; Exporting graphs -export. Graph function. Graphics  2. In R Visualizing the multivariate data: Scatter plot, Q-Q plot, P-P plot.  3. Performing dataanalysistasks:Readingdatawithscan,Expl oringdatausinggraphical tools, computing descriptivestatistics,onesampletests,twosampl etests,Goodnessoffittests.Parametrictestand Non-Parametric test	30	Describe, illustrate and explain acquire the data objective, pergprming	1,2,3,

	CO PO Mapping					
S.N.	S.N. Course Outcome (CO)					
1	Describe statistical population and sample, compile, classify and characterize data including scale of measurement.	1,2,3				
2	Compile and present univariate data in tabular and graphical form and explain the descriptive statistics.	1,2,3				
3	Compile and present bivariate data and explain it by various bivariate analysis, including the predictions/ forecasting.	1,2,3				
4	Compute probability including events and distributions (normal, binomial, poison).	1,2.3				
5	Explain the methods of hypothesis testing, parametric and non-parametric and used them to evaluate specific cases.	1,2,3				

			SEMES	TER – II									
Cours	e Title	BIOMEDICAL	TECHNIQU	ES AND I	ABOR	ATO	RY N	IAN	AGE	ME	NT		
Course	e Code	24MMLT1201R	Total Credits: 3 Total Hours: 15T+60P				T 0	P 4	S 0	R	O/F 0	<b>C</b> 3	
Pre-re	quisite	Nil		requisite	-	1			Nil				
Progr	amme	N	Master of Me	edical Labo	oratory	Tech	nolog	y					
Sem	ester	Spring/ II Semester of First Year of the Programme											
Course Objectives		<ol> <li>The students will understand and create methods of qualitative analysis of biomolecules and detection.</li> <li>The students will have an understanding on the measurement of radioactive isotopes, and application of isotopes in research and clinical biochemistry.</li> <li>The student will have comprehensive knowledge on Lab automation.</li> </ol>											
CO	01	Demonstrate an in-depth understanding of the principles and practical applications of qualitative analysis techniques.											
CO	02		Demonstrate extensive proficiency in a range of photometric techniques, covering both theoretical foundations and practical execution.										
C	03	Apply isotope applica implications.	Apply isotope applications with a practical understanding of their versatile uses and implications.										
	04	Illustrate advanced proficiency in essential laboratory management skills, displaying expertise in organizational and supervisory roles.  Implement advanced proficiency in incorporating automation and executing Point-of-Care Testing (POCT), showcasing a high level of competence in utilizing state-of-the-art technologies for precise diagnostics.											
Unit-		Content		Contact	]	Learr	ning (	Outo	ome		K	L	
No.	Electro	ds of qualitative a lecules: Chron	malysis of matography, entrifugation edures.	Hour 3	Explai method chrom electro	n biods, atogra	omoleaphy,	ecule enc	e ana ompa rifuga	ssing ation	s <b>1</b>	,,2	
П	II PHOTOMETRIC TECHNIQUES: Colorimetry, Spectrophotometry, Fluorometry, Reflectance phometry, Flamee mission spectrophotometry, Atomic absorption spectrophotometry.  4 Explain the photometric techniques, including colorimetry, pectrophotometry, fluorometry, reflectance photometry, fluorometry, reflectance photometry, flame emission spectrophotometry, and atomic absorption spectrophotometry.							g , e 1	,2				
III	isotope researce CELL Bioche	ion and measurement of es, application of it and clinical biochemi	3	Explai measu isotopo researc bioche fractio technic usage.	remeres' ich emistryonation	ts a and y, and n's	ppli d d illu	ıstrate princi	nctive n in inica e cel iples	e 1 1	,,2		

IV	Laboratory Management: Laboratory design Laboratory safety: Fire, chemical, radiation and infection control, hazardous waste and transport of hazardous materialsResponsibilities of laboratory personnel -Documentation and Maintenance of records in lab -Laboratory information Systems (LIS), Hospital information systems (HIS).	3	Llustrate on laboratory management, safety protocols, personnel responsibilities, documentation, and information systems for efficient lab operation and regulatory compliance.	1,2,3
V	Automation in Biochemistry Laboratory-History, processes, types, steps of analysis. Point-of-care testing (POCT)-Requirements, Classification, Applications	2	Illustrate and explain on biochemistry lab automation and point-of-care testing, ensuring efficient diagnostic procedures.	2,3,4
Practical	Chromatography: Paper, Thin layer chromatography, Principle and Instrumentation of gel, ion-exchange chromatography, HPLC.  Electrophoresis: Agarose gel electrophoresis, Principle and Instrumentation of slide gel, PAGE, SDSPAGE.  Photometry, Spectrophotometry - Principle, Instrumentation and analysis of blood samples  Atomic absorption  Spectrophotometry  (Principle and Instrumentation).  Cell fractionation—methods	60	Apply principles and instrumentation techniques of chromatography, electrophoresis, photometry, spectrophotometry, and atomic absorption spectrophotometry in biochemical analysis, as well as cell fractionation methods.	1,2,3, 4,5

- T1 Bishop M, Fody EP, Schoeff LE. Clinical Chemistry- Techniques, Principles, Correlations. Diabetes (FBS, RBS, OGTT, HbA1c). 2010; 13:27.
- T2 Chatterjea MN, Shinde R. Textbook of medical biochemistry. Wife Goes On; 2011.
- T3 Jung K. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics, Carl A. Burtis, Edward R. Ashwood, and David E. Bruns, editors. St. Louis, MO: Elsevier Saunders, 2006, 2448 pp., \$229.00, hardcover. ISBN 0-7216-0189-8. Clinical Chemistry. 2006 Jun 1;52(6):1214-.
- T4 National Research Council, Division on Earth, Life Studies, Board on Chemical Sciences, Committee on Prudent Practices in the Laboratory, An Update. Prudent practices in the laboratory: handling and management of chemical hazards, updated version.

#### **REFERENCE BOOKS:**

- R1 Godkar PB, Godkar DP. Textbook of medical laboratory technology. Bhalani publishing house; 2006.
- R2 Rastogi VB. Fundamentals of Molecular Biology. Ane Books Pvt Ltd; 2010 Jan 30.

## **OTHER LEARNING RESOURCES:**

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2176284/?page=1

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3418628/

https://www.ncbi.nlm.nih.gov/books/NBK535358/

CO PO Mapping									
S.N.	Course Outcome (CO)	Mapped Program Outcome							
1	Demonstrate an in-depth understanding of the principles and practical applications of qualitative analysis techniques.	1,3							
2	Demonstrate extensive proficiency in a range of photometric techniques, covering both theoretical foundations and practical execution.	1,2							
3	Apply isotope applications with a practical understanding of their versatile uses and implications.	1,2,3							
4	Illustrate advanced proficiency in essential laboratory management skills, displaying expertise in organizational and supervisory roles.	5,6,7							
5	Implement advanced proficiency in incorporating automation and executing Point-of-Care Testing (POCT), showcasing a high level of competence in utilizing state-of-the-art technologies for precise diagnostics.	1,2,3							

			SEMEST	ER – II									
Course T	e Title HEMATOLOGY												
Course C	ode	24MMLT1202R	Total Credits: 3 Total Hours: 1		1	T 0	P 4	S 0	R 0	O/F 0	C 3		
Pre-requi	isite	Nil	Co-requisi	ite				Ni	l	I			
Program	me		Master of Med	ical Lab	orato	ory T	echno	ology					
Semeste	er	Sp	ring/ II Semester	of First	Year	r of tl	ne Pro	ogramı	me				
Course Objectiv		values of bloc 2. To teach the RBC, WBC, p	<ul> <li>values of blood estimation in different methods.</li> <li>To teach the preparation of blood thin film and staining along with total RBC, WBC, platelet counts.</li> <li>To teach the disorders or blood cells and understand various techniques for</li> </ul>										
CO1		Understand the orig	gins, development	, and diso	rders	s of re	ed and	white	blood	cells			
CO2		Analyze the various	s investigations an	nd clinical	feat	ures o	of ane	mia.					
CO3		Evaluate the origin	, development, and	d disorde	s of	white	bloo	d cells.					
CO4		Examine laboratory investigations pertaining to plasma cell disorders.											
CO5		Classify the types a	nd laboratory inve	estigation	s of ₁	platel	et disc	orders.					
Unit- No.		Conten	t	Contac Hour	t	L	earnii	ng Out	come		KL		
I	fund	natopoiesis- Origination and fate of thropoiesis Origin, Cs.	of blood cells.	3	e	escril xplair lood o	the	illustra e forn		and of	1,2		
II		nemia: Morphologic sification Investigati	3	e	Describe, illustrate and explain red cells disorders, anaemia.					1,2			
III	Dise Leu	cocyte– Origin types orders of White bloo kaemia, Definiti ssification and Clinic	3	e: it	s cl	the assific	illustra WBC cation aficance	disor and		1,2			
IV	Plas feat	asma cell disorders –classification asma cell myeloma -definition, clinical atures and investigations.  one marrow Examination		4	explain the morphology and functions of plasma cells and				and and row	1,2			
V	And Nor	ombolytic —Formation of function.  The mal haemostasis. Constitution of haemore	lassification and	2									

T1: Text book of Pathology (Sixth Edition) – By Harsh Mohan

#### **REFERENCE BOOKS:**

- R1: Clinical Haematology Principles, procedure, correletions by E. Anne Stiene Martin, Cheryl A. Lotspiech –steininger, John A. Koepke.
- R2: Clinical Haematology in Medical Practice de Gruchy
- R3: Medical Laboratory Technology Methods & interpretation Ramnik Sood

## **OTHER LEARNING RESOURCES:**

https://www.researchgate.net/publication/260266684_CLINICAL_HEMATOLOGY

	CO PO Mapping									
S.N.	Course Outcome (CO)	Mapped Program Outcome								
1	Understand the origins, development, and disorders of red and white blood cells	1,2								
2	Analyze the various investigations and clinical features of anemia.	1,3								
3	Evaluate the origin, development, and disorders of white blood cells.	1,3								
4	Examine laboratory investigations pertaining to plasma cell disorders.	2,3								
5	Classify the types and laboratory investigations of platelet disorders.	1,3								

			SEMESTER	- II									
Cours	e Title	INTE	RODUCTION	TO BLC	OOD B	ANK	IN(	j					
Course	e Code	74 / 1 / 1 / 1 / 1 / 1 / 1 / 1	al Credits: 3 al Hours: 157	Г+60Р	L 1	T 0	P 4	<b>S</b> 0	R 0	O/F 0	C 3		
Pre-re	quisite	Nil	Co-requisi				•	N		•			
Prog	gram	Mast	ter of Medical	Laborat	ory Te	chno	logy	7					
Semo	ester	Spring/ II Semester of First Year of the Programme											
Cou Objec		<ol> <li>Recall the different blood group systems and genetics and indicate the different types of blood product and their uses</li> <li>Identify and categorize different types of anticoagulants used to store blood</li> <li>Build strong basics in different types of immune-hematological testing in blood centers.</li> </ol>											
CO	01	Understand the basics of Ir	nmuno- Hemat	tology, B	lood gro	oups,	and	l gei	netic	es			
CC	)2	Explain the types of blood											
CC	)3		Understand, evaluate, demonstrate, and classify the different types of Antigen-antibody reactions in Immuno- hematological testing										
CC	)4	Understand the basic know	ledge about A	nticoagula	ants use	ed to	stor	e bl	ood				
CC	)5	Elaborate on Blood group	systems -ABO	system, F	Rh, MN	S, Bo	omb	ay t	oloo	d grou	p		
Unit- No.		Content	Contact Hour		Learni	ing C	utc	ome	e		KL		
I	Blood	y of Transfusion Medicine group systems Rh – genetics	3	Understand the different Blood group systems, Elaborate on the ABO and Rh blood group system					the	1, 2,			
II	Types,	components Indications ation of blood	2	Describe compone and compone	ents, D Prepara	iscus			dica	lood tions lood	1,2,		
III	Donor Donor Advers Transf	donation registration, Selection and Phlebotomy. se donor reaction usion-Transmitted Infection es and Disease Agents	3 ous	Underst donation Transfu Disease	and an n proce sion-Tr	edure ansm	es, e nitte	eval d I	uate nfect	the	1, 2,4		
IV	Antico	Blood storage Anticoagulants used to store blood Changes occurring in the stored blood  3 Understand the basic knowledge about Anticoagulants used to store blood						1,2, 3					
V				Describe and evaluate the basic immune-haematological testing, remember and analyse and classify different blood components Eg: ABO Forward grouping, reverse group, Coomb's test, etc						sting, ssify ping,	1, 2, 3,4,5		

	1.	Blood grouping – ABO	60	
		grouping, Forward grouping		
		(slide & tube method)		
	2.	Reverse grouping – preparation		
	ے.	of pooled A, B & O cells		
	3.	Grading of Reaction. Other		
	٥.			
	4	methods of grouping.		
	4.	Rh grouping & Rh typing (slide		
	_	& tube method)		
	5.	Du Testing		
	6.	Direct and Indirect ,		
		Preparation of Coomb's		
ca		Control Cells		
cti	7.	Compatibility Testing		
Practical	8.	Selection of blood		
	9.	Crossmatching Technique –		
		Major, Minor, Saline, Albumin,		
		Coomb's		
	10.	Emergency –Cross matches		
		Blood Collection		
		Donor selection		
		Blood collection [Phlebotomy]		
		Post-donation Care		
		Cross-matching in Special		
	13.	Situations Special		
	16			
	16.	Investigation of Blood		
		Transfusion reaction		

- T1: Mollison's blood transfusion in clinical medicine, Harvey G. Klein MD Chief, Department of Transfusion Medicine 12th edition
- T2: Modern blood banking &Transfusion Practices Sixth edition
- **T3:** Transfusion medicine technical manual directorate General of health services ministry of health and Family Welfare Government of India, New Delhi Second Edition 2003

#### **REFERENCE BOOKS:**

R1: Blood banking and transfusion medicine, basic principles and practice, hullyersilbersteines Anderson Roback 2nd edition

## **OTHER LEARNING RESOURCES:**

- 1. https://www.ncbi.nlm.nih.gov/books/NBK233081/
- 2. https://www.ncbi.nlm.nih.gov/books/NBK499824/

	CO PO Mapping									
S.N.	Course Outcome (CO)  Mappe Ou									
1	Understand the basics of Immuno- Hematology, Blood groups, and genetics	1,2,3,4,5								
2	Explain the types of blood components and their indications for transfusion	1,2,3,4.5,6,7								
3	Understand, evaluate, demonstrate, and classify the different types of Antigen-antibody reactions in Immuno- hematological testing	2,3,4,8								
4	Understand the basic knowledge about Anticoagulants used to store blood	2,3.4								
5	Elaborate on Blood group systems -ABO system, Rh, MNS, Bombay blood group	1,2,3								

			SEMES	ΓER – II									
Cours	Course Title MICROBIOLOGY AND IMMUNOLOGY												
Course	e Code	24MMLT1205R	Total Credits:			L	Т	P	S	R	O/F	C	
			Total Hours:			1	0	4	0 NE	0	0	3	
	quisite	Nil		quisite					Nil				
	amme		Master of Me										
Sem	ester	Spring/ II Semester of First Year of the Programme											
Obje	urse ctives	<ol> <li>To teach the students to Understand the Compliment system</li> <li>Student will be made to understand about the Antimicrobial resistance and the control measures. And about Antigen-antibody reactions.</li> <li>To teach Basic knowledge about Mycology.</li> </ol>										d the	
CO	01	Studentswilllearnab	outCommunicab	olediseases	andnon-	-Cor	nmu	nicab	ledise	eases	•		
CC	02	Understanding the	Compliment syst	em									
CC	03	Students will be made to understand about the Antimicrobial resistance and the control measures.											
CO	04	Students will be ma	Students will be made to understand Antigen-antibody reactions.										
CC	<b>D</b> 5	Basic knowledge al	oout Mycology.										
Unit- No.		Content		Contact Hour	L	∠ear	ning	Outo	come		KL		
I	with: -Comn	ally important bact nunicable diseases Communicable diseas		3	To find out Medically important bacteria and Understanding Compliment system							,2	
П	Comple Function activate role in	liment system: on, compliment ion pathways, contro n inflammation, H nmunity Imr	receptors,	4	Under Compl	stan	_	ystem	1.	th	e 1,	,2	
III					Studer unders Antim the con	stano icro	l bial	abo Resi	stanc	th	e	,2	
IV	-Agglu -Precip -Comp	en-antibody reaction atination bitation lement fixation no fluroscence	ıs:	3	Students will Be made to understand Antigen antibody reactions							,2	
V	-Classi	uction to Mycology fication of fungus. cally important Fung		2	Basic knowledge about Mycology							,2	

1. T1: Textbook of Microbiology by CP Baveja, 7th edition.

## **REFERENCE BOOKS:**

- 1. R1: Reference: Textbook of microbiology and immunology by S.C. Parija
- 2. R2: Microbiology by Prescott, Harley, Kleis
- 3. R3: Textbook of Microbiology by Ananthanarayan and Paniker.

## **OTHER LEARNING RESOURCES:**

https://www.ncbi.nlm.nih.gov/books/NBK7627/

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Program Outcome							
1	Students will learn about Communicable diseases and non-Communicable diseases.	1,2							
2	Understanding the Compliment system	1,2							
3	Students will be made to understand about the Antimicrobial resistance and the control measures.	1,2,3,4							
4	Students will be made to understand Antigen-antibody reactions.	1,2							
5	Basic knowledge about Mycology.	1,2							

	SEMESTER – II											
Cours	se Title		MOLECU	LAR BIO	LOGY							
Cours	e Code	24MMLT1205R	I			L	T	P	S	R	O/F	C
Pre-re	equisite	Nil	Total Hours: 1	quisite		1	0	2	0 Ni	0 1	0	2
	ramme	1 122	Master of Medi	-	atory T	ech	nolo	ogy		<u>-                                      </u>		
Sem	ester	Spr	ing/ II Semester	of First Ye	ear of t	he I	Prog	ram	me			
	urse ctives	super coiling, to 2. To teach the stu	udents about basi poisomerases, rep dents about Trans students hemog	olication, sa cription an	itellite I d transl	DNA atio	<b>4</b> . n.				oiling apton	
C	01	Understand DNA st	ructure, types, coi	ling, and to	poison	nera	ses.					
C	02	Explain transcription	n, translation, gen	etic codes,	operon	s, aı	nd re	egula	tory	mecl	nanism	ıs.
CO	03	Analyze mutations,	comprehend muta	igenesis, an	nd under	rsta	nd I	NA	repai	r me	chanis	sms.
C	04	Acquire proficiency DNA, and apply clo		ONA techno	ology p	rinc	iple	s, co	nstru	ct re	combi	nant
C	05	Apply genetic know and applications in l		e, including	medica	al co	ondi	tions	, prei	natal	diagn	osis,
Unit- No.		Content		Contact	L	ear	ning	g Ou	tcom	e	K	KL
I	super of satellite Organiz genome sex o	information, Structure, types, coiling and super coiling, topoisomerases, replication, satellite DNA.  Organization of Prokaryotic and Eukaryotic genome, chromosome's structure, number, sex chromosomes, human karyotype, methods for chromosome analysis,						f here dietary pes, coiling and rases, replication, ic and Eukaryotic ttructure, number, man karyotype,  Describe, illustrate explain the basic concabout the Structure, type coiling and super coiling topoisomerases, replication satellite DNA.				
II Transcription and translation factors involved RNA processing, types of RNA, genetic code, Lac operon, Tryptophan operon, regulation in eukaryotes, gene dosage and gene amplification, generation of antibody diversity.					Descr explai and Mutat induce silent mutat chemi Recor techno	in tion ed, mu ion, ical mbii	on rans poin tatio r rant	slatio spo it mu on, fi ohysi nutag	nscri n ontan tation rame cal gen	and eous	1	,2
III	Mutation mutation mutation molecu signific	Structural organization of proteins  Mutation spontaneous, induced, point mutation and silent mutation, frame shift mutation, physical and chemical mutagens, molecular basis, site directed mutagenesis, significance of mutagenesis, DNA repair, isolating mutants, Ames test.  Describe, illustrate and explain to understand Structural organization of proteins							3	3,4		

IV	Recombinant DNA technology: necessary elements—enzymes and vectors —plasmids, cosmids, bacteriophages, shuttle vectors, expression vectors, construction of Rdna and cloning strategies — various methods, genomic libraries (e.g. using phage vectors), cDNA libraries, introduction of rDNA in to host—methods, restriction maps and sequencing.	2	Describe, illustrate and explain about Recombinant DNA Technology: necessary elements –enzymes and vectors–plasmids	3,4
V	Genetics in medicine: Hemoglobin and hemoglobinopathies, phenylketonuria, alkaptonuria, homocystinuria, Lesch-Nyhan syndrome, genetics of cancer, Down's syndrome, Di-George syndrome, Kleinfelters syndrome, Turner's syndrome, hermaphroditism, cystic Fibrosis, hemophilia, prenatal diagnosis of genetic diseases, application of recombinant DNA Technology in medicine  — PCR, RFLP, DNA finger printing, therapeutic proteins, vaccines, antibodies, transgenic organisms, gene therapy, Human genome project.	5	Describe, illustrate and explain the Knowledge about Genetics in medicine.	2,3,4
Practical	PCR-Side Directed Mutagenesis DNA Isolation, DNA Cloning, Bacterial Transformation and Fusion Protein Purification (Demonstration only) Plasmid Analysis by Restriction Digestion and Protein Gel Electrophoresis DNA Gel Electrophoresis	30	Describe, illustrate and explain the Knowledge about Molecular techniques.	1,2,3,4

**T1:** Molecular biology of the cell by Bruce Albert.

## **REFERENCE BOOKS:**

- R1: Pathfinder Life science fundamentals and practice Part I and Part II by Pranav Kumar (Fifth revised edition).
- R2: Wilson and Walkers Principles and Techniques of Biochemistry and Molecular biology.
- R3: Molecular biology of gene by Watson.

	CO PO Mapping						
S.N.	S.N. Course Outcome (CO)						
1	Understand DNA structure, types, coiling, and topoisomerases.	1,3,4					
2	2 Explain transcription, translation, genetic codes, operons, and regulatory mechanisms.						
3	Analyze mutations, comprehend mutagenesis, and understand DNA repair mechanisms.	1,3,4					
4	Acquire proficiency in recombinant DNA technology principles, construct recombinant DNA, and apply cloning strategies.	1,3,4					
5	Apply genetic knowledge in medicine, including medical conditions, prenatal diagnosis, and applications in healthcare.	1,3,4					

			SEMESTEI	R – II								
Cour	se Title	UNIVERS	SAL HUMAN VALUI	ES (U	HV) +	PROI	FESSI	ONAI	LETHI	CS		
Cour	se code	23UUHV101R	Total credits: 2	L	T	P	S	R	O/F		C	
			Total hours: 15T	1	0	2	0	0   LL	0		2	
	-	Nil	Co-requisite	100				LLL				
	Programme All UG an											
Sen	nester		Spring/ II Semester of First Year of the Programme									
	ourse ectives	existence.  2. It is free from a  3. It is a process Whatever is for facilitated to v	<ol> <li>It involves a systematic and rational study of the human being vis-à-vis the rest of existence.</li> <li>It is free from any dogma or value prescriptions.</li> <li>It is a process of self-investigation and self-exploration, and not of giving sermons. Whatever is found as truth or reality is stated as a proposal and the students are facilitated to verify it in their own right, based on their Natural Acceptance and subsequent Experiential Validation.</li> </ol>									
C	CO1	•	nts appreciate the esse re sustained happiness		•		•					
C	CO2	profession as well of the Human re	development of a Holi Il as towards happiness ality and the rest of I Il Human Values and n	s and p Existe	prospe nce. S	rity basuch a	sed on holisti	a corr ic pers	rect unde spective	ersta forr	anding ms the	
C	CO3		sible implications of s rustful and mutually fu Nature					_				
C	CO4		e is intended to provoung enquiring minds		much	n need	ed ori	entatio	on input	in	value	
Unit No.		Conte	nt	Cont Hou		Le	arnin	g Outo	come		KL	
I Introduction- Need, Basic Guidelines, Content and Process for Value Education. Understanding the need, basic guidelines, content and process for Value Education Self-Exploration—what is it?-its content and process; 'Natural Acceptance' and Experiential Validation—as the mechanism for self-exploration Continuous Happiness and Prosperity-A look at basic Human Aspirations Right understanding, Relationship and Physical Facilities-the basic requirements for fulfilment of aspirations of every human being with their correct priority Understanding Happiness and Prosperity correctly-A critical appraisal of the current scenario Method to fulfil the above human aspirations: understanding and living in harmony at various levels.			3	h th	appine	ss a value loratio aspin	and pe eduction, rations		ty nd ng	1,2,3,		

TT	II. J	2	C(1	104
II	Understanding Harmony in the Human	3	Students will learn to	1,2,,4,
	Being-		achieve personal harmony by	
	Harmony in Myself!		balancing the needs of the	
	Understanding human being as a co- existence		self and body through self-	
	of the sentient 'I' and the material 'Body'		control and health practices.	
	Understanding the needs of Self ('I') and			
	'Body'- Sukhand Suvidha			
	Understanding the Body as an instrument of			
	'I'(I being the doer, seer and enjoyer)			
	Understanding the characteristics and			
	activities of 'I' and harmony in 'I'			
	Understanding the harmony of I with the			
	Body: Sanyam and Swasthya; correct appraisal			
	of Physical needs, meaning of			
	Prosperity in detail Programs to ensure			
	Sanyam and Swasthya - Practice Exercises and			
	Case Studies will be taken up in Practice			
	Sessions.			
III	<b>Understanding Harmony in the Family and</b>		Students will learn to apply	
	Society-Harmony in Human Relationship:		principles of trust, respect,	
	Understanding Harmony in the family—the		and universal goals to	
	basic unit of human interaction Understanding		achieve harmony in family	
	values in human relationship; meaning of		and society.	
	Nyaya and program for its fulfilment to ensure		and society.	
	Ubhay-Tripti; Trust (Vishwas) and Respect			
	(Samman) as the foundational values of			
	relationship.			
	Understanding the meaning of			
	Vishwas; Difference between intention and			
	competence.			
	Understanding the meaning of			
	Samman Difference between respect and			
	differentiation the			
	Other salient values in relationship.			
	Understanding the harmony in the			
	Society (society being an extension of			
	family):			
	Samadhan, Samridhi, Abhay, Sah-astitva as			
	comprehensive Human Goals.			
	Visualizing a universal harmonious order in			
	society- Undivided Society (Akhand Samaj),			
	Universal Order (Sarvabhaum Vyawastha)			
	from family to world family!-Practice			
	Exercises and Case Studies will be taken up in			
	Practice Sessions.			
IV	<b>Understanding Harmony in the Nature and</b>		Students will grasp the	
	Existence-		harmony and	
	Whole existence as Coexistence		interconnectedness in nature	
	Understanding the harmony in the Nature		and existence through practical	

among the four order so nature recyclability and self- regulation in nature Understanding Existence as Co- existence (Sah-astitva) of mutually interacting units in all-pervasive space Holistic perception of harmony at all levels of Existence-Practice Exercises and Case Studies will be taken up in Practice Sessions.  $\mathbf{V}$ **Understanding of Harmony on Professional** Students will learn to apply professional ethics Natural acceptance of human values and human values to Definitiveness of Ethical Human Conduct promote responsible and Basis for Humanistic Education, Humanistic sustainable practices in Constitution and Humanistic Universal Order. technology Competence in professional Ethics: management. Ability to utilize the professional competence for augmenting universal human order Ability to identify the scope and characteristics of people friendly and eco-friendly production systems, Ability to identify and develop appropriate technologies and management patterns for above production systems. Case studies of typical holistic technologies, management models and production systems Strategy for transition from the present state to Universal Human Order: At the level of individual: as socially and ecologically responsible engineers, technologists and managers11.At the level of society: as mutually enriching institutions and

#### **TEXT BOOKS:**

- 1. The text book R.RGaur,RSangal, GPBagaria, A foundation course in Human Values and professional Ethics, Excel books, New Delhi, 2010, ISBN 978-8-174-46781-2
- 2. The teacher's manual R.R Gaur, R Sangal, GP Bagaria ,A foundation course in Human Values and professional Ethics—Teachers Manual, Excel books, New Delhi, 2010
- 3. A set of DVDs containing

organizations.

- Video of Teachers' Orientation Program
- PPTs of Lectures and Practice Sessions
- Audio-visual material for use in the practice sessions

#### **REFERENCE BOOKS:**

- 1. BL Bajpai, *Indian Ethos and Modern Management*, New Royal Book Co., Lucknow.
- 2. PLDhar, RR Gaur, Science and Humanism, Common wealth Publishers.
- 3. Sussan George, *How the Other Half Dies*, Penguin Press.
- 4. IvanIllich, Energy & Equity, The Trinity Press, Worcester, and Harper Collins, USA
- 5. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, limits to

- Growth, Club of Rome's Report, Universe Books.
- 6. Subhas Palekar, *How to practice Natural Farming*, Pracheen (Vaidik) Krishi Tantra Shodh ,Amravati.
- 7. A Nagraj, Jeevan Vidyaek Parichay, Divya Path Sans than, Amarkantak.
- 8. E.F.Schumacher, *Small is Beautiful: a study of economics as if people mattered*, Blond & Briggs, Britain.
- 9. A.N. Tripathy, *Human Values*, New Age International Publishers.

## **RELEVANT WEBSITES, MOVIES AND DOCUMENTARIES:**

- 1. Value Education websites ,http://uhv.ac.in,http://www.uptu.ac.in
- 2. Story of Stuff, http://www.storyofstuff.com
- 3. Al Gore, An Inconvenient Truth, Paramount Classics, USA
- 4. Charlie Chaplin, Modern Times, United Artists, USA
- 5. IIT Delhi, Modern Technology-the Untold Story

				SEMEST	ER – II								
Cours	se Title		APPI		ORATORY TECH Professional Skills		<b>IQ</b> U	E					
Cours	se Code	24MMLT1206R		ol Credits:		<b>L</b> 0	T 0	P 4	S	R	O/F 0	C 2	
Pre-re	equisite	Nil	1000		equisite	•	U	<u> </u>	Ni	Ů	· ·		
	ramme		Maste		cal Laboratory Te	chn	olog	y					
Sem	nester	Spi	ing/ II	Semester	of First Year of the	e Pı	rogr	amn	1e				
	urse ectives	<ol> <li>Adhere to safety measures for accu</li> <li>Operate microsco microbial and her</li> <li>Execute proper assessments with</li> </ol>	rate and opes, proper p	d reliable l repare cult ical analys sample co	aboratory results.  Fure media, and periods.  Sollection, pipetting	rfor	m s	taini	ng te	echn	iques	for	
С	01	Implement safety p measures to ensure a	ccurate	and ethica	l laboratory operation	ons.	,						
	O2 O3	Understand the prir microscopes for effe Prepare different cul microbial identificati	ctive lature me	boratory ar	nalysis.								
C	O4	Collect blood sample and estimate hemogl	_			rep	are a	nd s	tain 1	bloo	d smea	ars,	
C	O5	Use different types maintain precision in				neth	ods,	and	pre	vent	errors	s to	
Unit No.		Content		Contact	Learni	ng	Outo	come	9		]	KL	
I	Overview of Medical Laboratory Science Importance of Laboratory Safety Good Laboratory Practices (GLP) Quality Control & Assurance in  Students will u medical labora laboratory safety Good Laboratory ensure quality co					ory m Pr ntro	s easu actic ol ar	ciend res, ces (	ce, imp GLP	app leme ), a	oly ent nd	1,2	
II	1 '					ntify different types of cheir applications in catory science, and oper maintenance and					3,4		
III	Types Gram								3,4				
IV							,4,5						

V	Types of pipettes, Proper pipetting techniques and error prevention	16	Students will understand the types of pipettes, demonstrate proper pipetting techniques, and apply error prevention	3,4,5
			methods to ensure accuracy in laboratory procedures.	

T1: A textbook of Medical laboratory technology by Praful B. Godkar and Darshan P. Godkar

## **REFERENCE BOOKS:**

R1: Laboratory management (Quality in Laboratory Diagnosis) by Candis A. Kinkus

R2: A text book of quality control and Quality assurance by Deepanti Gajjar, Ashish Budhrani, Dr.Md.Rageeb Md.Usman, Dr.Dilpreet Singh.

R3: A text book of Medical laboratory technology by PrafulB.GodkarandDarshanP.Godkar.Vol.1

R4: Total quality management-principles and practice by S.K.Mandal.

## **OTHER LEARNING RESOURCES:**

Quality management in healthcare: The pivotal desideratum - PMC (nih.gov)

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Program Outcome						
1	Implement safety protocols, Good Laboratory Practices (GLP), and quality control measures to ensure accurate and ethical laboratory operations.	1,2,3,6						
2	Understand the principles, types, applications, maintenance, and troubleshooting of microscopes for effective laboratory analysis.	2,3						
3	Prepare different culture media, conduct Gram staining and other staining techniques for microbial identification.	3,6,7						
4	Collect blood samples using appropriate anticoagulants, prepare and stain blood smears, and estimate hemoglobin levels accurately.	2,3,4,5,6,7						
5	Use different types of pipettes, apply proper pipetting methods, and prevent errors to maintain precision in laboratory procedures.	1,2,3,4						

			SEME	STER – I	I							
Cour	se Title		ADVAN	CED CO	MMUN	ICAT	TION					
Cour	rse code	24UMPD1201R	Total Credit Total Hours			L 0	T 0	P 4	S 0	R 0	O/F 0	C 2
Pre-r	equisite	Nil	Co-re	equisite			ı	I	Nil			
Prog	gramme		Master of Me	dical Lab	oratory	y Tecl	nolo	gy				
Sen	nester	SI	oring/ II Semes	ter of Fir	st Year	of the	e Pro	gran	ıme			
	ourse ectives	<ol> <li>To familiarize students with the transformation of sentences and the appropriate use of prepositions.</li> <li>To enhance the writing skills in different areas including CV and cover letter writing.</li> <li>To convey meaning by reinforcing, substituting for, or contradicting verbal communication.</li> </ol>										
C	CO1	Practice of gramm	ar will polish th	neir writin	g skills.							
C	CO2	It will enhance their communication and interpretative skills.										
C	CO3	Introduction to behavioural skills, thoughts, and emotions will enable them to behave in a conscious and productive way.										
0	CO4	It will have a posit	ive impact in the	eir though	nt proces	s and	probl	em-s	olvin	ıg sk	ills	
C	CO5	Participants will grasp the fundamentals of non-verbal communication language, enabling them to apply effective techniques and avoid common interpersonal interactions.									•	
Unit -No.		Content Contact Learning Outcome Hour							I	KL		
I				3	Students will confidently utilize prepositions, construct tag questions, understand idioms, phrases, and clauses, and differentiate between simple, complex, and compound sentences						ag ns, nd le,	1,2
II	i. Acti	e2-Grammar ve and Passive Voice ct and Indirect Speed		2	To be active as direvarious	and p	assiv d inc	e vo	ice, a	is we	ell	1,2
III	Module3-WritingSkills i. The Basics of Writing; avoid ambiguity and vagueness ii. Paragraph Writing iii. Précis Writing iv. Letter Writing v. Resume, CV and Cover Letter			3	Students will be proficient in writing clear and concise content, including paragraphs, precis, letters,							1,2
IV	i. SWO	e4-Self-Managemen OT Analysis Regulation-Goal Seconal Hygiene		4	Able to set and ma enhance	l regu aintair	late g pers	goals onal	effec hygie	ctivel ene f	y, or	1,2

V	Module5-Non-VerbalCommunication-	3	To understand non-verbal	1,2				
	Sciences of Body Language		communication and body					
	i. What is Non-Verbal Communication		language, including its elements					
	& Body Language,		and types, recognize its					
	ii. Elements of Communication,		importance and impact, identify					
	iii. Types of Body Language,		various forms of communication					
	iv. Importance and Impact of Body		conveyed through body language					
	Language,		like haptics, kinesics, and					
	v. Types of Communication through		proxemics, and apply effective					
	Body Language,		do's and don'ts of body language					
	vi. Introduction to Haptic, Introduction to		etiquette.					
	Kinesics							
	vii Introduction to Proxemics,							
	viii Body Language Do's and Don'ts,							
	Doubt Clearing Session.							

- T1: Barrett, Grant. 2016. Perfect English Grammar: The Indispensible Guide to Excellent Writing and Speaking, Zephyros Press.
- T2: Mc Dowell, Gayle Laakmann. Cracking the Coding Interview (Indian Edition).

## **REFERENCE BOOKS:**

- R1: Communication Skills Training: A Practical Guide to Improving Your Social Intelligence, Presentation and Social Speaking, I an Tuhovsky.
- R2: A Text book for AECC English Communication: Interface, Dr. Kironmoy Chetia and Pranami Bania Breez Mohan Hazarika.

## **OTHER LEARNING RESOURCES:**

- https://youtu.be/x60GHpQ8gJk
- https://youtu.be/Ke_oSN-BCaY
- https://youtu.be/TDPDtrLxT-c

			SEMESTER -	- III										
Cours	se Title		RESEARCH/ C	CLINI	CAL	POST	ING							
Cours	se Code	24MMLT2103R	Total Credits: 8	L	T	P	S	R	O/F	'	C			
Dro ro	equisite	Nil	Total Hours: 120P  Co-requisite	0	0	14	0 N	8	0		8			
		1411												
	ramme	Master of Medical Laboratory Technology												
Sem	ester	Fall/ Third Semester of Second Year of the programme												
	urse ectives	<ol> <li>To apply theoretical knowledge acquired in academic coursework to practical scenarios within a diagnostic laboratory setting.</li> <li>To develop and enhance hands-on skills in laboratory techniques, equipment operation, and sample analysis applicable to diagnostic testing.</li> <li>To gain a thorough understanding of the workflow within a diagnostic laboratory, encompassing sample collection, processing, analysis, and result reporting</li> <li>To implement and adhere to quality control measures to ensure the accuracy, precision, and reliability of diagnostic test results.</li> </ol>												
C	<b>O</b> 1	Applied Theoretical Knowledge												
C	O2	Practical Laborato	ory Skills											
C	O3	Understanding La	boratory Workflow											
C	O4	Ensured Quality (	Control Practices											
	O5	Collaboration in a	Team Environment											
Unit- No.		Conten	ıt .	Contact Learning Outcome KL Hour										
I	Interpre Path pl Results Current	rinciples of Diagno tation of Laborator nysiology and its In Trends in Diagnos udies in Diagnostic	y Results npact on Diagnostic tic Technologies	1100	e and retical erpret esults	1	1,2							
II	Practica Handlin Equipm Sample Standar Commo Safety I Trouble	ll Laboratory Skills  Ig and Operation  ent.  Collection and Pred  d Operating Proc	120	)	lustrate lection follo tocols.		ınd							
III	Laborat Specime Data En Turnaro	ory Workflow: ory Workflow Man en Processing and I stry and Record-Ke ound Time Optimiza nication within the	Management eping Practices ation			Descrii explair specim from c reporti	n iens collect	Pr effic	ocess iently	2	2,3			

IV	Ensured Quality Control Practices: Quality Control (QC) and Quality Assurance (QA) Principles Implementing QC Procedures in the Laboratory Calibration and Validation of Laboratory Equipment Error Identification and Corrective Actions	Describe, illustrate and explain Identify and rectify errors to maintain high standards of quality.	3,4
V	Collaboration in a Team Environment: Roles and Responsibilities of Laboratory Personnel Effective Communication Skills Collaborative Problem-Solving Techniques	Describe, illustrate and explain perform individual roles within the team framework.	2,3

**T1** Leach DL, Ryman D. Clinical laboratory science: the basics and routine techniques. Clinical Laboratory Science. 2000 Jul 1;13(3):172.

**T2** McPherson RA, Pincus MR. Henry's clinical diagnosis and management by laboratory methods Ebook. Elsevier Health Sciences; 2021 Jun 9.

## **REFERENCE BOOKS:**

R1 Estridge BH, Reynolds AP. Basic clinical laboratory techniques. (No Title). 2012.

R2Varnadoe LA. Medical laboratory management and supervision. Lionel Varnadoe; 2008.

## **OTHER LEARNING RESOURCES:**

https://www.ncbi.nlm.nih.gov/books/NBK535358/

	CO PO Mapping									
S.N.	Course Outcome (CO)	Mapped Program Outcome								
1	Applied Theoretical Knowledge	1,2								
2	Practical Laboratory Skills	2,3								
3	Understanding Laboratory Workflow	5,6,7								
4	Ensured Quality Control Practices	1,2								
5	Collaboration in a Team Environment	5,6,7,8								

			SEMEST	ER -	- III								
Cours	e Title		CORPO	RAT	E PRO	OFIC	ENC	Y					
Course	e Code	24UMPD2101R	<b>Total Credits: 2</b>	ļ.	L	T	P	S	R	О	<b>/F</b>	C	
		210111 2210111	Total Hours: 30	)P	0	0	4	0	0	(	0	2	
Pre-re	quisite	Nil	Co-requisite	;				]	Nil				
Progr	amme		Al	l PG	Progr	amm	e						
Semo	ester	Fa	Fall/ III Semester of Second Year of the Programme										
Course Objectives		<ul><li>2. To acquire the listeners.</li><li>3. To increase prof</li></ul>	<ol> <li>To acquaint students with the various tools of an effective presentation.</li> <li>To acquire the speaking skill instruct, influence, engage, educate, or appease the listeners.</li> <li>To increase proficiency, present ability and quality of resume and provide guidance for self-promotion and self-evaluation in social media</li> </ol>										
CO1		It will prepare the learners to speak with greater control and char is main front of others.											
CO2		It will have appositive impact in the rethought process and problem-solving skills.											
CO	03	It will arm the students with all the necessary tools and skill sets to prepare professional resume. They will learn to highlight and assess themselves in social media.  It will impart in them techniques to solve critical problems in an interview, develop strategies to crack interviews, improve their communication skills, and boost their											
	confidence.												
CO	O5	It will able to lear	n research paper–									1	
Unit- No.		Content			ntact our		Lear	ning	Outo	ome		KL	
I	Modul	e1-Presentation Ski	Ells		5	Desc	cribe	and	expla	ain a	bout	1,2	
		oduction				the			ation		kills,	,	
	ii. Ess	ential characteristic	s of a good			Prep	aratio	n	of	a g	good		
	pre	esentation				prese	entati	on.					
	iii. Pre	paration of a good p	resentation										
П	i. Fea ii. Un Pu iii. Co iv. Phy v. Tip Sp vi. Tip Pro vii. Pro viii. De Do Po	<ul> <li>ii. Understanding and Overcoming Fer Public Speaking,</li> <li>iii. Confidence and Control,</li> <li>iv. Physiology and Stress-Control/Prov. Tips for Presentations and Public Speaking,</li> <li>vi. Tips for Using Visual Aids in Presentations,</li> <li>vii. Process for Preparing and Creating Presentations,</li> <li>viii. Delivering Presentations Successful Doubt Clearing and Summary of Management</li> </ul>			6	the F	ear o	f Put	expla	oeakii		1,2	
III	Cu let	le3-Practical session irriculum Vitae, Witer& Linked In Praration, submission	riting cover ofile		6	the	Prac ime,	ctical	riculu	sion	on	1,2	

	Resume.	LinkedIn Profile.						
	ii. Practical session on cover letter		Linkedin i forne.					
	screening session							
	iii.Creating a profile on LinkedIn							
	How to utilize it			4.0				
IV	Module 4-Leadership & Management	5	Describe and explain of	1,2				
	Skills and Module 5- Research		Leadership & Management					
	Paper–Writing Skills		Skills and Research Paper-					
	i. Concepts of Leadership,		Writing Skills					
	ii. Leadership Styles,							
	iii. Manager VS Leader,							
	iv. How to be an Effective Leader,							
	v. Mock/Practice Session,							
	Doubt Clearing Session							
	Module 5-Research Paper-Writing							
	Skills							
	i. How to write a research paper							
	ii. Key point in Research Work							
V	Module6- Interview Skills & Dress code	8	Describe and explain of-	1,2				
	Ethics and Module7-Mock Interview		Interview Skills & Dress code					
	i. Types of the interview-telephonic,		Ethics and Mock Interview					
	virtual & face to face							
	ii. Online interview, personal interview,							
	iii. Panel interview,							
	iv. Group interview,							
	v. JAM session,							
	vi. Types of interview questions							
	traditional/common interview							
	questions,							
	vii. Case interview questions,							
	viii. General Strategies for an wearing							
	questions,							
	ix. Marketing your skills and experiences,							
	x. Preparation before the interview,							
	. **							
	_							
	xii. How to maintain eye contact and							
	positive body language,							
	xiii. How to be presentable, xiv. Interviewed os and don'ts,							
	xv. Introduction to Dress Code Ethics,							
	xvi. Purpose and Importance							
	xvii. How to Make 'FIRST IMPRESSION'							
	xviii.What to Wear During Interviews or							
	Any Other Formal Meetings–Male &							
	Female Madula 7 Mach Internions							
	Module7-Mock Interview							
	i. Practical Mock Interview,							
	ii. Feedback-Receiving Feedback,							
	iii. Giving Feedback,							
	iv. Advantages of Effective Feedback,							
	How to deal with negative feedback							

- 1. Barrett, Grant.2016.Perfect English Grammar: The Indispensable Guide to Excellent Writing and Speaking, Zephyros Press.
- 2. Mc Dowell, Gayle Laakmann.2008.Cracking the Coding Interview (Indian Edition).

## **REFERENCE BOOKS:**

1. Garg. Manoj Kr. (2018) English Communication: Theory and Practical

## **OTHER LEARNING RESOURCES:**

- 1. https://brightlinkprep.com/10-best-toefl-prep-books/
- 2. https://files.eric.ed.gov/fulltext/EJ1132742.pdf

## **Group-A (Haematology and Blood Banking)**

			SEMES'	TER – III									
Cours	e Title			ICED HEN	<b>IATOL</b>	OGY	ı	1	1				
Course	e Code	24MMLT2104R	Total Credits Total Hours:		$\frac{\mathbf{L}}{4}$	T 0	P 6	S 0	R	O/F 0	<b>C</b> 7		
Pre-re	quisite	Nil	Co-req		) 4	U	0	Nil	U	U	/		
-	amme	1411	Master of Me		ratory 7	 Fechn	าดใกฐง						
	ester	Fall	/ Third Semeste						1e				
Course Objectives		<ol> <li>The students will be taught to understand the Origin, development, function, fate of blood cells, disorders of Red blood cells and white Blood cells.</li> <li>The students will have knowledge on Plasma cell myeloma and laboratory investigations.</li> <li>The students will understand to Elaborate on the Pathogenesis, Clinical feature on Vascular disorders, Platelet disorders, coagulation</li> <li>Demonstrate knowledge acquisition regarding hematopoietic stem cells and the</li> </ol>											
	01	synthesis of cell fo	rmations.					stem	cell	s and	the		
C	02	Evaluate and diagr	ose different typ	es of anemi	a in the	labora	atory.						
C	03	Analyze the types	and diagnose Leu	ıkemias.									
C	04	Understand various types of platelet disorders and conduct laboratory investigations for diagnosis.											
C	05	Examine thromboinvestigations.											
Unit-		Content		Contact	Le	earnii	ng Ot	itcon	ıe	ŀ	KL		
No.	Camana	l compate of blood	Calla fammatian	Hour 10	Dagaril	Describe, illustrate and							
	General aspects of blood, Cells formation. Synthesis and types of hemoglobin.  Basic aspects of anaemia Classification, pathophysiology and clinical features of anemia Investigation of Anemia in general.  Microcytic anaemias: Sidero blastic anemia, Anaemia of chronic infection. Haemoglobinopathies Thalassaemia, Iron deficiency anaemia.			explain the formation of blood cells and aspects of anaemia its classification based on the microcytic and various special test for anemias.  of ies							1,2		
II	Macrocytic Anaemias Megaloblastic anaemia Pernicious anaemia Non Megaloblastic Anemia.  Normocytic normo chronic anaemia.  Anaemiain systemic disorders Acute blood loss, Renal failure Liver disorders etc. Haemolytic anaemia Polycythaemia Haemorrhagic disorders:  Definition Pathogenesis and clinical features. Classification of Vascular disorders, platelet disorders, Coagulation disorders.			12	Describ explain anemia chromi hemori its labo	abos, No c ane	ormod emia a c disc	macr sytic r and v order	norm variou s an	c, al us	1,2		

III	Leucocyte disorders: Leukemia, types and Cytochemical investigations for Leukemias. Leukopenia Leucocytosis. Leukemoid reaction, Myelodysplastic syndrome (MDS).  Philadelphia chromosome. Leukocyte Alkaline Phosphatase [LAPscore.]	12	Describe, illustrate and explain the Various white blood cell disorders and various cyto-chemical stains for diagnosis of leukemia.	1,2
IV	Plasma cell disorders- Quantitative platelet disorders: Thrombocytopenia: Definition, Etiology, Lab Investigations, ITP Classification, Clinical, featrues, Diagnosis and B.M findings in ITP. Qualitative platelet disorders. Thromobcytosis- Definition, Etiology, Lab Investigations. Coagulation disorders Inherited- Haemophilia A and B Von Willebrand's disease Acquired; Vit.K deficiency, Liver disease, DIC Tests of vascular and platelet function. Bone Marrow examination Tests for coagulation disorders: Screening tests- First line tests. Second line tests – Mixing experiments. Coagulation factory assay. Urea solubility tests for Factor XIII Factor VIII inhibitor study. Fibrinogen assay Disseminated intra vascular coagulation-Definition, Pathogenesis, laboratory investigations	12	Describe , illustrate and explain the quantitative and qualitative platelet disorders its clinical features and laboratory diagnosis of platelets disorders.	1,2
V	Thrombotic disorders: Classification-Inherited and Acquired. Clinical features, Investigation of thrombotic disorders: Tests i. Protein C ii. Protein S iii. AT-III iv. Factor V leiden v. Anti phosphorlipid antibody syndrome vi. Definition clinical feature laboratory investigation.	14	Describe, illustrate and explain about thrombotic disorders its investigations and special test for diagnosis of thrombosis.	1,2

Practical	<ol> <li>Staining and Interpretation of Peripheral smears.</li> <li>Microcytic hypo chromic anaemia-3.Peripheral smear, bone marrow Examination iron.</li> <li>Serum Total iron bindng capacity [TIBC] bone marrow .Iron stain.</li> <li>Macrocytic Anaemia-Peripheral smear, bone marrow. Examination,</li> <li>VitB12 assay, Folate assay,</li> <li>Schilling Test.</li> <li>Plasma Hb Estimation Haemolytic Workup Peripheral smear – specific morphologic abnormalities Special tests</li> <li>Osmotic fragility test</li> <li>Sickling test</li> <li>Kleihauer acid elution test</li> <li>Alkalide naturation Test</li> <li>Ham's test, Sucroselysis test</li> <li>Coomb's test</li> <li>Electrophoresis – HbF, HbA2 estimation</li> <li>Tests for G-6PD deficiency Leukaemias:         <ol> <li>Myeloperoxidase</li> <li>Periodic Acid Phosphatase[PAS]</li> <li>Sudan Black</li> <li>Esterase, Non-specific esterase</li> <li>Leucocyte alkaline Phosphatase</li> <li>Tests for coagulation disorders: Screening tests – First line tests- Prothrombin time</li> </ol> </li> </ol>	90	Describe, illustrate and explain various haematological techniques and carry out microscopic examination.	1,2,3,4
	tests – First line tests- Prothrombin time (PT), Activated partial thromtime (APTT), Thrombin time (TT), INR.			

T1: Text book of Pathology (Sixth Edition) –By Harsh Mohan

T2: Essential of clinical pathology -Shirish M Kawthalkar

## **REFERENCE BOOKS:**

R1: Clinical Haematology Principles, procedure, correletions by E. Anne Stiene Martin, Cheryl A. Lotspiech –steininger, John A. Koepke.

R2: Clinical Haematology in Medical Practice – de Gruchy

R3: Medical Laboratory Technology Methods & interpretation – Ramnik Sood

#### **OTHER LEARNING RESOURCES:**

https://www.ncbi.nlm.nih.gov/books/NBK593683/

	CO PO Mapping								
S.N.	Course Outcome (CO)	Mapped Program Outcome							
1	Demonstrate knowledge acquisition regarding hematopoietic stem cells and the synthesis of cell formations.	1,2,3							
2	Evaluate and diagnose different types of anemia in the laboratory.	3,8							
3	Analyze the types and diagnose Leukemias.	5,3,2							
4	Understand various types of platelet disorders and conduct laboratory investigations for diagnosis.	1,3							
5	Examine thrombotic disorders and plasma cell disorders along with their laboratory investigations.	2,3,8							

			SEMEST	ER – III								
Cours	se Title			ED BLOO	D BANK	ING						
Cours	se code	24MMLT2105R			L	T	P	S	R	O/F	C	
		2-0-	Total hours: 607		4	0	6	0	0	0	7	
	equisite	Nil	Co-req					Nil				
	ramme	T.	Master of Me									
Sem	nester	1. Recall the differ	all/ III Semester o						a dif	Forant	tymag	
	urse ectives	of blood production anticoagulants understand the	of blood product and their uses, Identify and categorize different types of anticoagulants used to store blood,  2. Build a strong knowledge on the medico legal aspects of blood transfusion centers,.  3. Understand the importance of apheresis and explore the future trends in blood transfusion practices.									
C	01	Understand the bas	sics of Immuno- H	Iematology	, Blood gr	oups,	and	genet	tics			
C	O2	Explain the types hemapheresis.	Explain the types of blood components and their indications for transfusion, evaluate									
C	О3	Understand, evaluate, demonstrate, and classify the different types of Antigen-antibody reactions in Immuno-hematological testing										
C	O4	Understand the bassurance in blood	-	bout Antic	oagulants	used	to	store	bloo	d, qua	ılity	
C	05	Elaborate on Bloo understand and ap		•				-	/ blo	od gro	oup,	
Unit- No.		Content		Contact Hour	Lea	Learning Outcome					KL	
I	Blood  AF secreto Rh sys Du red MNS S Coomb	BO subgroups Bors, non-secretors.  tem – Importance of cells (A variant of to System – clinical signs test – Application	no Haematology: groups and genetics, ABO System O subgroups Bombay group, rs, non-secretors. em – Importance of the Rh system cells (A variant of the Rh system) ystem – clinical significance 's test – Application – DCT, ICT body testing, Compatibility testing			Understand and Explain basic introduction Immuno-Hematology, Systems and genetics, system, Bombay groclassify and composecretors, non-secretors						
II	Blood Indicat Autolo transm Haemo transfu Transfu Specia haemo Transfu transfu	Elaborat Explain blood co indicatio Comprel on Trai disease, evaluate conditio	ompoonn. hensivasfusi HDl	n the nents An we I on t	nend know ransr	feren thei i ledge nittee	t raa	2,3,4				

III	Blood donation  Donor Registration, Donor selection, Blood collection, Adverse donor reaction  Anticoagulants used to store blood Changes occurring in the stored blood  Blood components — Indications Preparation of blood	10	Understand the basic knowledge about Anticoagulants used to store blood	1,2,3,4
IV	Indications, Preparation of blood components  Immuno modulation and graft versus host reaction  Haema pheresis  Definition, Types of Apheresis, Machines and Techniques. Tissue banking, Cord blood banking Stem cell processing, storage, and transplantation.  Disposal of wastes and biologically hazardous substances in the blood bank Medico-legal aspects of blood transfusion Technical advances and future trends in blood bank  Orientation of a routine blood bank	15	Elaborate on the practices of hemapheresis, understand techniques, types and machines and Medico legal aspects of blood transfusion.	1,2,3,4
V	Quality Assurance -General condition, Equipment Reagents, Donor processing, Drugs control regulation and Blood Bank	15	Comprehend on the quality assurance, apply the quality control procedures, analyse the quality control protocol	1,2,3,4,
Practical	Blood grouping – ABO grouping, Forward grouping (slide & tube method) Reverse grouping – preparation of pooled A, B & O cells Grading of Reaction. Other methods of grouping. ABO antibody titration, Cold antibody titration. Rh grouping & Rh typing (slide & tube method) Du Testing Rh antibody titration Antiglobulin Testing Direct and Indirect Preparation of Coomb's Control Cells. Compatibility Testing Selection of blood Cross matching Technique – Major, Minor, Saline, Albumin, Emergency – Cross matches Blood Collection Donor selection Blood collection [Phlebotomy] Post-donation Care Preservation and Storage of blood Preparation and Storage of Blood	120		

Components
------------

Packed Cells, Fresh Frozen plasma [FFP],

Platelet Concentrate, Cryoprecipitate

Component transfusion – selection of blood group

Cross matching in Special Situations

Exchange transfusion – selection of blood group

Autoimmune haemolytic anaemia

Investigation of Blood Transfusion reaction

**Testing for transfusion Transmitted** 

Diseases Elisa-HIV, HBsAg, HCV, VDRL

Test, Malaria

Quality control - Methods

Reagents

Test methods

**Products** 

**Documents** 

Equipment

Apheresis procedures - Types of pheresis,

Machines, and Techniques.

Biomedical Waste Management -

Demonstration

Record keeping – To be observe

Documentation

#### **TEXT BOOKS:**

- **T1**: Mollison's blood transfusion in clinical medicine, Harvey G. Klein MD Chief, Department of Transfusion Medicine 12th edition
- **T2:** Modern blood banking &Transfusion Practices Sixth edition
- **T3:** Transfusion medicine technical manual directorate General of health services ministry of health and Family Welfare Government of India, New Delhi Second Edition 2003

#### **REFERENCE BOOKS:**

**R1:** Blood banking and transfusion medicine, basic principles and practice, hullyersilbersteines Anderson Roback 2nd edition

#### OTHER LEARNING RESOURCES:

- 1. https://www.ncbi.nlm.nih.gov/books/NBK233081/
- 2. https://www.ncbi.nlm.nih.gov/books/NBK499824/

	CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Program Outcome						
1	Understand the basics of Immuno- Hematology, Blood groups, and genetics	1,2,3,4,						
2	Explain the types of blood components and their indications for transfusion, evaluate hemapheresis.	1,2,3,4,7,8						
3	Understand, evaluate, demonstrate, and classify the different types of Antigen-antibody reactions in Immuno-hematological testing	2,3,4,5,6,8						
4	Understand the basic knowledge about Anticoagulants used to store blood, quality assurance in blood centers.	2,3,4,8						
5	Elaborate on Blood group systems -ABO system, Rh, MNS, Bombay blood group, understand and apply the laws and orders concerning blood transfusion.	1,2,7,8						

## **Group B: Microbiology and Immunology**

			SEMESTER	R – III							
Cour	se Title	BIOLO	GY								
Cour	se code	24MMLT2106R	Total Credits: 8 Total Hours: 60T	+90 <b>P</b>	L 4	T 0	P 6	S 0	R	O/F 0	7
Pre-r	equisite	Nil	Co-requis	ite		I	1	Nil	1		
Prog	ramme		Master of Medic	al labora	tory Tec	hnol	ogy				
Sen	nester	Fa	ıll/ III Semester of S	Second Yo	ear of the	e Pro	grar	nme			
Course Objectives		<ul><li>2. The student wi</li><li>3. The students microbiology</li></ul>	ill understand and st ll be taught in detail will understand th	about par ne depth	asitologio knowle	cal ar	nd my on	ycolo Qual	ity		
	CO1	diagnosis of diseas	es caused by bacteria	ι.		narac	terist	ics,	and ——	labora	tory
	CO2	•	stand different types								
	CO3		cteristics and laborate			sease	s cau	ised b	oy pa	rasites	
C	CO4	Demonstrate comp	rehensive knowledge	about m	ycology.						
	CO5	Apply in-depth kno	owledge to assess and		ent qualit	y cor	ntrol	in mi	crob	iology.	
Unit -No.		Content		Contact Hour	Lea	rnin	g Ou	itcon	1e	K	KL
I BACTERIOLOGY:  The epidemiology, pathogenesis, antigenic characteristics and laboratory diagnosis of disease caused by:  -Vibrios, Aeromonas, Plesiomonas -Campylobacter, H.pylori and Spirillum. Pseudomonas, Stenotrophomonas, BurkholderiaHaemophilus and BordetellaBrucellaMycobacteriaSpirochaetes,-Actinomycetes,Nocardia-MycoplasmaRickettsiaeChlamydia			16	Describ explain pathoge characte laborate disease	enesis eristic	s, cs diag	demic ant	igeni an	d of	1,2	
II	VIROLOGY -Poxviruses, -Herpes viruses, -Influenza virus -Adenoviruses			10	Describ explain viruses.	diff	illust		an es c		1,2
III	Protozoan parasites of medical importance: Entamoeba, Giardia, Trichomonas, Leishmania, Trypanosome, Plasmodium, Cryptosporidium, Balantidium, Isospora.			15	Describ explain diagnos by para	is of		labo ase c		y d	1,2
IV	-The mand and and -Contant	ryptosporidium, Balantidium, Isospora.  IYCOLOGY The morphology and reproduction of fungiand anti mycotic agents  Contaminant and opportunistic fungi			Describ explain knowled			prehe		e	1,2

	-Fungi causing systemic infections			
V	QUALITY CONTROL IN MICROBIOLOGY	4	Describe, illustrate and explain on Quality control in microbiology	1,2
Practical	Slide culture technique, germ tube test, LPCBTests for beta-lactamase including ESBLsNugent's Score for Bacterial vaginasis-MRSA detection methods-Special staining for Protozoan and Helminths identification Biofilm detection by Congo Red agar, Tube adherence method, Microtiter plate method.	90	Student will be made to learn and understand slide culture, LPCB,MRSA, Biofilm detection etc.	1,2,3,4

T1: Textbook of Microbiology by CP Baveja, 7th edition.

## **REFERENCE BOOKS:**

R1: Reference: Textbook of microbiology and immunology by S.C. Parija

R2: Microbiology by Prescott, Harley, Kleis

R3: Textbook of Microbiology by Ananthanarayan and Paniker.

## **OTHER LEARNING RESOURCES:**

https://www.ncbi.nlm.nih.gov/books/NBK7627/

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Analyze the epidemiology, pathogenesis, antigenic characteristics, and laboratory diagnosis of diseases caused by bacteria.	1,2					
2	Classify and understand different types of viruses.	1,2,4					
3	Evaluate the characteristics and laboratory diagnosis of diseases caused by parasites	1,2,3,4					
4	Demonstrate comprehensive knowledge about mycology.	1,2					
5	Apply in-depth knowledge to assess and implement quality control in microbiology.	1,2,3,4					

SEMESTER – III												
Cours	urse Title DIAGNOSTIC MICROBIOLOGY AND CLINICAL IMMUNOLOGY											
Course Code 24MMLT2107R Total Credits: 7				L	T	P	S	R	O/F	C		
				ours: 60T-		4	0	6	0	0	0	7
	quisite	Nil		Co-requisit		<b>T</b>			Nil			
Progr. Semo		Fall		of Medical ester of Sec					***			
Semo	ester	1. Students will be					`			10 CV	otom	
		<ol> <li>Students will be</li> <li>Summarizing ab</li> </ol>	_							ie sy	stem.	
	ırse	3. The student will		•	•			•		ີດ11e	ection	and
Obje	ctives	processing in m		-		•						
		from clinical sar		Committee	on and iso	1411011	or po	.551010	. 1011	.5	paurog	,0110
CO	01	Explain the structure		ion of the i	mmune sy	stem.						
CO	02	Summarize the princ					nor Ir	nmun	ity.			
CO	03	Demonstrate knowle								<b>.</b>		
C	04	Discuss about vario										
CO	05	Summarize the key of	concepts in	Entomolo	gy.							
Unit-		Content			Contact	Le	arnir	ıg Ou	ıtcor	ne	K	KL .
No.					Hour			0				
I		ure and function		immune	16		ribe,					1,2
	_	:-The human immune	_	TD 1		expla		abo		the		
		and tissues of the imi			ture a			on o				
		development lymphod genes, gene products a	-	King		the ii	nmun	ie sysi	tem.			
	Recept		ilia co-									
	-Antigo		oresentatio	n, super								
	antiger		L	, 1								
	-Cytok	ines ,cellular adhesio	n and intera	actions								
		ne regulation										
		efense mechanisms a	nmation:									
		noglobulin function										
	_	atory and effect or functions of CD4+ T										
Functi Mucos		oxic T cell function, c	vtotovic									
		on of macrophages,	•	function.								
		al defense Mechanism		1011011011,								
		ion of phagocytes, r	nast cells,	basophil								
	and eo	sinophil.										
II	_	plant Immunity & Tu		=	15	Desc	ribe,	illust	trate	anc	l 1	1,2
		epts and challenges in	•			expla		abo		the		
		LA. Major histocomp	-	-			splant			ty &		
		classes, MHC, H	LA typin	g, MHC		Tumo	or imi	munit	У			
	restrict	10П.										

TIT	VIDOLOGY	10	Describe illustrate and	1.2
III	VIROLOGY Paramyxoviridae	10	Describe, illustrate and explain Knowledge and	1,2
	- Entero viruses: Polio, Echo, Coxsackie viruses		Understanding about	
	- Oncogenic viruses		Viruses and their	
	- Viruses of gastroenteritis.		infections.	
	-			
IV	PARASITOLOGY	15	Describe, illustrate and	1,2
	Helminthology:		explain the	
	Cestodes: Diphyllobothrium, Taenia,		comprehensive	
	Echinococcus, Hymenolepis.		knowledge about	
	<b>Trematoda:</b> Schistosomes, Fasciola,		Parasitology	
	Paragonimus, Clonorchis, Opisthorchis.  Nematodes:			
	Trichuris, Trichinella, Strongyloides, Enterobius, Filarial worms			
	Enteroorus, Filariai worms			
V	ENTOMOLOGY:	4	Describe, illustrate and	1,2
	Ectoparasites: Common arthropods and other		explain about	
	vectors viz., Mosquito, Sand fly Ticks, Mite,		Entomology	
	and Cyclops			
	BACTERIOLOGY:	90	Describe, illustrate and	1,2,3,4
	Sample collection and selection in		explain staining	
	microbiology. Selection of media for culture.		techniques and	
	Pure culture of bacteria:		microscopic	
	Identification procedure of the given bacteria up		examination.	
	to species and subspecies level.			
	a) Escherichia coli			
	b) Klebsiella species			
	c) Vibrio cholera			
	d) Pseudomonas species			
	e) Staphylococcus species			
	f) Streptococcus species			
	<ul><li>g) Corynebacterium diphtheria</li><li>h) Salmonella species</li></ul>			
	h) Salmonella species Mixed cultures:			
cal	Samples:			
Practical	a) Urine			
Pr	b) Pus			
	c) Blood			
	d) CSF			
	e) Stool			
	f) Body Fluids			
	Evaluating immunological functions: Blood			
	grouping			
	Widal qualitative and quantitative analysis.			
	VDRL, RPR qualitative and quantitative			
	analysis.			
	Detection of specific antibodies and antigens.			
	ELISA			
	In-vitro toxigenicity tests-Elek test, Nagler's			
	reaction.			

MYCOLOGY:	
Sample collection and processing in mycology:	
Identification and isolation of possible fungal	
pathogens from clinical samples:	
a) CSF	
b) Urine	
c) Blood	
d) Hair, nail, skin scrapings	
e) Sputum.	
Disposal of contaminated material like cultures.	
Maintenance of stock culture.	
Examination of feces for parasite	
-Microscopic examination	
-Concentration method	

T1: Textbook of Microbiology by C.P Baveja 5th Edition

T2: Textbook of Microbiology Immunology by Subash Chandra Parija 2nd edition.

## **REFERENCE BOOKS:**

R1: Textbook of Medical Lab Technology- Praful B.Godkar, Darshan P. Godkar 3rd edition

R2: Ananthanarayan and Paniker, "Textbook of Microbiology 8th edition.

R3: Textbook of Essentials Microbiology Apurba Sankar Sastry Sandhya Bhat 4th edition.

## **OTHER LEARNING RESOURCES:**

https://www.ncbi.nlm.nih.gov/books/NBK7627/

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Explain the structure and function of the immune system.	1,2					
2	Summarize the principles of Transplant Immunity and Tumor Immunity.	1,2, 4					
3	Demonstrate knowledge and understanding of viruses and their infections.	1, 7					
4	Discuss about various chronic illness and its management	1,6,7					
5	Summarize the key concepts in Entomology.	4,6,7					

SEMESTER – IV											
Cours	se Title		QUALITY CONTR	OL IN	DIA	GNO	STIC	LAB			
Cours	e Code	24MMLT2201R	<b>Total Credits: 3</b>	L	T	O/F	C				
Cours	e Coue	24WIWIL 1 22UIK	Total Hours: 45T	3	0	0	0	0	0	3	
Pre-re	quisite	Nil	Co-requisite				N	lil			
Progr	amme		Master of Medic	al Labo	ratoi	y Tecl	hnolog	gy			
Sem	ester	Sp	ring/ IV Semester of	Second	l Yea	r of th	e Pro	gramn	ne		
Course Objectives		<ol> <li>To understand the needs of the quality control Programme.</li> <li>To improve the quality of the laboratory reports.</li> <li>To adopt such practices in day-to-day laboratory practice.</li> </ol>									
C	01	Preface of Quality	control and types.								
C	02	To ascertain source	ces of various errors in	n labora	tory.						
C	03	Understanding control charts.									
C	04	Outline the basic concepts of Quality circles.									
C	05	Illustrating over all knowledge of Total Quality Management.									
Unit- No.		Conten	t	Contac Hour	t	ome	KL				
I	• Inte	uction of Quality rnal quality control ernal quality contro		Describe, illustrate and explain to learn importance of quality control and Types.						1,2	
II	<ul><li>Pre-</li><li>Ana</li></ul>	es of Laboratory e analytical phase alytical phase analytical phase	rrors:	10	ex	escribe plain d sour	the d	lustrate ifferen	e and at errors	3,4	
<ul> <li>III Control charts:</li> <li>X-chart and R-chart</li> <li>Control chart for attributes</li> </ul>			utes	9 Describe, illustrate and a s, explain about control charts.						3,4	
IV Quality Circles:  • Benefits of Quality circle			cle	9	9 Describe, illustrate and explain understand quality circles.						
V	Total (	Quality Managem	ent	7	ex	escribe plain prove	to le		e and conomic	1,2	

- **T1.** Haider SI, As if SE. Quality control training manual: comprehensive training guide for API, finished pharmaceutical and biotechnologies laboratories. CRC Press; 2016 Apr 19.
- **T2.** Dasgupta A, Wahed A. Clinical chemistry, immunology and laboratory quality control: a comprehensive review for board preparation, certification and clinical practice.

#### **REFERENCE BOOKS:**

- R1. Gras JM. Laboratory quality control and patient safety. Walter de Gruyter GmbH & Co KG; 2017.
- **R2.** Bruce AW. Basic quality assurance and quality control in the clinical laboratory. (No Title). 1984.

## **OTHER LEARNING RESOURCES:**

- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2556587/#:~:text=The%20purpose%20of%20a%20QC,thenthey%20should%20review%20it.
- https://www.ncbi.nlm.nih.gov/books/NBK305273/

	CO PO Mapping						
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	To understand the needs of the quality control Programme.	1,2					
2	To ascertain sources of various errors in laboratory.	2,3					
3	Understanding control charts.	1,2					
4	Outline the basic concepts of Quality circles.	5,6					
5	Illustrating over all knowledge of Total Quality Management.	1,2,3,5,6					

			SEMES'	TER –	IV							
Cour	se Title	RESEARCH ETHICS										
Course Code		24MMLT2202R	Total Credits: 3 Total Hours: 4		L 3	T 0	P 0	S 0	R	O/ 0		C 3
Pre-requisite		Nil	Co-requisit	te				N	il			
Prog	ramme		Master of Medical Laboratory Technology									
Semester		Spring/ IV Semester of Second Year of the Programme										
Course Objectives		<ol> <li>This course aims to lay a foundation for empirical research in medical laboratory technology.</li> <li>It makes students aware of relevant guidelines, policies, and codes related to ethical research.</li> <li>The course provides an understanding of ethical theories and concepts through comprehensive study.</li> </ol>										
C	CO1	Able to describe ar										
C	CO2	Acquire an overview of important tissues in research ethics, like responsibility for research, ethical vetting, and scientific misconduct.										
C	203	Acquire skills of p	Acquire skills of presenting arguments and results of ethical inquiries.									
C	CO4	Able to Identify the concepts and procedures of sampling, data collection, analysis and reporting										
C	05	Equip with the skills and knowledge necessary to navigate and utilize research databases and metrics effectively in their research endeavors.										
Unit- No.		Content			tact ur	Learning Outcome					KL	
I		CS AND SCIENTII	8			cribe,	exp		and	3	3,4	
	COND						sify t			and		
		Introduction to the course and each other;					ntific	con	duct	in		
		oduction to moral i	•			resea	arcn.					
	moral Resear	judgements an ch regulation; self	d reactions.									
	Honest integrit	y, candour, com	promise, and									
	Data	ownership and	stewardship;									
conflic		· · · · · · · · · · · · · · · · · · ·	collaboration.									
Humar		J	esearch and									
		with respect to ch.	science and									
	Intellectual honesty and research integrity. Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP).											
	Redundant publications: duplicate and Overlapping publications, salami slicing. Selective reporting and misrepresentation of data.											

II	PUBLICATION ETHICS –	4	Describe and explain the	3,4
	Publication ethics: definition, introduction, and importance. Best		importance of ethics for publication of a research	
	practices / standards setting initiatives and		paper	
	guidelines: COPE, WAME, etc. Conflicts		paper	
	of interest. Publication misconduct:			
	definition, concept, problems that lead to			
	unethical behaviour and vice versa, types.			
	Violation of publication ethics, authorship,			
	and contributor ship.			
	Identification of publication misconduct,			
	Complaints and appeals.			
	Predatory publishers and journals.			
III	OPEN ACCESS PUBLISHING-	4	Describe and explain the	3,4
	Open access publications and initiatives.		Policies related to	
	SHERPA/ RoME0 online resource to		copyrights using various	
	check publisher copyright & amp; self-		tools.	
	archiving policies.			
	Software tool to identify predatory			
	publications developed by SPPU. Journal			
	finder / journal suggestion tools viz.  JANE, Elsevier Journal Finder, Springer			
	Journal Suggester, etc.			
IV	PUBLICATION MISCONDUCT	4	Describe and explain the	3,4
1 4	Group Discussions; Subject specific	7	software tools for any	3,4
	ethical issues, FFP, authorship. Conflicts		misconduct during	
	of interest.		publication.	
	Complaints and appeals: examples and		1	
	fraud from India and abroad. Software			
	tools; Use of plagiarism software like			
	Turnitin, Urkund and other open-source			
	software tools.			
V	DATABASES AND RESEARCH	7	Describe and explain the	3,4
	METRICS -		metrics and databases on	
	Databases: Indexing databases.		research	
	Citation databases: Web of Science, Scopus, etc. Research Metrics: Impact			
	Factor of journal as per Journal Citation			
	Report, SNIP, SJR, IPP, Cite Score.			
	Metrics: h-index, g-index, I-10 index,			
	altmetrics.			
	altmetrics.			

- T1: Bird, A (2006). Philosophy of Science. Routledge.
- T2: MacIntyre, Alasdair (1967) A Short History of Ethics. London.
- T3: Indian National Science Academy (INSA), Ethics in Science Education, Research and Governance (2019)

## **REFERENCE BOOKS:**

- R1: National Academy of Science, National Academy of Engineering and Institute of Medicine (2009). On Being a Scientist: A Guide of Responsible Conduct in Research: Third Edition, National academics Press.
- R2: GeorgeR, (2011). Sociological Theory, Rawat Publication, New Delhi, India. GeorgeR, (2019). Post Modern Social Theory, Rawat Publication, New Delhi, India.

CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Able to describe and apply theories and methods in ethics and research ethics.	2,4,7					
2	Acquire an overview of important tissues in research ethics, like responsibility for research, ethical vetting, and scientific misconduct.	2,4,7					
3	Acquire skills of presenting arguments and results of ethical inquiries.	2,4,7					
4	Able to Identify the concepts and procedures of sampling, data collection, analysis and reporting	2,4,7					
5	Equip with the skills and knowledge necessary to navigate and utilize research databases and metrics effectively in their research endeavours.	2,4,7					

SEMESTER – IV													
Cour	Course Title RESEARCH												
Course Code Pre-requisite		24MMLT2203R	Total Credits: 16 Total Hours: 96 P Co-requisite			L	T	P	S	R	O/F		C
		Nil				0	0	0	4   N	12	0		16
Pre-requisite Programme		1411			ahorat	torv '	Tech	molo		11			
		Master of Medical Laboratory Technology											
Semester  Course Objectives		Spring/ IV Semester of Second Year of the Programme											
		<ol> <li>Toacquire statistical analysis skills, and enhance data interpretation capabilities for effective analysis.</li> <li>ToConduct in-depth discussions and critical evaluations, and acquire techniques for clear articulation of feature scope.</li> <li>ToUse professional approaches to present the final thesis effectively.</li> </ol>											
(	CO1	Discuss the process of understanding and acquiring statistical analysis skills.											
	CO2	Describe methods to enhance data interpretation capabilities for effective analysis.											
	CO3	Discuss strategies for conducting in-depth discussions and critical evaluations.											
	CO4	Acquire techniques for clear articulation of feature scope.											
CO5		Describe approaches for professionally presenting the final thesis.											
Unit		Content									K	ΚL	
-No.			Hour										
I	Statistica Statistica	al analysis -Introd al Concepts	9	Describe, illustrate and explain Implement qualitative, quantitative, and mixed-methods research projects.						1	1,2		
II	Data interpretation -Parametric and Non-Parametric Tests: t-tests, ANOVA Chi-square tests -Interpretation of Results: Drawing meaningful conclusions			11	Describe, illustrate and explain data using statistical software, drawing meaningful conclusions.						2,3		
III	Discussion -Implications of findings Addressing limitations			8	Describe, illustrate and explain research findings effectively  3,4							,4	
IV	Design Trends i	Future scope of the study - Research Design and Methodology -Emerging Trends in Research -Collaboration and Interdisciplinary Research			Describe, illustrate and explain research processes and results clearly and ethically.							,4	
V	Final presentation of the thesis - Scientific Writing - Effective Oral Presentation - Ethical Considerations in Research Communication			9	Describe, illustrate and explain the final thesis, effectively communicating research objectives, methodology, analysis, and conclusions.							3,4	

T1: Hitchcock JH, Onwuegbuzie AJ, editors. The Routledge handbook for advancing integration in mixed methods research. London: Routledge; 2022 May 10.

# **REFERENCE BOOKS**:

R1: Marder MP. Research methods for science. Cambridge University Press; 2011 Jan 27.

## **OTHER LEARNING RESOURCES:**

https://yocket.com/blog/how-to-write-dissertation

CO PO Mapping							
S.N.	Course Outcome (CO)	Mapped Program Outcome					
1	Discuss the process of understanding and acquiring statistical analysis skills.	1,2,3,4,5,6,7,8					
2	Describe methods to enhance data interpretation capabilities for effective analysis.	1,2,3,4,5,6,7,8					
3	Discuss strategies for conducting in-depth discussions and critical evaluations.	1,2,3,4,5,6,7,8					
4	Acquire techniques for clear articulation of feature scope.	1,2,3,4,5,6,7,8					
5	Describe approaches for professionally presenting the final thesis.	1,2,3,4,5,6,7,8					