ALLIED HEALTH SCIENCES

<Programme Name-BCCT, BOTT, BMLT, BMRIT>

VISION

- TO IMPART QUALITY EDUCATION THROUGH OUTCOMES-BASED TEACHING & HANDSON CLINICAL PRACTICE.
- TO ENCOURAGE INOVATION & INTERDISCIPLIIARY COLLABORATION IN SOLVING REAL WORLD CHALLENGES.
- TO PRODUCE SKIILED, ETHICAL ALLIED HEALTH PROFESSIONALS , WHO CONTIRIBUTE HOLLISTIC HEALTHCARE & ENHANCEMENT OF COMMUNITY HEALTH AT LOCAL & GLOBAL LEVEL.

MISSION

- TO EDUCATE & PROFESSIONALS WHO CONTRIBUTR TO THE PROMOTION OF HEALTH, PREVENTION OF DISEASE & DELIVERY OF HIGH QUALITY PATIENT CARE.
- DEVELOPING NEXT GENERATION OF ALLIED HEALTH LEADERS THROUGH MENTORSHIP, EDUCATION & INNOVATION.
- TO ENCOURGE CREATIVE SOULITAION AND BEST PRACTICE IN PATIENT CARE.

PROGRAMME EDUCATIONAL OBJECTIVES:

COURSE: BMLT

PEO1: To produce skilled and competent individuals capable of performing, analyzing, and interpreting various diagnostic laboratory tests with accuracy, efficiency, adhering to quality standards in healthcare and research settings.
PEO 2: To develop professionals with strong ethical values, effective communication skills, and lifelong learning habits who can contribute to public health, research, and laboratory management while adapting to technological advancements in medical diagnostics.

COURSE: BMRIT

PEO1: To prepare graduates who can competently perform and manage diagnostic imaging procedures with a high degree of technical proficiency, ethical values, and professional integrity.
PEO2: To nurture radiology professionals who engage in lifelong learning, research, and innovation, contributing to advancements in medical imaging technology and healthcare delivery

COURSE: BOTT

PEO1: Professional Competence and Employability
Graduates will be competent operation theatre technologists capable of performing effectively in hospitals, surgical centers, and research settings, contributing to quality surgical care and patient management.
PEO2: Leadership, Research, and Innovation
Graduates will demonstrate leadership qualities, engage in evidence-based practice, and contribute to innovations in surgical technology, patient safety, and healthcare management through research and professional growth.

COURSE: BCTT

PEO 1: Professional Competence and Ethical Practice

Students will demonstrate strong foundational and applied knowledge in critical care technology, enabling them to provide high-quality patient monitoring and life-support services while adhering to ethical, moral, and professional standards within healthcare institutions.

PEO 2: Lifelong Learning and Leadership in Healthcare

Students will continuously update their knowledge and technical skills to adapt to emerging technologies and healthcare advancements, effectively communicating and collaborating with multidisciplinary teams to assume leadership roles in critical care environments.

PROGRAM SPECIFIC OUTCOME (PSOs)

(Derived from PO1, PO3, PO6, and PO8)

COURSE: BMLT

PSO 1: Apply theoretical knowledge and practical skills in clinical laboratory techniques for accurate analysis, diagnosis, and monitoring of diseases.

PSO 2: Demonstrate professional competence, ethical responsibility, and quality assurance in laboratory practices, with the ability to manage laboratory operations, handle biomedical waste safely, and contribute effectively to healthcare and research teams.

COURSE: BMRIT

PSO1: Apply theoretical and practical knowledge of imaging modalities such as X-ray, CT, MRI, Ultrasound, and Nuclear Medicine in clinical diagnosis and patient management.

PSO2: Implement radiation protection measures and quality assurance protocols in diagnostic imaging departments to ensure patient, staff, and environmental safety.

COURSE: BOTT

PSO1: Surgical Equipment Management

Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.

PSO2: Perioperative Patient Care and Safety

Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

COURSE :BCTT

PSO 1: Clinical Application and Technical Proficiency

Students will be able to competently operate, calibrate, and manage critical care instruments such as ventilators, defibrillators, and monitoring systems, ensuring accurate data collection and effective patient care in ICUs and emergency units.

PSO 2: Patient-Centered Critical Care and Professional Collaboration

Graduates will be able to assess patient conditions, support clinicians in emergency decision-making, and effectively communicate and coordinate with healthcare teams to deliver safe, ethical, and efficient critical care services.

PROGRAMME OUTCOMES (PO):

COURSE: BMLT

At the end of the program students should be able to:

PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests.
PO2: Skilled in the different types of specimen collection, handling, processing and analysis of patient specimens.
PO3: Identify, analyze and interpret laboratory data to assist in clinical decision making and problem solving in patient care.
PO4: Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.

PO5: Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.
PO6: Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.
PO7: Engage in continuous learning, professional development and adopt research-based approaches to keep pace.
PO8: Detecting the outbreaks and preventing the spread of infectious diseases,which contributes to a healthier community.

COURSE: BMRIT

At the end of the program, students should be able to:

PO1: Demonstrate a comprehensive understanding of concepts in radiology, imaging technology, and radiation physics, and apply this knowledge in diverse clinical settings.
PO2: Exhibit critical thinking and problem-solving skills to evaluate radiographic images, identify errors, and ensure diagnostic accuracy.
PO3: Acquire competency in the operation and maintenance of conventional and advanced imaging modalities, ensuring patient safety and optimal image quality.
PO4: Work effectively as a member or leader in multidisciplinary healthcare teams and actively participate in clinical and research activities.
PO5: Apply appropriate quantitative and analytical techniques for radiation dose optimization, quality control, and image assessment.
PO6: Develop an aptitude for research, evidence-based practice, and continuous learning to keep pace with technological advancements in radiological sciences.
PO7: Demonstrate ethical responsibility, empathy, and sensitivity towards patients while adhering to professional standards and radiation protection principles.
PO8: Communicate effectively with patients, healthcare professionals, and the community to promote awareness of diagnostic imaging procedures, radiation safety, and healthcare standards.

COURSE: BOTT

At the end of the program students should be able to:

PO1. Disciplinary Knowledge: Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.
PO2. Communication Skills: Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.
PO3. Problem Solving and Analytical Reasoning: Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.

PO4. Teamwork and Collaboration:Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.
PO5. Self-Directed Learning:Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.
PO6. Ethical and Professional Conduct:Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.
PO7. Lifelong Learning:Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8. Technological Competence and Innovation: Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

COURSE: BCTT-

At the end of the program students should be able to:

PO1 Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.
PO2 Communication Skills: Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.
PO3 Problem Solving & Reasoning: Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.
PO4 Cooperation/Team work: Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.
PO5 Self-directed learning: Able to work independently in various healthcare settings and manage situations requiring quick and responsible action
PO6 Moral and ethical awareness/reasoning: Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.
PO7 Lifelong learning: Able to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.
PO8: Clinical Competence and Technical Skills:
Able to apply practical and technical skills in operating, maintaining, and troubleshooting critical care equipment, perform patient monitoring procedures accurately, and ensure safe and effective delivery of critical care services in emergency and ICU settings.

Credit Definition

Type	Duration (in hours)	Credit
Lecture (L)	1	1
Tutorial (T)	0	0
Practical (P)	2	1

Total Credit Distribution for the Entire Programme:

PROGRAMME-BCCT

Semester	Credit						
	CC	DSE	GE	AECC	SEC	USC	Total/Sem
First	18			2			20
Second	18		4	2	1		25
Third	12	6	4	2	1	2	27
Fourth	12	6	4	2	1	2	27
Fifth	18	6			1	2	27
Sixth	18	6				2	26
Total Credit/ Course	96	24	12	8	4	8	
Total Credit							152

PROGRAMME-BMLT

Semester	Credit						
	CC	DSE	GE	AECC	SEC	USC	Total/Sem
First	18			2			20
Second	18		4	2	1		25
Third	12	6	4	2	1	2	27
Fourth	12	6	4	2	1	2	27
Fifth	18	6			1	2	27
Sixth	18	6				2	26
Total Credit/ Course	90	30	12	8	4	8	
Total Credit							152

PROGHRAMME-BOTT

Semester	Credit						
	CC	DSE	GE	AECC	SEC	USC	Total/Sem
First	18			2			20
Second	18		4	2	1		25
Third	12	6	4	2	1	2	27
Fourth	12	6	4	2	1	2	27
Fifth	18	6			1	2	27
Sixth	18	6				2	26
Total Credit/ Course	96	24	12	8	4	8	
Total Credit							152

PROGRAMME-BMRIT

Semester	Credit						
	CC	DSE	GE	AECC	SEC	USC	Total/Sem
First	18			2			20
Second	18		4	2	1		25
Third	12	6	4	2	1	2	27
Fourth	12	6	4	2	1	2	27
Fifth	18	6			1	2	27
Sixth	18	6				2	26
Total Credit/ Course	96	24	12	8	4	8	
Total Credit							152

Category Definition:

Definition of Category/Type	Abbreviation
Core Courses;	CC
General Elective	GE
Ability Enhancement Compulsory Course	AECC
Skill Enhancement Courses;	SEC
Discipline Specific Elective	DSE
University specified course	USC
Skill Enhancement Courses	SEC

COURSE -BMLT

First Year

Category	Course Name	Credit	Teaching Scheme		
			L	T	P
Semester –I					
CC – 1	Basic & Applied Human Anatomy	4	4	0	0
	Basic & Applied Human Anatomy Lab	2	0	0	4
CC – 2	Basic & Applied Human Physiology	4	4	0	0
	Basic & Applied Human Physiology lab	2	0	0	4
CC– 3	Basic Instrument & Equipment	4	4	0	0
	Basic Instrument & Equipment lab	2	0	0	4
AECC – 1	Communicative English – I	2	2	0	0
Total Credit = 20			Teaching Hour = 24		
Semester –II					
CC – 4	Biochemistry & Biophysics	4	4	0	0
	Biochemistry & Biophysics Lab	2	0	0	4
CC – 5	Basic & Clinical Hematology	4	4	0	0
	Basic & Clinical Hematology Lab	2	2	0	2
CC-6	Diagnostic laboratory Instrument & Equipment	4	4	0	0
	Diagnostic laboratory Instrument & Equipment Lab	2	0	0	4
GE – 1	General Elective (Clinical Psychology)	4	4	0	0

AECC – 2	Communicative English – II	2	2	0	0
SEC – 1	Mentored Seminar – I	1	1	0	0
Total Credit = 25			Teaching Hour = 31		

Second Year

Category	Course Name	Credit	Teaching Scheme		
			L	T	P
Semester – III					
CC – 7	Clinical Pathology	4	4	0	0
	Clinical Pathology Lab	2	0	0	4
CC – 8	Clinical Immunology & Serology	4	4	0	0
	Clinical Immunology & Serology Lab	2	0	0	4
DSE – 1	Pharmacology & Toxicology	4	4	0	0
	Pharmacology & Toxicology – Lab	2	0	0	4
GE – 2	General Elective-II	4	4	0	0
AECC – 3	Fundamentals of Computer Science	2	2	0	0
SEC – 2	Mentored Seminar – II	1	1	0	0
USC – 1	Environmental Science-I	2	2	0	0
Total Credit = 27			Teaching Hour = 33		
Semester – IV					
CC – 9	Clinical Biochemistry	4	4	0	0
	Clinical Biochemistry Lab	2	0	0	4
CC – 10	Medical Microbiology -I Bacteriology	4	4	0	0
	Medical Microbiology -I Bacteriology lab	2	0	0	4
DSE – 2	Medical Biotechnology	4	4	0	0
	Medical Biotechnology LAB	2	0	0	4
GE – 3	General Elective-III	4	4	0	0
AECC – 4	Medical Law & Ethics	2	2	0	0

SEC – 3	**Mentored Seminar – III**	**1**	**1**	**0**	**0**
USC – 2	**Environmental Science-II**	**2**	**2**	**0**	**0**
Total Credit = 27			**Teaching Hour = 33**		

Third Year

Category	Course Name	Credit	Teaching Scheme		
			L	T	P
Semester – V					
CC – 11	Applied Cytopathology	4	4	0	0
	Applied Cytopathology Lab	2	0	0	4
CC – 12	Medical Microbiology –II Mycology & virology	4	4	0	0
	Medical Microbiology –II Mycology & virology Lab	2	0	0	4
CC – 13	Applied Histopathology	4	4	0	0
	Applied Histopathology – lab	2	0	0	4
DSE – 3	Clinical Parasitology & Entamology	4	4	0	0
	Clinical Parasitology & Entamology Lab	2	0	0	4
SEC – 4	Mentored Seminar – IV	1	1	0	0
USC – 3	Health Statistics	2	2	0	0
Total Credit = 27			**Teaching Hour = 33**		
Semester – VI					
CC – 14	Immunohematology & blood banking	4	4	0	0
	Immunohematology & blood banking Lab	2	0	0	4
CC – 15	Clinical Endocrinology and Andrology	4	4	0	0
	Clinical Endocrinology and Andrology Lab	2	0	0	4
CC – 16	Advanced Diagnostic Molecular Biology	4	4	0	0
	Advanced Diagnostic Molecular Biology Lab	2	0	0	4
DSE-4	Project	6	0	0	12
USC-4	Research Methodology	2	2	0	0
Total Credit = 26			**Teaching Hour 38**		

First Year

Category	Course Name	Credit	Teaching Scheme

			L	T	P
Semester – I					
CC – 1	**Basic & Applied Human Anatomy**	**4**	**4**	**0**	**0**
	Basic & Applied Human Anatomy Lab	**2**	**0**	**0**	**4**
CC – 2	**Basic & Applied Human Physiology**	**4**	**4**	**0**	**0**
	Basic & Applied Human Physiology lab	**2**	**0**	**0**	**4**
CC-3	**Basic Instrument & Equipment**	**4**	**4**	**0**	**0**
	Basic Instrument & Equipment lab	**2**	**2**	**0**	**0**
AECC – 1	**Communicative English – I**	**2**	**2**	**0**	**0**
Total Credit = 20			**Teaching Hour = 24**		
Semester – II					
CC – 4	**Basic Biochemistry & Microbiology**	**4**	**4**	**0**	**0**
	Basic Biochemistry & Microbiology Lab	**2**	**0**	**0**	**4**
CC – 5	**Basic Physics with an introduction to Plasma**	**4**	**4**	**0**	**0**
	Basic Physics with an introduction to Plasma Lab	**2**	**0**	**0**	**4**
CC- 6	**Radiation Physic -I**	**4**	**4**	**0**	**0**
	Radiation Physic –I	**2**	**0**	**0**	**4**
GE – 1	**General Elective-I**	**4**	**4**	**0**	**0**
AECC – 2	**Communicative English – II**	**2**	**2**	**0**	**0**
SEC – 1	**Mentored Seminar – I**	**1**	**1**	**0**	**0**
Total Credit = 25			**Teaching Hour = 31**		

_COURSE-BMRIT

First Year

COURSE: BOTT

Category	Course Name	Credit	Teaching Scheme		
			L	T	P
Semester –I					

CC – 1	Basic & Applied Human Anatomy	4	4	0	0
	Basic & Applied Human Anatomy Lab	2	0	0	4
CC – 2	Basic & Applied Human Physiology	4	4	0	0
	Basic & Applied Human Physiology lab	2	0	0	4
CC-3	Basic Instrument & Equipment	4	4	0	0
	Basic Instrument & Equipment lab	2	0	0	4
AECC – 1	Communicative English – I	2	2	0	0
Total Credit = 20			Teaching Hour = 24		
Semester –II					
CC – 4	Basic Biochemistry & Microbiology	4	4	0	0
	Basic Biochemistry & Microbiology Lab	2	0	0	4
CC – 5	Basic Nursing	4	4	0	0
	Basic Nursing Lab	2	2	0	2
CC – 6	Basic surgery	4	4	0	0
	Basic surgery Lab	2	0	0	4
GE – 1	General Elective - I	4	4	0	0
AECC – 2	Communicative English – II	2	2	0	0
SEC – 1	Mentored Seminar – I	1	1	0	0
Total Credit = 25			Teaching Hour = 31		

Second Year

Category	Course Name	Credit	Teaching Scheme		
			L	T	P
Semester –III					
CC – 7	Basic and Advance Life support	4	4	0	0
	Basic and Advance Life support Lab	2	0	0	4
CC – 8	Basic Anaesthesia	4	4	0	0
	Basic Anaesthesia Lab	2	0	0	4

DSE – 1	Clinical Pathology	4	4	0	0
	Clinical Pathology Lab	2	0	0	4
GE – 2	General Elective - II	4	4	0	0
AECC – 3	Fundamentals of Computer Science	2	2	0	0
SEC – 2	Mentored Seminar – II	1	1	0	0
USC – 1	Environmental Science-I	2	2	0	0
Total Credit = 27			Teaching Hour = 33		
Semester – IV					
CC – 9	Advanced Anaesthesia	4	4	0	0
	Advanced Anaesthesia Lab	2	0	0	4
CC – 10	Basic surgery –II	4	4	0	0
	Basic surgery -II Lab	2	0	0	4
DSE – 2	Clinical pharmacology	4	4	0	0
	Clinical pharmacology lab	2	0	0	4
GE – 3	General Elective - III	4	4	0	0
AECC – 4	Medical Law & Ethics	2	2	0	0
SEC – 3	Mentored Seminar – III	1	1	0	0
USC – 2	Environmental Science-II	2	2	0	0
Total Credit = 27			Teaching Hour = 33		

Third Year

Category	Course Name	Credit	Teaching Scheme		
			L	T	P
Semester – V					
CC – 11	Special surgical procedure –I	4	4	0	0
	Special surgical procedure –I lab	2	0	0	4
CC – 12	OT Management	4	4	0	0
	OT Management – Lab	2	0	0	4

CC – 13	CSSD-1	4	4	0	0
	CSSD-1 LAB	2	0	0	4
DSE – 3	Lab Science -1	4	4	0	0
	Lab Science -1 LAB	2	0	0	4
SEC – 4	Mentored Seminar – IV	1	1	0	0
USC – 3	Health Statistics	2	2	0	0
Total Credit = 27			Teaching Hour = 33		
Semester – VI					
CC – 14	Special surgical procedure –II	4	4	0	0
	Special surgical procedure –II lab	2	0	0	4
CC – 15	CSSD II	4	4	0	0
	CSSD II– Lab	2	0	0	4
CC – 16	Lab Science II & Imaging Study	4	4	0	0
	Lab Science II & Imaging Study – Lab	2	0	0	4
DSE-4	Project	6	0	0	12
USC-4	Research Methodology	2	2	0	0
Total Credit = 26			Teaching Hour 38		

COURSE-BCCT

First Year

Category	Course Name	Credit	Teaching Scheme		
			L	T	P
Semester –I					
CC – 1	Basic & Applied Human Anatomy	4	4	0	0
	Basic & Applied Human Anatomy Lab	2	0	0	4
CC – 2	Basic & Applied Human Physiology	4	4	0	0
	Basic & Applied Human Physiology lab	2	0	0	4
CC– 3	Basic Instrument & Equipment	4	4	0	0

	Basic Instrument & Equipment lab	2	0	0	4
AECC – 1	Communicative English –I	2	2	0	0
Total Credit = 20			Teaching Hour = 24		
Semester –II					
CC – 4	Basic Biochemistry & Microbiology	4	4	0	0
	Basic Biochemistry & Microbiology Lab	2	0	0	4
CC – 5	Basic Nursing	4	4	0	0
	Basic Nursing Lab	2	2	0	2
CC-6	Basic surgery	4	4	0	0
	Basic surgery Lab	2	0	0	4
GE – 1	Clinical Psychology	4	4	0	0
AECC – 2	Communicative English – II	2	2	0	0
SEC – 1	Mentored Seminar – I	1	1	0	0
Total Credit = 25			Teaching Hour = 31		

Second Year

Category	Course Name	Credit	Teaching Scheme		
			L	T	P
Semester –III					
CC – 7	Basic and Advance Life support	4	4	0	0
	Basic and Advance Life support Lab	2	0	0	4
CC – 8	Clinical Pathology	4	4	0	0
	Clinical Pathology Lab	2	0	0	4
DSE – 1	Clinical pharmacology	4	4	0	0
	Clinical pharmacology – Lab	2	0	0	4
GE – 2	General Elective-II	4	4	0	0
AECC – 3	Fundamentals of Computer Science	2	2	0	0
SEC – 2	Mentored Seminar – II	1	1	0	0

USC – 1	Environmental Science-I	2	2	0	0
Total Credit = 27			Teaching Hour = 33		
Semester – IV					
CC – 9	Basic Critical Care Management I	4	4	0	0
	Basic Critical Care Management I- lab	2	0	0	4
CC – 10	Clinical Medicine-I	4	4	0	0
	Clinical Medicine-I LAB	2	0	0	4
DSE – 2	Basic Anaesthesia	4	4	0	0
	Basic Anaesthesia LAB	2	0	0	4
GE – 3	General Elective-III	4	4	0	0
AECC – 4	Medical Law & Ethics	2	2	0	0
SEC – 3	Mentored Seminar – III	1	1	0	0
USC – 2	Environmental Science-II	2	2	0	0
Total Credit = 27			Teaching Hour = 33		

Third Year

Category	Course Name	Credit	Teaching Scheme		
			L	T	P
Semester – V					
CC –11	Advance Critical Care Management I	4	4	0	0
	Advance Critical Care Management I LAB	2	0	0	4
CC – 12	Clinical Medicine-II	4	4	0	0
	Clinical Medicine-II LAB	2	0	0	4
CC – 13	CSSD-1	4	4	0	0
	CSSD-1 LAB	2	0	0	4

DSE – 3	**Lab Science -1**	**4**	**4**	**0**	**0**
	Lab Science -1 LAB	**2**	**0**	**0**	**4**
SEC – 4	**Mentored Seminar – IV**	**1**	**1**	**0**	**0**
USC – 3	**Health Statistics**	**2**	**2**	**0**	**0**
Total Credit = 27			**Teaching Hour = 33**		
Semester – VI					
CC – 14	**Advance Critical Care Management II**	**4**	**4**	**0**	**0**
	Advance Critical Care Management II LAB	**2**	**0**	**0**	**4**
CC – 15	**CSSD II**	**4**	**4**	**0**	**0**
	CSSD II– Lab	**2**	**0**	**0**	**4**
CC – 16	**Lab Science II & Imaging Study**	**4**	**4**	**0**	**0**
	Lab Science II & Imaging Study – Lab	**2**	**0**	**0**	**4**
DSE-4	**Project**	**6**	**0**	**0**	**12**
USC-4	**Research Methodology**	**2**	**2**	**0**	**0**
Total Credit = 26			**Teaching Hour 38**		

Second Year

Category	Course Name	Credit	Teaching Scheme		
			L	T	P
Semester – III					
CC – 7	Basic Radiology & Dark Room Analysis	4	4	0	0
	Basic Radiology & Dark Room Analysis - Lab	2	0	0	4
CC – 8	Radiation Physics II	4	4	0	0
	Radiation Physics II Lab	2	0	0	4
DSE – 1	Radiography Position	4	4	0	0
	Radiography Position Lab	2	0	0	4
GE – 2	General Elective-II	4	4	0	0
AECC – 3	Fundamentals of Computer Science	2	2	0	0
SEC – 2	Mentored Seminar – II	1	1	0	0
USC – 1	Environmental Science-I	2	2	0	0
Total Credit = 27			**Teaching Hour = 33**		
Semester – IV					
CC – 9	Special Radiographic Techniques	4	4	0	0
	Special Radiographic Techniques Lab	2	0	0	4
CC – 10	General Radiography & Patient Care in Hospital	4	4	0	0
	General Radiography & Patient Care in Hospital Lab	2	0	0	4
DSE – 2	Contrast Media with Interventional Techniques	4	4	0	0
	Contrast Media with Interventional Techniques– Lab	2	0	0	4
GE – 3	General Elective-III	4	4	0	0
AECC – 4	Medical Law & Ethics	2	2	0	0
SEC – 3	Mentored Seminar – III	1	1	0	0
USC – 2	Environmental Science-II	2	2	0	0
Total Credit = 27			**Teaching Hour = 33**		

Third Year

Category	Course Name	Credit	Teaching Scheme		
			L	T	P
Semester – V					
CC –11	Advanced Radiography Equipment & Techniques	4	4	0	0
	Advanced Radiography Equipment & Techniques Lab	2	0	0	4
CC – 12	Radiation Hazards & Preventative Strategies	4	4	0	0
	Radiation Hazards & Preventative Strategies Lab	2	0	0	4
CC – 13	CT Scan	4	4	0	0
	CT Scan Lab	2	0	0	4
DSE – 3	Nuclear Medicine	4	4	0	0
	Nuclear Medicine Lab	2	0	0	4
SEC – 4	Mentored Seminar – IV	1	1	0	0
USC – 3	Health Statistics	2	2	0	0
Total Credit = 27			**Teaching Hour = 33**		
Semester – VI					
CC – 14	USG & Doppler Study	4	4	0	0
	USG & Doppler Study Lab	2	0	0	4
CC – 15	MRI	4	4	0	0
	MRI Lab	2	0	0	4
CC – 16	Basic and Cross Sectional Anatomy in CT & MRI Imaging	4	4	0	0
	Basic and Cross Sectional Anatomy in CT & MRI Imaging Lab	2	0	0	4
DSE-4	Project	6	0	0	12
USC-4	Research Methodology	2	2	0	0

Total Credit = 26	Teaching Hour 38

COURSE CO-PO-PSO MAPPING
SEMESTER-I
COURSE 1 (BMLT)

PAPER: BASIC & APPLIED HUMAN PHYSIOLOGY

Course Outcomes:

CO1: Students will be able to classify the various blood components and their transfusion according to the clinical physiology.
CO2: Students will be able to demonstrate the physiology of cardio-vascular system, pulmonary system, and renal system, and its abnormalities.
CO3: Students will be able to detect hormonal imbalance.
CO4: Students will be able to monitor cardio-pulmonary parameters and management. CO5: Students will be able to check the reflexes of neuro-muscular system.

At the end of the program students should be able to:
PO1- Demonstrate sufficient concepts in performing routine clinical laboratory tests.
PO2- Skilled in the different types of specimen collection, handling, processing and analysis of patient specimens.
PO3- analyse and interpret laboratory data to assist in clinical decision making and problem-solving in-patient care.
PO4- Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.
PO5- Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.
PO6- Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.
PO7- Engage in continuous learning, professional development and adopt research-based approaches to keep pace.
PO8: Detecting the outbreaks and preventing the spread of infectious diseases,which contributes to a healthier community.

PSO 1: Apply theoretical knowledge and practical skills in clinical laboratory techniques including hematology, clinical biochemistry, microbiology, histopathology, and immunology for accurate analysis, diagnosis, and monitoring of diseases.
PSO 2: Demonstrate professional competence, ethical responsibility, and quality assurance in laboratory practices, with the ability to manage laboratory operations, handle biomedical waste safely, and contribute effectively to healthcare and research teams.
PEO 1: To produce skilled and competent medical laboratory technologists capable of performing, analyzing, and interpreting various diagnostic laboratory tests with accuracy, efficiency, and
adherence to quality standards in healthcare and research settings.

PEO 2: To develop professionals with strong ethical values, effective communication skills, and lifelong learning habits who can contribute to public health, research, and laboratory management while adapting to technological advancements in medical diagnostics.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	3	2	2	1	2	1
CO2	3	3	3	2	1	2	1
CO3	3	3	3	2	1	2	2
CO4	3	3	3	2	2	3	2
CO5	3	2	2	2	1	2	1
TOTAL	15	14	13	10	6	11	7

CO / PO–PSO–PEO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PEO1	PEO2
CO1	3	3	2	2	1	2	1	2	3	2	3	2
CO2	3	3	3	2	1	2	1	2	3	3	3	3
CO3	3	3	3	2	1	2	2	2	3	2	3	2
CO4	3	3	3	2	2	3	2	3	3	3	3	3
CO5	3	2	2	2	1	2	1	2	2	2	2	2
Total	**15**	**14**	**13**	**10**	**6**	**11**	**7**	**11**	**14**	**12**	**14**	**12**

PAPER: BASIC INSTRUMENT& INSTRUMENT &EQUIPMENT

Course Outcomes:

CO1: Students will be able to identify the parts and functions of basic clinical equipment.
CO2: Students will be able to demonstrate the use of basic diagnostic tools.
CO3: Students will be able to compare various patient care accessories used in clinical practice.
CO4: Students will be able to differentiate between types of surgical instruments.
CO5: Students will be able to evaluate the handling strategies of surgical and emergency instruments in clinical settings.

Program Outcomes (POs)

At the end of the program, students should be able to:
PO1. Demonstrate sufficient concepts in performing routine clinical laboratory tests.
PO2. Skilled in the different types of specimen collection, handling, processing and analysis of patient specimens.
PO3. Analyse and interpret laboratory data to assist in clinical decision making and problem-solving in-patient care.
PO4. Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.
PO5. Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.
PO6. Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.
PO7. Engage in continuous learning, professional development and adopt research-based approaches to keep pace.
PO8. Detecting the outbreaks and preventing the spread of infectious diseases,which contributes to a healthier community.

Program Specific Outcomes (PSO)

PSO 1: Apply theoretical knowledge and practical skills in clinical laboratory techniques including hematology, clinical biochemistry, microbiology, histopathology, and immunology for accurate analysis, diagnosis, and monitoring of diseases.

PSO 2: Demonstrate professional competence, ethical responsibility, and quality assurance in laboratory practices, with the ability to manage laboratory operations, handle biomedical waste safely, and contribute effectively to healthcare and research teams.

Program Educational Objectives (PEO)

PEO 1: To produce skilled and competent medical laboratory technologists capable of performing, analyzing, and interpreting various diagnostic laboratory tests with accuracy, efficiency, and adherence to quality standards in healthcare and research settings.

PEO 2: To develop professionals with strong ethical values, effective communication skills, and lifelong learning habits who can contribute to public health, research, and laboratory management while adapting to technological advancements in medical diagnostics.

CO, PO and PSO mapping

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2
CO1	3	3	2	2	1	2	1	2	3	3
CO2	3	3	3	2	1	2	1	2	3	2
CO3	2	3	3	2	1	2	2	1	3	2
CO4	2	2	3	2	2	3	2	3	2	3
CO5	3	3	2	2	1	2	1	1	3	2
TOTAL	13	14	13	10	6	11	7	9	14	12

PAPER-BASIC & APPLIED HUMAN ANATOMY

PROGRAM OUTCOMES (PO)

PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests.
PO2: Skilled in the different types of specimen collection, handling, processing and analysis of patient specimens.
PO3: Identify, analyze and interpret laboratory data to assist in clinical decision making and problem solving in patient care.
PO4: Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.
PO5: Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.
PO6: Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.
PO7: Engage in continuous learning, professional development and adopt research-based approaches to keep pace.

PO8: Detecting the outbreaks and preventing the spread of infectious diseases, which contributes to a healthier community.

Program Specific Outcomes (PSO)

PSO 1: Apply theoretical knowledge and practical skills in clinical laboratory techniques including hematology, clinical biochemistry, microbiology, histopathology, and immunology for accurate analysis, diagnosis, and monitoring of diseases.

PSO 2: Demonstrate professional competence, ethical responsibility, and quality assurance in laboratory practices, with the ability to manage laboratory operations, handle biomedical waste safely, and contribute effectively to healthcare and research teams.

Course outcome

CO1.Students will be able to outline position, specified function of skeletal system and respiratory system.
CO2 Students will be able to Demonstrate the parts and functions of Cardiovascular system of human body.
CO3.Students will be able to think critically to differentiate the anatomical position and function of Excretory system of human body.
CO4.Students will be able to Monitoring the functions of gastro-intestinal system with position.
CO5.Students will be able to Design the pathways and correlation of Nervous system with other systems including cardiovascular system, excretory system.

CO PO and PSO mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	1	3	3	1	1	2	3	3
CO2	3	3	2	1	1	2	2	3	3	3
CO3	2	2	3	2	1	2	3	1	2	3
CO4	2	2	3	1	1	2	2	2	3	3
CO5	2	2	3	1	2	3	3	3	3	3
TOTAL	12	11	12	8	8	10	11	11	14	15

SEMESTER-II
COURSE-BMLT

PAPER: BASIC BIOCHEMISTRY AND BIOPHYSICS:
CO1: Discuss fundamental chemistry concepts used in physiology.
CO2: Describe the structure, classification, sources and functions of biomolecules like carbohydrate, protein and lipid.
CO3: Recognize the significance of vitamins and minerals in physiology.
CO4: Discuss enzyme functions and classifications.
CO5: Comprehend metabolic pathway for carbohydrates, lipids, and proteins.

PROGRAMME-OUTCOME (PO)
At the end of the program students should be able to:
PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests.

PO2: Skilled in the different types of specimen collection, handling, processing and analysis of patient specimens.

PO3: Identify, analyze and interpret laboratory data to assist in clinical decision making and problem-solving in-patient care.

PO4: Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.

PO5: Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.

PO6: Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.

PO7: Engage in continuous learning, professional development and adopt research-based approaches to keep pace.
PO8: Detecting the outbreaks and preventing the spread of infectious diseases,which contributes to a healthier community.

PSO 1: Apply theoretical knowledge and practical skills in clinical laboratory techniques including hematology, clinical biochemistry, microbiology, histopathology, and immunology for accurate analysis, diagnosis, and monitoring of diseases.
PSO 2: Demonstrate professional competence, ethical responsibility, and quality assurance in laboratory practices, with the ability to manage laboratory operations, handle biomedical waste safely, and contribute effectively to healthcare and research teams.
PEO 1: To produce skilled and competent medical laboratory technologists capable of performing, analyzing, and interpreting various diagnostic laboratory tests with accuracy, efficiency, and adherence to quality standards in healthcare and research settings.
PEO 2: To develop professionals with strong ethical values, effective communication skills, and lifelong learning habits who can contribute to public health, research, and laboratory management while adapting to technological advancements in medical diagnostics.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	1	2	1	0	1	2	1	3	2
CO2	3	2	2	1	2	2	2	1	3	2
CO3	2	1	2	1	2	1	3	2	2	2
CO4	3	1	3	1	0	2	2	1	3	2
CO5	3	2	3	1	1	3	3	2	3	3
TOTAL	13	7	12	5	5	9	12	7	14	11

Basic and Clinical Haematology

Course Outcomes (COs)

CO1. Demonstrate standardized procedures for blood collection and handling, including phlebotomy techniques, use of anticoagulants, and post-procedural care.

CO2. Explain and apply the principles, advantages, and precautions of automation in haematology for accurate laboratory analysis.

CO3. Describe the process of haematopoiesis and identify morphological features and clinical significance of WBCs and platelets in normal and pathological conditions.

CO4. Analyze and interpret laboratory findings in anaemia and haemoglobin disorders, including thalassemia, using diagnostic tests such as Hb estimation, ESR, electrophoresis, and RBC indices.

CO5. Evaluate the mechanism of blood coagulation, identify coagulation factors, and differentiate between normal haemostasis and coagulation disorders.

Program Outcomes – (PSO)

At the end of the program students should be able to:

PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests.

PO2: become skilled in the different types of specimen collection, handling, processing and analysis of patient specimens.

PO3: Identify, analyze and interpret laboratory data to assist in clinical decision making and problem solving in patient care.

PO4: Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.

PO5: Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.

PO6: Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.

PO7: Engage in continuous learning, professional development and adopt research-based approaches to keep pace.

PO8: be involved in detecting the outbreaks and preventing the spread of infectious diseases, contributing to a healthier community.

PSO 1: Apply theoretical knowledge and practical skills in clinical laboratory techniques for accurate analysis, diagnosis, and monitoring of diseases.

PSO 2: Demonstrate professional competence, ethical responsibility, and quality assurance in laboratory practices, with the ability to manage laboratory operations, handle biomedical waste safely, and contribute effectively to healthcare and research teams.

PEO 1:To produce skilled and competent individuals capable of performing, analyzing, and interpreting various diagnostic laboratory tests with accuracy, efficiency, adhering to quality standards in healthcare and research settings.

PEO 2:To develop professionals with strong ethical values, effective communication skills, and lifelong learning habits who can contribute to public health, research, and laboratory management while adapting to technological advancements in medical diagnostics.

CO–PO & PSO Mapping

Course Outcomes (COs)	PO1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO 2
CO1 –	3	3	2	2	2	2	1	2	3	2
CO2 –	3	3	3	1	1	3	2	2	3	3
CO3 –	3	2	3	1	1	2	2	2	3	2
CO4 –	3	3	3	2	2	2	2	3	3	3
CO5 –	3	2	3	2	1	2	2	2	3	2

PAPER-DIAGNOSTIC LABORATORY INSTRUMENT AND EQUIPMENT

COURSE OUTCOME

CO1.Students will be able to outline parts and functions of various microscopes, colorimeter, spectrophotometer.

CO2 Students will be able to Demonstrate parts and functions of various centrifuge machines, bio-safety cabinets, laminar airflow.

CO3.Students will be able to Differentiate the working principles of ELISA, RIA, CLIA.

CO4.Students will be able to Monitoring functions of blood cell counter, semi and full autoanalyzer.

CO5.Students will be able to design the parts and functional process of Electrophoresis, HPLC, Real time PCR.

PROGRAMME: PO

1. Demonstrate sufficient concepts in performing routine clinical laboratory tests.
2. Skilled in the different types of specimen collection, handling, processing and analysis of patient specimens.
3. Identify, analyze and interpret laboratory data to assist in clinical decision making and problem solving in patient care.
4. Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.
5. Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.
6. Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.
7. Engage in continuous learning, professional development and adopt research-based approaches to keep pace.

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	2	2	2	3	2
CO2	3	3	2	2	1	3	2
CO3	3	2	3	2	1	3	3
CO4	3	3	3	2	2	3	2
CO5	3	3	3	2	2	3	3
TOTAL	15	13	13	10	8	15	12

Semester -III

COURSE NAME-BMLT

PAPER: Clinical Pathology

Program Educational Objectives (PEOs)

PEO 1: Graduates will develop strong foundational knowledge and technical competence in clinical pathology to perform and interpret laboratory investigations.

PEO 2: Graduates will demonstrate professionalism, ethics, communication, and teamwork in healthcare and laboratory practice.

PEO 3: Graduates will pursue lifelong learning, research, and innovation to improve healthcare outcomes.

PEO 4: Graduates will contribute responsibly to society by ensuring safety, quality, and ethical standards in healthcare services.

Program Specific Outcomes (PSOs)

PSO 1: Apply advanced knowledge and laboratory skills in clinical pathology for accurate diagnosis and ethical practice.

PSO 2: Design, implement, and evaluate laboratory procedures for body fluid, hematology, and inflammatory investigations to support patient care and public health.

Program Outcomes (POs)

PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests.

PO2: Skilled in specimen collection, handling, processing, and analysis.

PO3: Identify, analyze, and interpret laboratory data for clinical decision making.

PO4: Exhibit professional conduct, ethical values, and accountability.

PO5: Communicate effectively and collaborate within a multidisciplinary healthcare team.

PO6: Use modern instruments, information systems, and quality assurance practices.

PO7: Engage in continuous learning and adopt research-based approaches.

PO8: Apply professional responsibility and contribute to community health and national development. (added for PSO mapping consistency)

Course Outcomes (COs)

CO1: Explain principles and procedures of collection and processing of CSF and its investigations.

CO2: Demonstrate examination techniques for urine analysis.

CO3: Differentiate between transudate and exudate in serous fluids.

CO4: Appraise diagnostic significance of bone marrow aspiration and biopsy.

CO5: Design a laboratory workflow for inflammation analysis including granuloma identification.

Integrated CO–PO–PSO Mapping Table

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	3	2	1	3	2	2	2	3	2
CO2	3	3	2	2	3	3	2	2	3	3
CO3	2	2	3	2	1	2	1	2	2	3
CO4	2	2	3	2	1	2	3	2	3	3
CO5	2	2	3	2	2	3	3	3	3	3

PEO–PO Mapping Table

PEOs	PO1	PO2	PO3	PO4	PO 5	PO 6	PO7	PO8

PEO1	3	3	3	2	2	3	2	2
PEO2	2	3	2	3	3	2	2	3
PEO3	2	2	3	2	2	3	3	2
PEO4	1	2	2	2	2	2	3	3

PSO–PO Mapping Table

PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
PSO	1	3	3	3	3	2	3	2
PSO	2	3	3	3	2	3	3	3

(3 – Strong, 2 – Moderate, 1 – Low correlation)

PAPER: PHARMACOLOGY & TOXICOLOGY

PROGRAM OUTCOMES (PO):

PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests.

PO2: become skilled in the different types of specimen collection, handling, processing and analysis of patient specimens.

PO3: Identify, analyze and interpret laboratory data to assist in clinical decision making and problem solving in patient care.

PO4: Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.

PO5: Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.

PO6: Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.

PO7: Engage in continuous learning, professional development and adopt research-based approaches to keep pace.

PO8: be involved in detecting the outbreaks and preventing the spread of infectious diseases, contributing to a healthier community.

Program Specific Outcomes (PSO):

PSO 1: Apply theoretical knowledge and practical skills in clinical laboratory techniques for accurate analysis, diagnosis, and monitoring of diseases.

PSO 2: Demonstrate professional competence, ethical responsibility, and quality assurance in laboratory practices, with the ability to manage laboratory operations, handle biomedical waste safely, and contribute effectively to healthcare and research teams.

Course Outcome (CO):

CO1: Define the key concept of PK & PD.

CO2: Explain the concepts of drug metabolism, including biotransformation of drug.

CO3: Apply knowledge of receptor subtypes to understand drug selectivity and specificity.

CO4: Examine dose-response curves and identify key parameters.

CO5: Evaluate the effectiveness of different risk management strategies for reducing workplace exposure to Drug & hazardous chemicals.

CO PO and PSO Mapping:

CO/PO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PSO 1**	**PSO 2**
CO1	2	0	1	2	0	0	2	0	3	1

CO2	2	3	3	0	1	1	2	0	0	1
CO3	2	0	3	1	1	0	2	0	0	1
CO4	3	0	3	0	0	0	2	3	2	3
CO5	3	0	2	0	0	3	2	0	1	3
TOTAL	**12**	**3**	**12**	**3**	**2**	**4**	**10**	**3**	**6**	**9**

PAPER- Clinical Immunology and Serology

PO

At the end of the program students should be able to:

PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests.

PO2: become skilled in the different types of specimen collection, handling, processing and analysis of patient specimens.

PO3: Identify, analyse and interpret laboratory data to assist in clinical decision making and problem-solving in-patient care.

PO4: Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.

PO5: Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.PO6: Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.

PO7: Engage in continuous learning, professional development and adopt research-based approaches to keep pace.

PO8: be involved in detecting the outbreaks and preventing the spread of infectious diseases, contributing to a healthier community.

PSO

PSO 1: Apply theoretical knowledge and practical skills in clinical laboratory techniques for accurate analysis, diagnosis, and monitoring of diseases.

PSO 2: Demonstrate professional competence, ethical responsibility, and quality assurance in laboratory practices, with the ability to manage laboratory operations, handle biomedical waste safely, and contribute effectively to healthcare and research teams.

PEO 1: To produce skilled and competent individuals capable of performing, analysing, and interpreting various diagnostic laboratory tests with accuracy, efficiency, adhering to quality standards in healthcare and research settings.

PEO 2: To develop professionals with strong ethical values, effective communication skills, and lifelong learning habits who can contribute to public health, research, and laboratory management while adapting to technological advancements in medical diagnostics.

COURSE OUTCOME:

1. Compare innate and acquired immunity
2. Illustrate the concept of immunosuppression
3. Distinguish between the concepts of autoimmunity and immunization
4. Select the right diagnostic immunological/serological test for specific diseases
5. Plan experimental set-up for antigen-antibody reactions

	PO								PSO	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO 1**	**PSO 2**
CO1	1	0	1	0	2	3	3	1	3	1
CO2	1	0	1	1	3	3	3	0	3	1
CO3	3	3	3	2	3	3	3	3	3	2
CO4	3	3	3	3	3	3	2	3	3	3
CO5	3	3	1	0	2	3	3	3	3	3
TOTAL	**11**	**9**	**9**	**6**	**13**	**15**	**14**	**10**	**15**	**10**

SEMESTER-V

COURSE NAME-BMLT

PAPER- ADVANCED HISTOPATHOLOGY AND HISTOTECHNIQUES

CO1: Students will be able to **define, identify, and explain** the principles and applications of cryostat sections, special stains, connective tissue staining, and immunohistochemistry.
CO2: Students will be able to **demonstrate and execute** various histological staining methods for carbohydrates, glycogen, amyloid, lipids, enzymes, microorganisms, and reticulin fibers.
CO3 : Students will be able to **differentiate, examine, and interpret** diagnostic outcomes from special stains, enzyme histochemistry, microorganism detection, and immunohistochemistry.
CO4 : Students will be able to **appraise, check, and verify** quality control procedures, diagnostic reliability, and museum specimen preservation techniques in histopathology.
CO5 : Students will be able to **design, formulate, and compile** comprehensive protocols for advanced histopathology and histotechniques in clinical and research applications.
BMLT:

• At the end of the program students should be able to:

PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests.
PO2: Skilled in the different types of specimen collection, handling, processing and analysis of patient specimens.
PO3: Identify, analyze and interpret laboratory data to assist in clinical decision making and problem solving in patient care.
PO4: Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.
PO5: Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.
PO6: Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.
PO7: Engage in continuous learning, professional development and adopt research-based approaches to keep pace.

PO8: Detecting the outbreaks and preventing the spread of infectious diseases,which contributes to a healthier community.

PSO 1: Apply theoretical knowledge and practical skills in clinical laboratory techniques including hematology, clinical biochemistry, microbiology, histopathology, and immunology for accurate analysis, diagnosis, and monitoring of diseases.

PSO 2: Demonstrate professional competence, ethical responsibility, and quality assurance in laboratory practices, with the ability to manage laboratory operations, handle biomedical waste safely, and contribute effectively to healthcare and research teams.

PEO 1: To produce skilled and competent medical laboratory technologists capable of performing, analyzing, and interpreting various diagnostic laboratory tests with accuracy, efficiency, and adherence to quality standards in healthcare and research settings.

PEO 2: To develop professionals with strong ethical values, effective communication skills, and lifelong learning habits who can contribute to public health, research, and laboratory management while adapting to technological advancements in medical diagnostics.

CO-PO Mapping:

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2	2	1	1	2	1	0
CO2	3	3	2	1	1	3	2	0
CO3	2	2	3	1	1	2	2	1
CO4	2	2	2	3	1	3	2	1
CO5	2	2	3	2	2	3	3	1
TOTAL	**12**	**11**	**12**	**8**	**6**	**13**	**10**	**3**

CO-PSO Mapping:

COs / PSOs	PSO1	PSO2
CO1	3	2
CO2	3	2
CO3	3	3
CO4	2	3
CO5	3	3

SUBJECT NAME: HEMATOLOGY AND BLOOD BANKING

CO1: Students will be able to define and identify the principles of blood banking, blood grouping, anticoagulants, donor selection, transfusion reactions, and blood components.

CO2: Students will be able to demonstrate and execute blood grouping methods, cross-matching, antibody screening, grading of agglutination, and processing of blood components.
CO3 : Students will be able to differentiate, examine, and interpret transfusion-transmitted infections, compatibility testing, transfusion reactions, and clinical indications of blood components.
CO4 : Students will be able to appraise, check, and verify the quality of blood collection, preservation, transportation, and transfusion practices for patient safety.
CO5 : Students will be able to design, formulate, and compile standard operating procedures for safe and effective blood banking and transfusion services.

• At the end of the program students should be able to:

PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests.**PO2:** Skilled in the different types of specimen collection, handling, processing and analysis of patient specimens.
PO3: Identify, analyze and interpret laboratory data to assist in clinical decision making and problem solving in patient care.
PO4: Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.
PO5: Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.
PO6: Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.
PO7: Engage in continuous learning, professional development and adopt research-based approaches to keep pace.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	3	2	2	1	2	1
CO2	3	3	3	2	1	3	1
CO3	3	3	3	2	1	2	2
CO4	3	3	3	3	2	3	2
CO5	3	2	2	2	1	2	2
Total	15	14	13	11	6	12	8

ADVANCED CLINICAL NUTRITION

Course Outcomes (CO):

CO1: Recall and list the sources, functions, deficiency symptoms, and toxicities of major vitamins and minerals essential to human health and the techniques used in nutritional assessment and describe the structure and goals of national nutrition programs in India.

CO2: Demonstrate the principles of therapeutic nutrition in the planning of diet charts for common liver, cardiovascular, renal, and gastrointestinal disorders.

CO3: Differentiate between dietary requirements for various pathological states and analyze the impact of diet modifications in chronic diseases.

CO4: Monitor the Micronutrients deficiencies by observing Clinical signs and the effectiveness of community nutrition programs and evaluate nutritional interventions based on clinical and biochemical indicators

CO5: Designing diagnosis plan for confirmation of deficiencies and biochemical markers for the nutritional deficiencies based on clinical manifestations

Program Outcomes (PO):

• At the end of the program students should be able to:

PO1- Demonstrate sufficient concepts in performing routine clinical laboratory tests

PO2- Skilled in the different types of specimen collection, handling, processing and analysis of patient specimens

PO3-analyse and interpret laboratory data to assist in clinical decision making and problem-solving in-patient care.

PO4- Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery

PO5- Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.

PO6- Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.

PO7- Engage in continuous learning, professional development and adopt research-based approaches to keep pace.

PO8: Detecting the outbreaks and preventing the spread of infectious diseases, which contributes to a healthier community.

Program Specific Outcomes (PSO):

PSO 1: Apply theoretical knowledge and practical skills in clinical laboratory techniques including hematology, clinical biochemistry, microbiology, histopathology, and immunology for accurate analysis, diagnosis, and monitoring of diseases.

PSO 2: Demonstrate professional competence, ethical responsibility, and quality assurance in laboratory practices, with the ability to manage laboratory operations, handle biomedical waste safely, and contribute effectively to healthcare and research teams.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	3	1	2	0	3	2	2	1
CO2	2	2	3	1	3	1	3	1	1	1
CO3	2	3	3	1	3	1	3	3	2	1
CO4	1	1	3	1	2	0	2	2	2	1

CO5	3	2	3	2	3	2	2	2	3	2
TOTAL	**11**	**10**	**15**	**6**	**13**	**4**	**13**	**10**	**10**	**6**

SEMESTER -VI

COURSE NAME-BMLT

PAPER: Clinical Enzymology, Endocrinology & Toxicology
CO–PO–PSO Mapping
Course Outcomes (COs)
CO1: Explain the classification, secretion, and mechanism of hormone action along with the regulation of endocrine system functions.
CO2: Interpret thyroid function tests and evaluate disorders related to thyroid dysfunction such as hypothyroidism and hyperthyroidism.
CO3: Analyze infertility profiles and assess hormonal assays including LH, FSH, Estrogen, Progesterone, and Testosterone for clinical significance.
CO4: Evaluate adrenal and pituitary hormones (ACTH, Aldosterone, Cortisol, Growth Hormone) and identify hypo- and hyper-secretion disorders.
CO5: Demonstrate understanding of enzymology and toxicology principles including enzyme classification, enzyme kinetics, inhibition, isoenzymes, and toxic agents' clinical effects and diagnostic tests.

PROGRAM OUTCOMES (PO)

PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests.
PO2: Skilled in the different types of specimen collection, handling, processing and analysis of patient specimensPO3: Identify, analyze and interpret laboratory data to assist in clinical decision making and problem solving in patient care.
PO4: Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.
PO5: Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.
PO6: Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.
PO7: Engage in continuous learning, professional development and adopt research-based approaches to keep pace.
PO8: Detecting the outbreaks and preventing the spread of infectious diseases, which contributes to a healthier community.
Program Specific Outcomes (PSO)

PSO 1: Apply theoretical knowledge and practical skills in clinical laboratory techniques including haematology, clinical biochemistry, microbiology, histopathology, and immunology for accurate analysis, diagnosis, and monitoring of diseases.

PSO 2: Demonstrate professional competence, ethical responsibility, and quality assurance in laboratory practices, with the ability to manage laboratory operations, handle biomedical waste safely, and contribute effectively to healthcare and research teams.

Course outcome

CO1.Students will be able to outline the basic structure and function of cells.
CO2.Students will be able to Demonstrate the functions of various microscopes.
CO3.Students will be able to Differentiate the benign and malignant tumour.
CO4.Students will be able to Monitoring the various techniques and instruments used in various types of cytology.
CO5.Students will be able to design the steps of cytological procedures with staining procedures.

CO PO and PSO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	2	2	1	2	2	3	2	3
CO2	3	3	2	2	1	3	2	3	3	3
CO3	3	2	3	2	1	2	3	1	2	3
CO4	3	3	3	2	2	3	2	2	2	3
CO5	3	3	3	2	2	3	3	3	3	3
TOTAL	15	13	13	10	7	13	12	12	12	15

PAPER: CLINICAL CYTOLOGY

PROGRAM OUTCOMES (PO)

PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests.PO2: Skilled in the different types of specimen collection, handling, processing and analysis of patient specimens.
PO3: Identify, analyze and interpret laboratory data to assist in clinical decision making and problem solving in patient care.
PO4: Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.
PO5: Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.
PO6: Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.
PO7: Engage in continuous learning, professional development and adopt research-based approaches to keep pace.
PO8: Detecting the outbreaks and preventing the spread of infectious diseases, which contributes to a healthier community.

Program Specific Outcomes (PSO)

PSO 1: Apply theoretical knowledge and practical skills in clinical laboratory techniques including haematology, clinical biochemistry, microbiology, histopathology, and immunology for accurate analysis, diagnosis, and monitoring of diseases.PSO 2: Demonstrate professional competence, ethical responsibility, and quality assurance in laboratory practices, with the ability to manage laboratory operations, handle biomedical waste safely, and contribute effectively to healthcare and research teams.

Course outcome

CO1.Students will be able to outline the basic structure and function of cells.
CO2.Students will be able to Demonstrate the functions of various microscopes.
CO3.Students will be able to Differentiate the benign and malignant tumour.
CO4.Students will be able to Monitoring the various techniques and instruments used in various types of cytology.

CO5.Students will be able to design the steps of cytological procedures with staining procedures.

CO PO and PSO mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	2	2	1	2	2	3	2	3
CO2	3	3	2	2	1	3	2	3	3	3
CO3	3	2	3	2	1	2	3	1	2	3
CO4	3	3	3	2	2	3	2	2	2	3
CO5	3	3	3	2	2	3	3	3	3	3
TOTAL	**15**	**13**	**13**	**10**	**7**	**13**	**12**	**12**	**12**	**15**

PAPER: Advanced Diagnostic Molecular Biology
CO-PO mapping

	PO								**PSO**	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO 1**	**PSO 2**
CO1	3	2	1	2	2	3	3	1	3	1
CO2	3	2	1	2	2	3	3	1	3	1
CO3	3	3	3	2	2	3	3	0	3	2
CO4	3	3	3	3	3	3	3	0	3	3
CO5	3	3	3	2	3	3	3	3	3	3

CO: The students will learn to:

1. Explain DNA structure and DNA replication.
2. Illustrate the processes of RNA and protein syntheses following central dogma
3. Distinguish between different blotting techniques used in molecular biology
4. Select among prenatal diagnostic techniques and compare with stem cell banking technique.
5. Plan the need-based use of molecular diagnostic techniques like conventional PCR and real time PCR.

PO

At the end of the program students should be able to:

PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests

PO2: become skilled in the different types of specimen collection, handling, processing and analysis of patient specimens.

PO3: Identify, analyze and interpret laboratory data to assist in clinical decision making and problem solving in patient care.

PO4: Exhibit professional conduct, ethical values, confidentiality and accountability in laboratory practice and healthcare delivery.

PO5: Communicate effectively with healthcare professionals, patients and work collaboratively as part of a multidisciplinary healthcare team.

PO6: Use modern laboratory instruments, information systems and quality assurance practices to maintain reliability and accuracy in laboratory results.

PO7: Engage in continuous learning, professional development and adopt research-based approaches to keep pace.
PO8: be involved in detecting the outbreaks and preventing the spread of infectious diseases, contributing to a healthier community.

PSO 1: Apply theoretical knowledge and practical skills in clinical laboratory techniques for accurate analysis, diagnosis, and monitoring of diseases.

PSO 2: Demonstrate professional competence, ethical responsibility, and quality assurance in laboratory practices, with the ability to manage laboratory operations, handle biomedical waste safely, and contribute effectively to healthcare and research teams.

PEO 1:To produce skilled and competent individuals capable of performing, analyzing, and interpreting various diagnostic laboratory tests with accuracy, efficiency, adhering to quality standards in healthcare and research settings.

PEO 2:To develop professionals with strong ethical values, effective communication skills, and lifelong learning habits who can contribute to public health, research, and laboratory management while adapting to technological advancements in medical diagnostics.

SEMESTER-I

COURSE NAME (BCCT)

PAPER: BASIC & APPLIED HUMAN ANATOMY

PROGRAM OUTCOMES (PO)

PO1 Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.

PO2 Communication Skills: Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.

PO3 Problem Solving & Reasoning: Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.

PO4 Cooperation/Team work: Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.

PO5 Self-directed learning: Able to work independently in various healthcare settings and manage situations requiring quick and responsible action

PO6 Moral and ethical awareness/reasoning: Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.

PO7 Lifelong learning: Able to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.

PO8: Clinical Competence and Technical Skills:

Able to apply practical and technical skills in operating, maintaining, and troubleshooting critical care equipment, perform patient monitoring procedures accurately, and ensure safe and effective delivery of critical care services in emergency and ICU settings.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: Clinical Application and Technical Proficiency

Students will be able to competently operate, calibrate, and manage critical care instruments such as ventilators, defibrillators, and monitoring systems, ensuring accurate data collection and effective patient care in ICUs and emergency units.

(Linked to PO1, PO3, and PO8)

PSO 2: Patient-Cantered Critical Care and Professional Collaboration

Graduates will be able to assess patient conditions, support clinicians in emergency decision-making, and effectively communicate and coordinate with healthcare teams to deliver safe, ethical, and efficient critical care services.

(Linked to PO2, PO4, PO6, and PO7)

Course outcome

CO1.Students will be able to outline position, specified function of skeletal system and respiratory system.

CO2 Students will be able to Demonstrate the parts and functions of Cardiovascular system of human body.

CO3.Students will be able to think critically to differentiate the anatomical position and function of Excretory system of human body.

CO4.Students will be able to Monitoring the functions of gastro-intestinal system with position.

CO5.Students will be able to Design the pathways and correlation of Nervous system with other systems including cardiovascular system, excretory system.

CO PO and PSO mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	2	1	2	2	2	2	3	3
CO2	3	2	3	2	2	2	2	1	3	3
CO3	3	2	3	2	2	2	3	2	2	3
CO4	3	2	3	2	2	2	3	3	3	3
CO5	3	2	3	3	3	2	3	3	3	3
TOTAL	15	10	14	10	11	10	13	11	14	15

PAPER: BASIC &APPLIED HUMAN PHYSIOLOGY

Course Outcomes:

CO1: Students will be able to classify the various blood components and their transfusion according to the clinical physiology.
CO2: Students will be able to demonstrate the physiology of cardio-vascular system, pulmonary system, and renal system, and its abnormalities.
CO3: Students will be able to detect hormonal imbalance.
CO4: Students will be able to monitor cardio-pulmonary parameters and management. CO5: Students will be able to check the reflexes of neuro-muscular system.

PROGRAM OUTCOMES (PO)

PO1 Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.
PO2 Communication Skills: Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.
PO3 Problem Solving & Reasoning: Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.
PO4 Cooperation/Team work: Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.
PO5 Self-directed learning: Able to work independently in various healthcare settings and manage situations requiring quick and responsible action
PO6 Moral and ethical awareness/reasoning: Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.
PO7 Lifelong learning: Able to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.
PO8: Clinical Competence and Technical Skills: Able to apply practical and technical skills in operating, maintaining, and troubleshooting critical care equipment, perform patient monitoring procedures accurately, and ensure safe and effective delivery of critical care services in emergency and ICU settings.

PROGRAM EDUCATIONAL OUTCOMES (PEOs)

PEO 1: Professional Competence and Ethical Practice: Students will demonstrate strong foundational and applied knowledge in critical care technology, enabling them to provide high-quality patient monitoring and life-support services while adhering to ethical, moral, and professional standards within healthcare institutions.

(Derived from PO1, PO3, PO6, and PO8)
PEO 2: Lifelong Learning and Leadership in Healthcare: Students will continuously update their knowledge and technical skills to adapt to emerging technologies and healthcare

advancements, effectively communicating and collaborating with multidisciplinary teams to assume leadership roles in critical care environments.

(Derived from PO2, PO4, PO5, and PO7)

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: Clinical Application and Technical Proficiency

Students will be able to competently operate, calibrate, and manage critical care instruments such as ventilators, defibrillators, and monitoring systems, ensuring accurate data collection and effective patient care in ICUs and emergency units. (Linked to PO1, PO3, and PO8)

PSO 2: Patient-Centered Critical Care and Professional Collaboration

Graduates will be able to assess patient conditions, support clinicians in emergency decision-making, and effectively communicate and coordinate with healthcare teams to deliver safe, ethical, and efficient critical care services.

(Linked to PO2, PO4, PO6, and PO7)

CO / PO–PSO–PEO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PEO1	PE
CO1	3	2	2	1	1	2	1	3	3	2	3	2
CO2	3	2	3	2	2	2	2	3	3	3	3	3
CO3	3	1	2	1	2	2	2	2	2	2	3	2
CO4	3	2	3	3	3	2	2	3	3	3	3	3
CO5	3	2	2	2	2	2	1	2	2	2	3	2
TOTAL	15	9	12	9	10	10	8	13	13	12	15	12

PAPER: BASIC INSTRUMENT & EQUIPMENT

Course Outcomes:

CO1: Students will be able to identify the parts and functions of basic clinical equipment.
CO2: Students will be able to demonstrate the use of basic diagnostic tools.
CO3: Students will be able to compare various patient care accessories used in clinical practice.
CO4: Students will be able to differentiate between types of surgical instruments.
CO5: Students will be able to evaluate the handling strategies of surgical and emergency instruments in clinical settings.

Program Outcomes (POs)

At the end of the program, students should be able to:

PO1 Disciplinary knowledge:
Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.
PO2 Communication Skills:
Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.
PO3 Problem Solving & Reasoning:
Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.
PO4 Cooperation/Team work:Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.
PO5 Self-directed learning:
Able to work independently in various healthcare settings and manage situations requiring quick and responsible action.
PO6 Moral and ethical awareness/reasoning: Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.
PO7 Lifelong learningAble to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.
PO8: Clinical Competence and Technical Skills:Able to apply practical and technical skills in operating, maintaining, and troubleshooting critical care equipment, perform patient monitoring procedures accurately, and ensure safe and effective delivery of critical care services in emergency and ICU settings.

Program Specific Outcomes (PSO)

PSO 1: Clinical Application and Technical Proficiency

Students will be able to competently operate, calibrate, and manage critical care instruments such as ventilators, defibrillators, and monitoring systems, ensuring accurate data collection and effective patient care in ICUs and emergency units.

PSO 2: Patient-Centered Critical Care and Professional Collaboration

Graduates will be able to assess patient conditions, support clinicians in emergency decision-making, and effectively communicate and coordinate with healthcare teams to deliver safe, ethical, and efficient critical care services.

Program Educational Objectives (PEO)

PEO 1: Professional Competence and Ethical Practice

Students will demonstrate strong foundational and applied knowledge in critical care technology, enabling them to provide high-quality patient monitoring and life-support services while adhering to ethical, moral, and professional standards within healthcare institutions.

PEO 2: Lifelong Learning and Leadership in Healthcare

Students will continuously update their knowledge and technical skills to adapt to emerging technologies and healthcare advancements, effectively communicating and collaborating with multidisciplinary teams to assume leadership roles in critical care environments.

CO, PO and PSO mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO 1	PSO 2
CO1	3	2	2	1	1	2	1	0	1	2
CO2	3	2	3	2	2	2	2	3	3	3
CO3	3	1	2	1	2	2	2	3	3	2
CO4	3	2	3	3	3	2	2	3	3	3
CO5	3	2	2	2	2	2	1	2	3	2
TOTAL	15	9	12	9	10	10	8	11	13	12

SEMESTER II

PAEER: BASIC BIOCHEMISTRY AND MICROBIOLOGY

CO1: Discuss the classification, function and metabolism of carbohydrate.
CO2: Discuss the classification, function, and metabolism of protein.
CO3: Describe the types, function and metabolism of lipids, including their physiological roles.
CO4: Explain the historical background and basic concepts of microbiology including classification and morphology of bacteria.
CO5: Explain the structural and functional features of prokaryotic cells including gram positive and gram-negative bacteria.

PROGRAMME OUTCOME PO-

PO1 Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.
PO2 Communication Skills: Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.
PO3 Problem Solving & Reasoning: Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.
PO4 Cooperation/Team work: Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.
PO5 Self-directed learning: Able to work independently in various healthcare settings and manage situations requiring quick and responsible action
PO6 Moral and ethical awareness/reasoning: Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.
PO7 Lifelong learning: Able to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.
PO8: Clinical Competence and Technical Skills:
Able to apply practical and technical skills in operating, maintaining, and troubleshooting critical care equipment, perform patient monitoring procedures accurately, and ensure safe and effective delivery of critical care services in emergency and ICU settings.

PROGRAM EDUCATIONAL OUTCOMES (PEOs)
PEO 1: Professional Competence and Ethical Practice
Students will demonstrate strong foundational and applied knowledge in critical care technology, enabling them to provide high-quality patient monitoring and life-support services while adhering to ethical, moral, and professional standards within healthcare institutions.
(Derived from PO1, PO3, PO6, and PO8)

PEO 2: Lifelong Learning and Leadership in Healthcare
Students will continuously update their knowledge and technical skills to adapt to emerging technologies and healthcare advancements, effectively communicating and collaborating with multidisciplinary teams to assume leadership roles in critical care environments.
(Derived from PO2, PO4, PO5, and PO7)

PROGRAM SPECIFIC OUTCOMES (PSOs)
PSO 1: Clinical Application and Technical Proficiency
Students will be able to competently operate, calibrate, and manage critical care instruments such as ventilators, defibrillators, and monitoring systems, ensuring accurate data collection and effective patient care in ICUs and emergency units.
(Linked to PO1, PO3, and PO8)

PSO 2: Patient-Centered Critical Care and Professional Collaboration
Graduates will be able to assess patient conditions, support clinicians in emergency decision-making, and effectively communicate and coordinate with healthcare teams to deliver safe, ethical, and efficient critical care services.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	1	3	0	1	1	2	2	3	2
CO2	3	1	3	2	1	1	2	2	3	2
CO3	3	1	3	0	1	1	2	2	3	2
CO4	3	2	2	1	1	2	2	2	2	3
CO5	3	2	3	1	2	2	3	3	3	3

TOTAL		15	7	14	4	6	7	11	11	14	12

PAPER BASIC NURSING

CO1-Students will be able to interpret various aseptic techniques before doing any procedure.
CO2-Students will be able to practice post-surgical patient care.
CO3-Students will be able to differentiate the cannulas, catheters which are needed for required patients.
CO4-Students will be able to monitor the critically ill patients who are on ventilators.
CO5- Students will be able to plan suitable patient management in emergency situations.

PROGRAM OUTCOMES (PO)

PO1. Disciplinary Knowledge:
Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.

PO2. Communication Skills:
Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.

PO3. Problem Solving and Analytical Reasoning:
Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.

PO4. Teamwork and Collaboration:
Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.

PO5. Self-Directed Learning:
Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.

PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.PO7. Lifelong Learning:
Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.

PO8.Technological Competence and Innovation:
Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)

PSO1: Surgical Equipment Management
Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.

PSO2: Perioperative Patient Care and Safety

Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

Program Educational Objectives (PEO)

PEO1: Professional Competence and Employability

Graduates will be competent operation theatre technologists capable of performing effectively in hospitals, surgical centers, and research settings, contributing to quality surgical care and patient management.

PEO2: Leadership, Research, and Innovation

Graduates will demonstrate leadership qualities, engage in evidence-based practice, and contribute to innovations in surgical technology, patient safety, and healthcare management through research and professional growth.

CO	PO1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	3	4	2	3	2	3	3	3
CO2	3	2	3	2	2	3	2	3	3	3
CO3	3	2	3	2	2	3	2	3	3	2
CO4	3	2	3	3	2	3	2	3	3	3
CO5	3	3	3	3	3	4	2	3	3	3
TOTAL	**15**	**11**	**15**	**14**	**11**	**16**	**10**	**15**	**15**	**14**

PAPER: BASIC SURGERY

CO1 Explain the principles and the use of hemostatic agents.

CO2 Demonstrate correct preoperative skin preparation

CO3 Differentiate between various abdominal incisions and surgical positions based on indication and approach.

CO4 Critique the selection of suture materials for different surgical cases.

CO5 Design a comprehensive pre-operative preparation protocol for a patient undergoing surgery.

PROGRAM OUTCOMES (PO)

CRITICAL CARE TECHNOLOGISTS ARE ABLE TO

PO1 Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.

PO2 Communication Skills: Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.

PO3 Problem Solving & Reasoning: Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.

PO4 Cooperation/Team work: Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.
PO5 Self-directed learning: Able to work independently in various healthcare settings and manage situations requiring quick and responsible action
PO6 Moral and ethical awareness/reasoning: Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.
PO7 Lifelong learning: Able to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.
PO8: Clinical Competence and Technical Skills: Able to apply practical and technical skills in operating, maintaining, and troubleshooting critical care equipment, perform patient monitoring procedures accurately, and ensure safe and effective delivery of critical care services in emergency and ICU settings.

Co Po mapping for BCCT

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	3	1	2	3	2	2	3	2
CO2	3	2	2	3	2	3	2	2	2	3
CO3	3	1	3	2	2	2	2	2	3	2
CO4	3	2	3	1	2	2	3	2	3	2
CO5	3	3	3	3	3	3	3	3	3	3
SUM	15	10	14	10	11	13	12	11	14	12

SEMESTER-III
COURSE NAME-BCCT

PAPER: BASIC LIFE SUPPORT

Course Outcomes:

CO1: Students will be able to explain the fundamental principles of basic and advanced life support.
CO2: Students will be able to demonstrate appropriate life-saving techniques and emergency procedures in clinical situations.
CO3: Students will be able to distinguish the use of various life support tools and technologies in the management of critically ill patients.
CO4: Students will be able to monitor the administration and effects of emergency interventions and medications in life-threatening conditions.
CO5: Students will be able to formulate the post-resuscitation care strategies to support recovery and prevent complications.

Program Outcomes (POs)

At the end of the program, students should be able to:

PO1. Disciplinary Knowledge:
Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.
PO2. Communication Skills:
Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.
PO3. Problem Solving and Analytical Reasoning:
Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.
PO4. Teamwork and Collaboration:
Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.
PO5. Self-Directed Learning:
Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.
PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.
PO7. Lifelong Learning:
Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8. Technological Competence and Innovation:Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)

PSO1: Surgical Equipment Management

Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.

PSO2: Perioperative Patient Care and Safety

Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

Program Educational Objectives (PEO)

PEO1: Professional Competence and Employability

Graduates will be competent operation theatre technologists capable of performing effectively in hospitals, surgical centers, and research settings, contributing to quality surgical care and patient management.

PEO2: Leadership, Research, and Innovation

Graduates will demonstrate leadership qualities, engage in evidence-based practice, and contribute to innovations in surgical technology, patient safety, and healthcare management through research and professional growth.

CO, PO and PSO mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	1	0	0	2	0	1	1	3
CO2	3	2	3	0	2	0	3	2	3	3
CO3	3	0	3	0	2	0	3	2	3	3
CO4	3	2	3	2	2	2	3	3	3	3
CO5	3	0	3	0	0	0	2	2	3	3
TOTAL	**15**	**6**	**13**	**2**	**6**	**4**	**11**	**10**	**13**	**15**

PAPER: Clinical Pathology

Program Educational Objectives (PEOs)

PEO 1: Graduates will develop strong foundational knowledge and technical competence in clinical pathology to perform and interpret laboratory investigations.

PEO 2: Graduates will demonstrate professionalism, ethics, communication, and teamwork in healthcare and laboratory practice.

PEO 3: Graduates will pursue lifelong learning, research, and innovation to improve healthcare outcomes.

PEO 4: Graduates will contribute responsibly to society by ensuring safety, quality, and ethical standards in healthcare services.

Program Specific Outcomes (PSOs)

PSO 1: Apply advanced knowledge and laboratory skills in clinical pathology for accurate diagnosis and ethical practice.

PSO 2: Design, implement, and evaluate laboratory procedures for body fluid, hematology, and inflammatory investigations to support patient care and public health.

Program Outcomes (POs)

PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests.

PO2: Skilled in specimen collection, handling, processing, and analysis.

PO3: Identify, analyze, and interpret laboratory data for clinical decision making.

PO4: Exhibit professional conduct, ethical values, and accountability.

PO5: Communicate effectively and collaborate within a multidisciplinary healthcare team.

PO6: Use modern instruments, information systems, and quality assurance practices.

PO7: Engage in continuous learning and adopt research-based approaches.

PO8: Apply professional responsibility and contribute to community health and national development. (added for PSO mapping consistency)

Course Outcomes (COs)

CO1: Explain principles and procedures of collection and processing of CSF and its investigations.

CO2: Demonstrate examination techniques for urine analysis.

CO3: Differentiate between transudate and exudate in serous fluids.

CO4: Appraise diagnostic significance of bone marrow aspiration and biopsy.

CO5: Design a laboratory workflow for inflammation analysis including granuloma identification.

Integrated CO–PO–PSO Mapping Table

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	3	2	1	3	2	2	2	3	2
CO2	3	3	2	2	3	3	2	2	3	3
CO3	2	2	3	2	1	2	1	2	2	3
CO4	2	2	3	2	1	2	3	2	3	3
CO5	2	2	3	2	2	3	3	3	3	3

PEO–PO Mapping Table

PEOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
PEO1	3	3	3	2	2	3	2	2
PEO2	2	3	2	3	3	2	2	3
PEO3	2	2	3	2	2	3	3	2
PEO4	1	2	2	2	2	2	3	3

PSO–PO Mapping Table

PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
PSO	1	3	3	3	3	2	3	2
PSO	2	3	3	3	2	3	3	3

(3 – Strong, 2 – Moderate, 1 – Low correlation)

PAER: Clinical Pharmacology

Course Outcome (CO):

CO1: List different routes of drug administration and their impact on PK.

CO2: Describing how drugs interact with the body (pharmacokinetics).

CO3: Classify the major classes of drugs (e.g., antibiotics, analgesics, Cholinergic etc).

CO4: Comparing the efficacy and safety profiles of different drugs within the same class.
CO5: Evaluating the effectiveness of a treatment plan based on patient outcomes.

Program Outcomes (POs):

PO1 Disciplinary knowledge:
Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.
PO2 Communication Skills:
Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.
PO3 Problem Solving & Reasoning:
Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.
PO4 Cooperation/Team work:
Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.
PO5 Self-directed learning:
Able to work independently in various healthcare settings and manage situations requiring quick and responsible action.
PO6 Moral and ethical awareness/reasoning:
Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.
PO7 Lifelong learning:
Able to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	0	0	2	1	1	1
CO2	2	1	1	2	3	1	2
CO3	3	0	2	3	2	1	2
CO4	3	2	3	0	2	3	2
CO5	3	1	3	2	2	2	2
TOTAL	**14**	**4**	**9**	**9**	**10**	**8**	**9**

SEMESTER-V

PAPER: ADVANCED CRITICAL CARE MANAGEMENT I

COURSE OUTCOMES:
CO1: Define and identify the causes and different types of respiratory diseases, and explain their pathophysiology and management.
CO2: Demonstrate the application of non-invasive and invasive mechanical ventilation, and implement appropriate ventilator modes, settings, and monitoring in critically ill patients.
CO3: Examine the process of weaning from mechanical ventilation, differentiate between successful and failed extubation, and distinguish factors contributing to ventilator-associated pneumonia

CO4: Appraise metabolic and endocrine emergencies, and prioritize appropriate ICU management strategies for critically ill patients.
CO5: Design integrated management plans for different renal diseases and renal replacement therapies, and formulate safe protocols for blood transfusion by generating preventive measures against hazards and complications.

PROGRAM OUTCOMES (PO)

CRITICAL CARE TECHNOLOGISTS ARE ABLE TO

PO1 Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.
PO2 Communication Skills: Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.
PO3 Problem Solving & Reasoning: Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.
PO4 Cooperation/Team work: Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.
PO5 Self-directed learning: Able to work independently in various healthcare settings and manage situations requiring quick and responsible action
PO6 Moral and ethical awareness/reasoning: Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.
PO7 Lifelong learning: Able to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
CO1	1	0	2	1	2	1	2
CO2	3	1	3	1	2	1	2
CO3	2	1	3	1	2	1	2
CO4	3	1	3	1	2	2	2
CO5	3	1	3	2	3	2	2
Total	12	4	14	6	11	7	10

PAPER: CLINICAL MEDICINE-II

PROGRAM OUTCOMES (PO)

CRITICAL CARE TECHNOLOGISTS ARE ABLE TO

PO1 Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.

PO2 Communication Skills: Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.

PO3 Problem Solving & Reasoning: Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.

PO4 Cooperation/Team work: Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.

PO5 Self-directed learning: Able to work independently in various healthcare settings and manage situations requiring quick and responsible action

PO6 Moral and ethical awareness/reasoning: Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.

PO7 Lifelong learning: Able to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.

PO8: Clinical Competence and Technical Skills:

Able to apply practical and technical skills in operating, maintaining, and troubleshooting critical care equipment, perform patient monitoring procedures accurately, and ensure safe and effective delivery of critical care services in emergency and ICU settings.

PROGRAM EDUCATIONAL OUTCOMES (PEOs) CCT

PEO 1: Professional Competence and Ethical Practice

Students will demonstrate strong foundational and applied knowledge in critical care technology, enabling them to provide high-quality patient monitoring and life-support services while adhering to ethical, moral, and professional standards within healthcare institutions.

(Derived from PO1, PO3, PO6, and PO8)

PEO 2: Lifelong Learning and Leadership in Healthcare

Students will continuously update their knowledge and technical skills to adapt to emerging technologies and healthcare advancements, effectively communicating and collaborating with multidisciplinary teams to assume leadership roles in critical care environments.

(Derived from PO2, PO4, PO5, and PO7)

PROGRAM SPECIFIC OUTCOMES (PSOs) CCT

PSO 1: Clinical Application and Technical Proficiency

Students will be able to competently operate, calibrate, and manage critical care instruments such as ventilators, defibrillators, and monitoring systems, ensuring accurate data collection and effective patient care in ICUs and emergency units.(Linked to PO1, PO3, and PO8)

PSO 2: Patient-Centered Critical Care and Professional Collaboration

Students will be able to assess patient conditions, support clinicians in emergency decision-making, and effectively communicate and coordinate with healthcare teams to deliver safe, ethical, and efficient critical care services. (Linked to PO2, PO4, PO6, and PO7)

CO:

CO 1: Students will be able to explain the etiology, clinical features, and management of common respiratory diseases such as pneumonia, tuberculosis, bronchiectasis, and COPD.

CO2: Students will be able to demonstrate gastrointestinal and hepatobiliary disorders including peptic ulcer, jaundice, cirrhosis, and hepatitis, and interpret related diagnostic findings.

CO3: Students will be able to contrast in kidney diseases such as glomerulonephritis, acute and chronic renal failure, and urinary tract infections, and select appropriate treatment strategies.

CO4: Students will be able to detect hematological diseases including different types of anemia, leukemia, hemophilia, and lymphoma, with a focus on diagnosis and clinical approach.CO5: Students will be able to generate the clinical presentation and management of cardiovascular, infectious, and systemic diseases including rheumatic fever, valvular disorders, malaria, and AIDS

CO–PO–PSO Mapping:

Course Outcomes (COs)	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PSO 1**	**PSO 2**
CO1	3	2	3	1	1	2	2	3	3	2
CO2	3	2	3	1	1	2	2	3	3	2
CO3	3	2	3	1	1	2	2	3	3	2
CO4	3	2	3	1	1	2	2	3	3	2
CO5	3	2	3	2	2	3	2	3	3	3
TOTAL	**15**	**10**	**15**	**6**	**6**	**11**	**10**	**15**	**15**	**11**

PAPER: Adv. CLINICAL NUTRITION

Course Outcomes (CO):

CO1: Recall and list the sources, functions, deficiency symptoms, and toxicities of major vitamins and minerals essential to human health and the techniques used in nutritional assessment and describe the structure and goals of national nutrition programs in India.
CO2: Demonstrate the principles of therapeutic nutrition in the planning of diet charts for common liver, cardiovascular, renal, and gastrointestinal disorders.
CO3: Differentiate between dietary requirements for various pathological states and analyze the impact of diet modifications in chronic diseases.
CO4: Monitor the Micronutrients deficiencies by observing Clinical signs and the effectiveness of community nutrition programs and evaluate nutritional interventions based on clinical and biochemical indicators
CO5: Designing diagnosis plan for confirmation of deficiencies and biochemical markers for the nutritional deficiencies based on clinical manifestations

Program outcomes (PO):

Critical care technologists are able to –
PO1 Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.

PO2 Communication Skills: Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.
PO3 Problem Solving & Reasoning: Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.
PO4 Cooperation/Team work: Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.
PO5 Self-directed learning: Able to work independently in various healthcare settings and manage situations requiring quick and responsible action
PO6 Moral and ethical awareness/reasoning: Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.
PO7 Lifelong learning: Able to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.
PO8: Clinical Competence and Technical Skills: Able to apply practical and technical skills in operating, maintaining and troubleshooting critical care equipment, perform patient monitoring procedures accurately, and ensure safe and effective delivery of critical care services in emergency and ICU settings.

Program Specific Outcome (PSO):
PSO 1: Clinical Application and Technical Proficiency

Students will be able to competently operate, calibrate, and manage critical care instruments such as ventilators, defibrillators, and monitoring systems, ensuring accurate data collection and effective patient care in ICUs and emergency units.

PSO 2: Patient- Cantered Critical Care and Professional Collaboration

Graduates will be able to assess patient conditions, support clinicians in emergency decision-making, and effectively communicate and coordinate with healthcare teams to deliver safe, ethical, and efficient critical care services.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	2	1	1	2	1	1	0	1
CO2	3	3	3	2	2	2	2	1	1	2
CO3	3	3	3	3	3	3	3	1	1	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	3	2	2	2	2	2	2	2	3
TOTAL	**15**	**14**	**13**	**11**	**11**	**12**	**11**	**7**	**6**	**10**

SEMESTER VI

COURSE NAME (BCCT)

ADVANCED CRITICAL CARE MANAGEMENT II
COURSE OUTCOME:
CO1: Students will be able to describe the causes, types, and management of various Cardiovascular diseases.
CO2: Students will be able to demonstrate the appropriate care and postoperative Management techniques for patients after bypass surgery and with definite procedures.
CO3: Students will be able to differentiate between MODS, SIRS, and Immunocompromised conditions in terms of clinical presentation and management Protocols.

CO4: Students will be able to prioritize critical care interventions in obstetric emergencies.
CO5: Students will be able to formulate an emergency response and management plan for Toxicological cases such as snake bites and organo-phosphorus poisoning etc.

PROGRAM OUTCOMES (PO)

CRITICAL CARE TECHNOLOGISTS ARE ABLE TO

PO1 Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.
PO2 Communication Skills: Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.
PO3 Problem Solving & Reasoning: Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.
PO4 Cooperation/Team work: Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.
PO5 Self-directed learning: Able to work independently in various healthcare settings and manage situations requiring quick and responsible action
PO6 Moral and ethical awareness/reasoning: Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.
PO7 Lifelong learning: Able to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.
PO8 Clinical competence & technical skills – Operate, maintain, and troubleshoot critical care instruments and ensure safe and effective delivery of ICU services.

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1 Clinical application and technical proficiency — Operate, calibrate, and manage critical care instruments for accurate data collection and patient monitoring in ICUs.
PSO2 Patient-centred critical care and professional collaboration — Assess patient conditions, assist clinicians, and coordinate with healthcare teams for safe and ethical care.

PROGRAM EDUCATIONAL OUTCOMES (PEOs):

PEO1 Professional competence and ethical practice — Apply foundational and applied knowledge in critical care while maintaining ethical and professional standards.
PEO2 Lifelong learning and leadership in healthcare — Continuously update knowledge, communicate effectively, and assume leadership roles in multidisciplinary critical care teams.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	2	1	1	2	1	3	3	2
CO2	3	2	3	2	2	2	1	3	3	3
CO3	3	2	3	2	1	2	1	3	3	2
CO4	3	2	2	3	2	2	2	3	2	3
CO5	3	2	3	2	2	3	2	3	3	3
Total	15	10	13	10	8	11	7	15	14	13

PAPER CSSD

Course Outcomes:

CO1: Students will be able to explain about basic concepts of CSSD and its management.
CO2: Students will be able to execute various sterilization techniques and procedures.
CO3: Students will be able to distinguish between different disinfection and sterilization methods.
CO4: Students will be able to monitor the effectiveness of disinfection and sterilization processes.
CO5: Students will be able to design the sterilization protocol for an instrument, device and healthcare facility.

Program Outcomes (POs)

At the end of the program, students should be able to:
PO1. Disciplinary Knowledge:
Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.PO2. Communication Skills:
Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.

PO3. Problem Solving and Analytical Reasoning:
Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.
PO4. Teamwork and Collaboration:
Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.
PO5. Self-Directed Learning:
Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.
PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.
PO7. Lifelong Learning:
Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8. Technological Competence and Innovation:
Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)PSO1: Surgical Equipment Management
Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.
PSO2: Perioperative Patient Care and Safety
Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

Program Educational Objectives (PEO)

PEO1: Professional Competence and Employability
Graduates will be competent operation theatre technologists capable of performing effectively in hospitals, surgical centers, and research settings, contributing to quality surgical care and patient management.
PEO2: Leadership, Research, and Innovation
Graduates will demonstrate leadership qualities, engage in evidence-based practice, and contribute to innovations in surgical technology, patient safety, and healthcare management through research and professional growth.

CO, PO and PSO mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO 1	PSO 2
CO1	3	2	1	0	0	2	0	2	3	3
CO2	3	2	3	0	2	0	3	2	3	2
CO3	3	0	3	0	2	0	3	1	3	2
CO4	3	2	3	2	2	2	3	3	2	3
CO5	3	0	3	0	0	0	2	1	3	2
TOTAL	15	6	13	2	6	4	11	9	14	12

PAPER: LAB SCIENCE AND IMAGING

PROGRAM OUTCOMES (POS)
CRITICAL CARE TECHNOLOGISTS ARE ABLE TO
PO1 Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.
PO2 Communication Skills: Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.
PO3 Problem Solving & Reasoning: Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.
PO4 Cooperation/Team work: Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.
PO5 Self-directed learning: Able to work independently in various healthcare settings and manage situations requiring quick and responsible action
PO6 Moral and ethical awareness/reasoning: Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.
PO7 Lifelong learning: Able to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.
PO8: Clinical Competence and Technical Skills:
Able to apply practical and technical skills in operating, maintaining, and troubleshooting critical care equipment, perform patient monitoring procedures accurately, and ensure safe and effective delivery of critical care services in emergency and ICU settings.

PROGRAM SPECIFIC OUTCOMES (PSOs)
PSO 1: Clinical Application and Technical Proficiency

Students will be able to competently operate, calibrate, and manage critical care instruments such as ventilators, defibrillators, and monitoring systems, ensuring accurate data collection and effective patient care in ICUs and emergency units.

PSO 2: Patient-Centered Critical Care and Professional Collaboration

Graduates will be able to assess patient conditions, support clinicians in emergency decision-making, and effectively communicate and coordinate with healthcare teams to deliver safe, ethical, and efficient critical care services.

COURSE OUTCOME (CO)

CO1 : Students will be able to recall and explain the fundamental principles of hematology, biochemistry, serology, body fluid analysis, biopsy, and imaging modalities.

CO2 : Students will be able to execute different diagnostic procedures including laboratory tests, tissue examinations, and imaging investigations using standard protocols.

CO3 : Students will be able to interpret laboratory and imaging findings to differentiate normal physiology from pathological conditions across various systems.

CO4 : Students will be able to check the accuracy, reliability, and clinical significance of integrated laboratory and imaging results in patient care.

CO5 : Students will be able to design comprehensive diagnostic approaches by integrating laboratory sciences and imaging techniques for holistic disease evaluation.

CO PO and PSO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	1	2	1	2	1	2	2	3	1
CO2	3	1	2	1	2	2	1	3	3	2
CO3	3	1	3	1	2	2	2	3	3	3
CO4	1	3	2	3	2	3	2	2	2	3
CO5	3	2	3	2	3	2	3	3	3	3
TOTAL	**13**	**8**	**13**	**8**	**11**	**10**	**10**	**13**	**14**	**12**

COURSE NAME: BOTT

SEMESTER-I

PAPER: Basic and Applied Human Anatomy

Program Outcome

PO1. Disciplinary Knowledge:

Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.

PO2. Communication Skills:

Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.

PO3. Problem Solving and Analytical Reasoning:

Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.

PO4. Teamwork and Collaboration:

Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.
PO5. Self-Directed Learning:
Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.
PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.
PO7. Lifelong Learning:
Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8.Technological Competence and Innovation:
Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)

PSO1: Surgical Equipment Management
Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.
PSO2: Perioperative Patient Care and Safety
Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

Course outcome

CO1.Students will be able to outline position, specified function of skeletal system and respiratory system.
CO2 Students will be able to Demonstrate the parts and functions of Cardiovascular system of human body .
CO3.Students will be able to think critically to differentiate the anatomical position and function of Excretory system of human body.
CO4.Students will be able to Monitoring the functions of gastro-intestinal system with position.
CO5.Students will be able to Design the pathways and correlation of Nervous system with other systems including cardiovascular system, excretory system.

CO PO and PSO mapping

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**
CO1	3	2	2	1	2	2	3	2	3	3
CO2	3	2	3	2	2	2	2	2	3	3
CO3	3	2	2	2	2	2	3	1	2	3
CO4	3	2	3	2	2	2	3	3	3	3
CO5	3	2	3	3	3	2	3	3	3	3
TOTAL	15	10	13	10	11	10	14	11	14	15

PAPER: BASIC INSTRUMENT & EQUIPMENT

Course Outcomes:

CO1: Students will be able to identify the parts and functions of basic clinical equipment.
CO2: Students will be able to demonstrate the use of basic diagnostic tools.
CO3: Students will be able to compare various patient care accessories used in clinical practice.
CO4: Students will be able to differentiate between types of surgical instruments.
CO5: Students will be able to evaluate the handling strategies of surgical and emergency instruments in clinical settings.

Program Outcomes (POs)

At the end of the program, students should be able to:PO1. Disciplinary Knowledge:
Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.

PO2. Communication Skills:
Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.PO3. Problem Solving and Analytical Reasoning:
Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.
PO4. Teamwork and Collaboration:
Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.
PO5. Self-Directed Learning:
Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.PO7. Lifelong Learning:
Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8. Technological Competence and Innovation:
Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)

PSO1: Surgical Equipment Management

Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.

PSO2: Perioperative Patient Care and Safety

Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

Program Educational Objectives (PEO)

PEO1: Professional Competence and Employability

Graduates will be competent operation theatre technologists capable of performing effectively in hospitals, surgical centers, and research settings, contributing to quality surgical care and patient management.

PEO2: Leadership, Research, and Innovation Graduates will demonstrate leadership qualities, engage in evidence-based practice, and contribute to innovations in surgical technology, patient safety, and healthcare management through research and professional growth.

CO, PO and PSO mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	1	0	0	2	0	2	1	3
CO2	3	2	3	0	2	0	3	2	3	3
CO3	3	0	3	0	2	0	3	1	3	3
CO4	3	2	3	2	2	2	3	3	3	3
CO5	3	0	3	0	0	0	2	2	3	3
TOTAL	15	6	13	2	6	4	11	10	13	15

PAPER: BASIC & APPLIED HUMAN PHYSIOLOGY

Course Outcomes:

CO1: Students will be able to classify the various blood components and their transfusion according to the clinical physiology.

CO2: Students will be able to demonstrate the physiology of cardio-vascular system, pulmonary system, and renal system, and its abnormalities.

CO3: Students will be able to detect hormonal imbalance.

CO4: Students will be able to monitor cardio-pulmonary parameters and management.

CO5: Students will be able to check the reflexes of neuro-muscular system.

PROGRAM OUTCOMES (PO)

B.Sc. in Operation Theatre Technology
PO1. Disciplinary Knowledge:
Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.
PO2. Communication Skills:
Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.

PO3. Problem Solving and Analytical Reasoning:
Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.

PO4. Teamwork and Collaboration:
Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes
PO5. Self-Directed Learning: Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.
PO6. Ethical and Professional Conduct: Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.

PO7. Lifelong Learning: Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8.Technological Competence and Innovation: Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)

PSO1: Surgical Equipment Management

Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures

PSO2: Perioperative Patient Care and Safety

Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

Program Educational Objectives (PEO)

PEO1: Professional Competence and Employability

Graduates will be competent operation theatre technologists capable of performing effectively in hospitals, surgical centers, and research settings, contributing to quality surgical care and patient management.

PEO2: Leadership, Research, and Innovation

Graduates will demonstrate leadership qualities, engage in evidence-based practice, and contribute to innovations in surgical technology, patient safety, and healthcare management through research and professional growth.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	1	0	0	2	0
CO2	3	2	3	0	2	0	3
CO3	3	0	3	0	2	0	3
CO4	3	2	3	2	2	2	3
CO5	3	0	3	0	0	0	2
TOTAL	15	6	13	2	6	4	11

CO / PO–PSO–PEO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PEO 1	PEO 2
CO1	3	2	1	0	0	2	0	2	3	2	3	2
CO2	3	2	3	0	2	0	3	3	3	3	3	3
CO3	3	0	3	0	2	0	3	2	3	2	3	3
CO4	3	2	3	2	2	2	3	3	3	3	3	3
CO5	3	0	3	0	0	0	2	2	2	2	3	2
TOTAL	15	6	13	2	6	4	11	12	14	12	15	13

SEMESTER-II

PAPER: BASIC BIOCHEMISTRY AND MICROBIOLOGY

CO1: Discuss the classification, function and metabolism of carbohydrate.
CO2: Discuss the classification, function, and metabolism of protein.
CO3: Describe the types, function and metabolism of lipids, including their physiological roles.
CO4: Explain the historical background and basic concepts of microbiology including classification and morphology of bacteria.
CO5: Explain the structural and functional features of prokaryotic cells including gram positive and gram-negative bacteria.
PO-

PO1. Disciplinary Knowledge:

Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.PO2. Communication Skills:
Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.

PO3. Problem Solving and Analytical Reasoning:
Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.
PO4. Teamwork and Collaboration:Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.
PO5. Self-Directed Learning:Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.
PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.
PO7. Lifelong LearningCommit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8.Technological Competence and Innovation: Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)

PSO1: Surgical Equipment Management
Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.
PSO2: Perioperative Patient Care and Safety
Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

Program Educational Objectives (PEO)

PEO1: Professional Competence and Employability

Graduates will be competent operation theatre technologists capable of performing effectively in hospitals, surgical centers, and research settings, contributing to quality surgical care and patient management.

PEO2: Leadership, Research, and Innovation

Graduates will demonstrate leadership qualities, engage in evidence-based practice, and contribute to innovations in surgical technology, patient safety, and healthcare management through research and professional growth.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	1	3	0	1	1	2	2	3	2
CO2	3	1	3	2	1	1	2	2	3	2
CO3	3	1	3	0	1	1	2	2	3	2
CO4	3	2	2	1	1	2	2	2	2	3
CO5	3	2	3	1	2	2	3	3	3	3
TOTAL	15	7	14	4	6	7	11	11	14	12

PAPER: BASIC NURSING:

CO1-Students will be able to interpret various aseptic techniques before doing any procedureCO2-Students will be able to practice post-surgical patient care.
CO3-Students will be able to differentiate the cannulas, catheters which are needed for required patients.
CO4-Students will be able to monitor the critically ill patients who are on ventilators.
CO5- Students will be able to plan suitable patient management in emergency situations.

PROGRAM OUTCOMES (PO)

PO1. Disciplinary Knowledge:

Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.
PO2. Communication Skills:
Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.
PO3. Problem Solving and Analytical Reasoning:
Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.
PO4. Teamwork and Collaboration:
Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.PO5. Self-Directed Learning:
Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.
PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.
PO7. Lifelong Learning:Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8.Technological Competence and Innovation:
Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)

PSO1: Surgical Equipment Management
Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.
PSO2: Perioperative Patient Care and Safety
Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.Program Educational Objectives (PEO)

PEO1: Professional Competence and Employability
Graduates will be competent operation theatre technologists capable of performing effectively in hospitals, surgical centers, and research settings, contributing to quality surgical care and patient management.

PEO2: Leadership, Research, and Innovation Graduates will demonstrate leadership qualities, engage in evidence-based practice, and contribute to innovations in surgical technology, patient safety, and healthcare management through research and professional growth.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	3	4	2	3	2	3	3	3
CO2	3	2	3	2	2	3	2	3	3	3
CO3	3	2	3	2	2	3	2	3	3	2
CO4	3	2	3	3	2	3	2	3	3	3
CO5	3	3	3	3	3	4	2	3	3	3
TOTAL	15	11	15	14	11	16	10	15	15	14

PAPER: BASIC SURGERY

COURSE OUTCOME

CO1 Explain the principles and the use of hemostatic agents.
CO2 Demonstrate correct preoperative skin preparation
CO3 Differentiate between various abdominal incisions and surgical positions based on indication and approach.
CO4 Critique the selection of suture materials for different surgical cases.
CO5 Design a comprehensive pre-operative preparation protocol for a patient undergoing surgery.

PROGRAM OUTCOMES (PO)

PO1. Disciplinary Knowledge:
Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.
PO2. Communication Skills:
Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.**PO3. Problem Solving and Analytical Reasoning:**Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.
PO4. Teamwork and Collaboration:
Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.
PO5. Self-Directed Learning:
Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.
PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.
PO7. Lifelong Learning:

Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8.Technological Competence and Innovation:
Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

CO-PO mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	2	1	2	3	2	2	3	2
CO2	3	2	2	3	2	3	2	2	2	3
CO3	3	1	3	2	2	2	2	2	3	2
CO4	3	2	3	1	2	2	3	2	3	2
CO5	3	3	3	3	3	3	3	3	3	3
TOTAL	**15**	**10**	**13**	**10**	**11**	**13**	**12**	**11**	**14**	**12**

SEMESTER-III
COURSE NAME- BOTT

PAPER: Basic Anesthesia

Course outcomes

CO1MStudents will be able to explain the different types of anaesthesia and their indications in clinical settings
CO2 Students will be able to demonstrate the assembly and working of anaesthesia machines and equipment.
CO3 Students will be able to differentiate between GA and local anaesthesia.
CO4 Students will be able to judge the appropriate fasting guidelines and prophylaxis methods before elective surgeries in various patient scenarios.
CO5 Students will be able to design a preoperative anaesthesia plan, incorporating patient-specific needs and procedural requirements.

Program outcomes

PO1. Disciplinary Knowledge:
Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.
PO2. Communication Skills:
Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.

PO3. Problem Solving and Analytical Reasoning:
Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.
PO4. Teamwork and Collaboration:
Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.
PO5. Self-Directed Learning:
Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.
PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.
PO7. Lifelong Learning:
Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8.Technological Competence and Innovation:
Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)

PSO1: Surgical Equipment Management
Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.

PSO2: Perioperative Patient Care and Safety
Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	1	2	0	2	1	2	2	2	2
CO2	3	1	2	2	2	1	2	3	3	2
CO3	3	1	2	0	2	1	2	2	2	2
CO4	3	1	3	2	2	3	2	2	2	3
CO5	3	2	3	3	2	3	3	3	3	3
Sum	15	6	12	7	10	9	11	12	12	12

PAPER: Clinical Pathology
Program Educational Objectives (PEOs)

PEO 1: Graduates will develop strong foundational knowledge and technical competence in clinical pathology to perform and interpret laboratory investigations.
PEO 2: Graduates will demonstrate professionalism, ethics, communication, and teamwork in healthcare and laboratory practice.
PEO 3: Graduates will pursue lifelong learning, research, and innovation to improve healthcare outcomes.
PEO 4: Graduates will contribute responsibly to society by ensuring safety, quality, and ethical standards in healthcare services.

Program Specific Outcomes (PSOs)

PSO 1: Apply advanced knowledge and laboratory skills in clinical pathology for accurate diagnosis and ethical practice.
PSO 2: Design, implement, and evaluate laboratory procedures for body fluid, hematology, and inflammatory investigations to support patient care and public health.

Program Outcomes (POs)

PO1: Demonstrate sufficient concepts in performing routine clinical laboratory tests.
PO2: Skilled in specimen collection, handling, processing, and analysis.
PO3: Identify, analyze, and interpret laboratory data for clinical decision making.
PO4: Exhibit professional conduct, ethical values, and accountability.
PO5: Communicate effectively and collaborate within a multidisciplinary healthcare team.
PO6: Use modern instruments, information systems, and quality assurance practices.
PO7: Engage in continuous learning and adopt research-based approaches.
PO8: Apply professional responsibility and contribute to community health and national development. (added for PSO mapping consistency)

Course Outcomes (COs)

CO1: Explain principles and procedures of collection and processing of CSF and its investigations.
CO2: Demonstrate examination techniques for urine analysis.
CO3: Differentiate between transudate and exudate in serous fluids.
CO4: Appraise diagnostic significance of bone marrow aspiration and biopsy.
CO5: Design a laboratory workflow for inflammation analysis including granuloma identification.

Integrated CO–PO–PSO Mapping Table

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	3	2	1	3	2	2	2	3	2
CO2	3	3	2	2	3	3	2	2	3	3
CO3	2	2	3	2	1	2	1	2	2	3
CO4	2	2	3	2	1	2	3	2	3	3
CO5	2	2	3	2	2	3	3	3	3	3

PEO–PO Mapping Table

PEOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
PEO1	3	3	3	2	2	3	2	2
PEO2	2	3	2	3	3	2	2	3
PEO3	2	2	3	2	2	3	3	2
PEO4	1	2	2	2	2	2	3	3

PSO–PO Mapping Table

PSOs	PO1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8
PSO	1	3	3	3	3	2	3	2
PSO	2	3	3	3	2	3	3	3

(3 – Strong, 2 – Moderate, 1 – Low correlation)

PAPER: BASIC LIFE SUPPORT

Course Outcomes:

CO1: Students will be able to explain the fundamental principles of basic and advanced life support.
CO2: Students will be able to demonstrate appropriate life-saving techniques and emergency procedures in clinical situations.
CO3: Students will be able to distinguish the use of various life support tools and technologies in the management of critically ill patients.
CO4: Students will be able to monitor the administration and effects of emergency interventions and medications in life-threatening conditions.
CO5: Students will be able to formulate the post-resuscitation care strategies to support recovery and prevent complications.

BOTT – Program Outcomes (POs)
At the end of the program, students should be able to:

PO1. Disciplinary Knowledge:
Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.
PO2. Communication Skills:
Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.
PO3. Problem Solving and Analytical Reasoning:
Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.
PO4. Teamwork and Collaboration:
Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.
PO5. Self-Directed Learning:
Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.
PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.
PO7. Lifelong Learning:

Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8. Technological Competence and Innovation:

Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)

PSO1: Surgical Equipment Management

Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.

PSO2: Perioperative Patient Care and Safety

Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

Program Educational Objectives (PEO)

PEO1: Professional Competence and Employability

Graduates will be competent operation theatre technologists capable of performing effectively in hospitals, surgical centers, and research settings, contributing to quality surgical care and patient management.

PEO2: Leadership, Research, and Innovation

Graduates will demonstrate leadership qualities, engage in evidence-based practice, and contribute to innovations in surgical technology, patient safety, and healthcare management through research and professional growth.

CO, PO and PSO mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO 1	PSO 2
CO1	3	2	1	0	0	2	0	1	1	3
CO2	3	2	3	0	2	0	3	2	3	3
CO3	3	0	3	0	2	0	3	2	3	3
CO4	3	2	3	2	2	2	3	3	3	3
CO5	3	0	3	0	0	0	2	2	3	3

TOTAL	15	6	13	2	6	4	11	10	13	15

SEMESTER- V
COURSE BOTT

PAPER-General Surgical Instrument and Procedures
PROGRAM OUTCOMES (PO)

PO1. Disciplinary Knowledge:Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.

PO2. Communication Skills:Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.

PO3. Problem Solving and Analytical Reasoning:Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.

PO4. Teamwork and Collaboration:Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.

PO5. Self-Directed Learning: Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.

PO6. Ethical and Professional Conduct: Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.

PO7. Lifelong Learning: Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.

PO8.Technological Competence and Innovation:Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)

PSO1: Surgical Equipment Management

Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.

PSO2: Perioperative Patient Care and Safety

Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

CO1.Classify the various types of Surgical incisions .

CO2.Excuate the steps involved in a various Surgical Procedure under Supervision.

CO3.Differentiate open and Laparoscopic Surgical Techniques.

CO4.Appraise the role of technology in improving Surgical outcomes.

CO5.Invent a new technique or approach for Surgical Procedures.

CO PO and PSO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	2	1	1	2	1	2	3	2
CO2	3	2	3	3	2	2	2	3	3	2
CO3	3	2	3	2	2	2	2	3	3	3
CO4	3	2	3	2	3	2	2	3	3	3
CO5	3	2	3	3	3	3	3	3	3	3
TOTAL	15	10	14	11	11	11	10	14	15	13

PAPER: OT Management
COURSE OUTCOMES (CO)

CO1 Students will be able to identify various instruments and patient positions used in the operation theatre.
CO2 Students will be able to Classify various techniques of invasive and non-invasive mechanical ventilation.
CO3 Students will be able to distinguish the procedures of weaning from mechanical ventilation.
CO4 Students will be able to judge the effectiveness of ABG and ECG analysis techniques in patient monitoring.
CO5 Students will be able to design a structured operation theatre workflow considering equipment layout, patient safety, and emergency protocols.

PROGRAM OUTCOMES (PO)

PO1. Disciplinary Knowledge:
Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.

PO2. Communication Skills:
Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.

PO3. Problem Solving and Analytical Reasoning:
Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.

PO4. Teamwork and Collaboration:
Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.

PO5. Self-Directed Learning:
Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.

PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.

PO7. Lifelong Learning:
Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8.Technological Competence and Innovation:
Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)
PSO1: Surgical Equipment Management
Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.
PSO2: Perioperative Patient Care and Safety
Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	1	2	2	2	1	2	3	3	2
CO2	3	1	3	0	2	1	2	3	3	2
CO3	3	1	3	1	2	1	2	2	3	2
CO4	3	1	3	2	2	2	2	2	3	3
CO5	3	2	3	3	2	3	3	3	3	3

Sum	15	6	14	8	10	8	11	13	15	12

PAPER: Adv. CLINICAL NUTRITION

Course Outcomes (CO):

CO1: Recall and list the sources, functions, deficiency symptoms, and toxicities of major vitamins and minerals essential to human health and the techniques used in nutritional assessment and describe the structure and goals of national nutrition programs in India.

CO2: Demonstrate the principles of therapeutic nutrition in the planning of diet charts for common liver, cardiovascular, renal, and gastrointestinal disorders.
CO3: Differentiate between dietary requirements for various pathological states and analyze the impact of diet modifications in chronic diseases.CO4: Monitor the Micronutrients deficiencies by observing Clinical signs and the effectiveness of community nutrition programs and evaluate nutritional interventions based on clinical and biochemical indicators
CO5: Designing diagnosis plan for confirmation of deficiencies and biochemical markers for the nutritional deficiencies based on clinical manifestations

Program outcomes (PO)
PO1. Disciplinary Knowledge:
Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.
PO2. Communication Skills:
Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism
PO3. Problem Solving and Analytical Reasoning:
Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.
PO4. Teamwork and Collaboration:
Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.
PO5. Self-Directed Learning:
Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.
PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.
PO7. Lifelong Learning:
Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8.Technological Competence and Innovation:
Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO):

PSO1: Surgical Equipment Management

Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.

PSO2: Perioperative Patient Care and Safety

Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO 8	PSO 1	PSO 2
CO1	2	1	3	1	1	1	1	0	0	1
CO2	3	3	3	2	2	1	3	0	1	2
CO3	3	3	3	2	2	1	3	1	1	3
CO4	2	2	2	2	0	1	2	1	2	2
CO5	2	2	3	0	2	0	2	1	2	2
TOTAL	**12**	**11**	**14**	**7**	**7**	**4**	**11**	**3**	**6**	**10**

SEMESTER- VI

PAPER: Special Surgical Procedures and Instruments

Course Outcomes (CO)

CO1.Students will be able to outline a basic operation theatre equipment to achieve a specified function.

CO2 Students will be able to demonstrate in setting up and operating essential operation theatre equipment, ensuring safety and efficiency.

CO3.Students will be able to differentiate emphasis on technical skills, patient infection,and critical thinking. CO4.Students will be able to Monitor during Surgery.

CO5.Students will be able to Design a Modular Operation Theatre.

PROGRAM OUTCOMES (PO)

PO1. Disciplinary Knowledge:

Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.PO2. Communication Skills:

Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.

PO3. Problem Solving and Analytical Reasoning:

Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.

PO4. Teamwork and Collaboration:

Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.

PO5. Self-Directed Learning:

Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.
PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.
PO7. Lifelong Learning:
Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8.Technological Competence and Innovation:
Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)

PSO1: Surgical Equipment Management
Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.
PSO2: Perioperative Patient Care and Safety
Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO 1	PSO 2	
CO1	3	2	2	1	2	2	1	3	3	2	
CO2	3	2	3	3	2	3	2	3	3	3	
CO3	2	2	3	2	2	3	2	2	3	2	
CO4	3	2	3	3	2	3	2	3	3	3	
CO5	3	2	3	2	3	3	2	3	3	3	
TOTAL	14	10	14	11	11	14	9	14	15	13	

PAPER CSSD

Course Outcomes:

CO1 Students will be able to explain about basic concepts of CSSD and its management.

CO2: Students will be able to execute various sterilization techniques and procedures.
CO3: Students will be able to distinguish between different disinfection and sterilization methods.

CO4: Students will be able to monitor the effectiveness of disinfection and sterilization processes.
CO5: Students will be able to design the sterilization protocol for an instrument, device and healthcare facility.

Program Outcomes (POs)

At the end of the program, students should be able to:PO1. Disciplinary Knowledge:
Demonstrate comprehensive theoretical and practical understanding of the core and allied areas with the ability to apply this knowledge effectively in surgical and clinical environments.

PO2. Communication Skills: Exhibit proficiency in verbal and written communication for effective interaction with healthcare professionals, patients, and multidisciplinary teams, maintaining clarity, accuracy, and professionalism.
PO3. Problem Solving and Analytical Reasoning:
Apply critical and analytical thinking to identify, interpret, and resolve issues through evidence-based and situation-specific approaches.

PO4. Teamwork and Collaboration:
Work efficiently and respectfully within multidisciplinary healthcare teams, fostering cooperation and coordination to achieve safe and effective surgical outcomes.
PO5. Self-Directed Learning:
Demonstrate initiative, responsibility, and independence in professional practice, utilizing appropriate resources and adapting to advancements in surgical technologies and techniques.
PO6. Ethical and Professional Conduct:
Uphold ethical principles, professional standards, and legal frameworks while maintaining integrity, confidentiality, and accountability in all aspects of healthcare delivery.PO7. Lifelong Learning:
Commit to continuous learning and professional development to remain competent, adaptable, and responsive to ongoing advancements in medical science and healthcare practices.
PO8. Technological Competence and Innovation:
Demonstrate proficiency in utilizing modern surgical instruments, digital technologies, and information systems to enhance the precision, safety, and efficiency of operation theatre practices, while embracing innovation and adaptability to emerging healthcare technologies.

Program Specific Outcomes (PSO)

PSO1: Surgical Equipment Management
Students will be able to identify, operate, maintain, and troubleshoot various operation theatre instruments and advanced surgical equipment, ensuring their proper sterilization, calibration, and functionality for safe surgical procedures.
PSO2: Perioperative Patient Care and Safety
Students will be able to assist in preoperative, intraoperative, and postoperative patient care by applying aseptic techniques, infection control measures, and emergency response protocols to enhance patient safety and surgical efficiency.

Program Educational Objectives (PEO)

PEO1: Professional Competence and Employability
Graduates will be competent operation theatre technologists capable of performing effectively in hospitals, surgical centers, and research settings, contributing to quality surgical care and patient management.
PEO2: Leadership, Research, and Innovation

Graduates will demonstrate leadership qualities, engage in evidence-based practice, and contribute to innovations in surgical technology, patient safety, and healthcare management through research and professional growth.

CO, PO and PSO mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO 1	PSO 2
CO1	3	2	1	0	0	2	0	2	3	3
CO2	3	2	3	0	2	0	3	2	3	2
CO3	3	0	3	0	2	0	3	1	3	2
CO4	3	2	3	2	2	2	3	3	2	3
CO5	3	0	3	0	0	0	2	1	3	2
TOTAL	15	6	13	2	6	4	11	9	14	12

PAPER Lab science and imaging study

PROGRAM OUTCOMES (POS)

PO1 Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.

PO2 Communication Skills: Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.

PO3 Problem Solving & Reasoning: Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.

PO4 Cooperation/Team work: Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.

PO5 Self-directed learning: Able to work independently in various healthcare settings and manage situations requiring quick and responsible action

PO6 Moral and ethical awareness/reasoning: Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.

PO7 Lifelong learning: Able to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.

PO8: Clinical Competence and Technical Skills:

Able to apply practical and technical skills in operating, maintaining, and troubleshooting critical care equipment, perform patient monitoring procedures accurately, and ensure safe and effective delivery of critical care services in emergency and ICU settings.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: Clinical Application and Technical Proficiency

Students will be able to competently operate, calibrate, and manage critical care instruments such as ventilators, defibrillators, and monitoring systems, ensuring accurate data collection and effective patient care in ICUs and emergency units.

PSO 2: Patient-Centered Critical Care and Professional Collaboration

Graduates will be able to assess patient conditions, support clinicians in emergency decision-making, and effectively communicate and coordinate with healthcare teams to deliver safe, ethical, and efficient critical care services.

CO1 : Students will be able to recall and explain the fundamental principles of hematology, biochemistry, serology, body fluid analysis, biopsy, and imaging modalities.

CO2 : Students will be able to execute different diagnostic procedures including laboratory tests, tissue examinations, and imaging investigations using standard protocols.

CO3 : Students will be able to interpret laboratory and imaging findings to differentiate normal physiology from pathological conditions across various systems.

CO4 : Students will be able to check the accuracy, reliability, and clinical significance of integrated laboratory and imaging results in patient care.

CO5 : Students will be able to design comprehensive diagnostic approaches by integrating laboratory sciences and imaging techniques for holistic disease evaluation.
CO PO and PSO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	1	2	1	2	1	2	2	3	1
CO2	3	1	2	1	2	2	1	3	3	2
CO3	3	1	3	1	2	2	2	3	3	3
CO4	1	3	2	3	2	3	2	2	2	3
CO5	3	2	3	2	3	2	3	3	3	3
TOTAL	13	8	13	8	11	10	10	13	14	12

SEMESTER-I

COURSE NAME (BMRIT)

PAPER: Basic and Applied Human Anatomy
PROGRAM OUTCOMES (PO)

Program Outcomes (POs)-
At the end of the program, students should be able to:**PO1:** Demonstrate a comprehensive understanding of concepts in radiology, imaging technology, and radiation physics, and apply this knowledge in diverse clinical settings.**PO2**: Exhibit critical thinking and problem-solving skills to evaluate radiographic images, identify errors, and ensure diagnostic accuracy.
PO3: Acquire competency in the operation and maintenance of conventional and advanced imaging modalities, ensuring patient safety and optimal image quality.
PO4: Work effectively as a member or leader in multidisciplinary healthcare teams and actively participate in clinical and research activities.
PO5: Apply appropriate quantitative and analytical techniques for radiation dose optimization, quality control, and image assessment.
PO6: Develop an aptitude for research, evidence-based practice, and continuous learning to keep pace with technological advancements in radiological sciences.

PO7: Demonstrate ethical responsibility, empathy, and sensitivity towards patients while adhering to professional standards and radiation protection principles.
PO8: Communicate effectively with patients, healthcare professionals, and the community to promote awareness of diagnostic imaging procedures, radiation safety, and healthcare standards.

Program Specific Outcomes (PSOs)

PSO1: Apply theoretical and practical knowledge of imaging modalities such as X-ray, CT, MRI, Ultrasound, and Nuclear Medicine in clinical diagnosis and patient management.
PSO2: Implement radiation protection measures and quality assurance protocols in diagnostic imaging departments to ensure patient, staff, and environmental safety.
Course outcome
CO1. Students will be able to outline position, specified function of skeletal system and respiratory system.
CO2 Students will be able to Demonstrate the parts and functions of Cardiovascular system of human body .
CO3.Students will be able to think critically to differentiate the anatomical position and function of Excretory system of human body.
CO4.Students will be able to Monitoring the functions of gastro-intestinal system with position.
CO5.Students will be able to Design the pathways and correlation of Nervous system with other systems including cardiovascular system, excretory system.

CO PO and PSO mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	2	1	2	2	2	2	3	3
CO2	3	2	3	2	2	2	2	3	3	2
CO3	3	3	2	2	2	2	2	1	2	3
CO4	3	3	3	2	2	2	2	2	3	3
CO5	3	3	3	3	3	3	2	3	3	3
TOTAL	15	13	13	10	11	11	10	11	14	14

=PAPER: BASIC INSTRUMENT AND EQUIPMENT

Course Outcomes:

CO1: Students will be able to identify the parts and functions of basic clinical equipment.
CO2: Students will be able to demonstrate the use of basic diagnostic tools.
CO3: Students will be able to compare various patient care accessories used in clinical practice.
CO4: Students will be able to differentiate between types of surgical instruments.
CO5: Students will be able to evaluate the handling strategies of surgical and emergency instruments in clinical settings.
Program Outcomes (POs)
At the end of the program, students should be able to:
PO1. Demonstrate a comprehensive understanding of concepts in radiology, imaging technology, and radiation physics, and apply this knowledge in diverse clinical settings.
PO2. Exhibit critical thinking and problem-solving skills to evaluate radiographic images, identify errors, and ensure diagnostic accuracy.

PO3. Acquire competency in the operation and maintenance of conventional and advanced imaging modalities, ensuring patient safety and optimal image quality.
PO4. Work effectively as a member or leader in multidisciplinary healthcare teams and actively participate in clinical and research activities.
PO5. Apply appropriate quantitative and analytical techniques for radiation dose optimization, quality control, and image assessment.
PO6. Develop an aptitude for research, evidence-based practice, and continuous learning to keep pace with technological advancements in radiological sciences.
PO7. Demonstrate ethical responsibility, empathy, and sensitivity towards patients while adhering to professional standards and radiation protection principles.
PO8: Communicate effectively with patients, healthcare professionals, and the community to promote awareness of diagnostic imaging procedures, radiation safety, and healthcare standards.

Program Specific Outcomes (PSO)

PSO 1: Apply theoretical and practical knowledge of imaging modalities such as X-ray, CT, MRI, Ultrasound, and Nuclear Medicine in clinical diagnosis and patient management.
PSO 2: Implement radiation protection measures and quality assurance protocols in diagnostic imaging departments to ensure patient, staff, and environmental safety.

Program Educational Objectives (PEO)
PEO 1: To prepare graduates who can competently perform and manage diagnostic imaging procedures with a high degree of technical proficiency, ethical values, and professional integrity.
PEO 2: To nurture radiology professionals who engage in lifelong learning, research, and innovation, contributing to advancements in medical imaging technology and healthcare delivery.
CO, PO and PSO mapping

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2
CO1	3	2	2	1	2	1	3	2	1	2
CO2	3	2	2	1	2	2	2	2	3	2
CO3	3	2	1	1	1	2	2	2	3	2
CO4	2	3	3	2	3	2	3	3	3	3
CO5.	3	2	2	1	1	1	2	2	3	2
TOTAL	14	11	10	6	9	8	12	11	13	11

PAPER: BASIC & APPLIED HUMAN PHYSIOLOGY

Course Outcomes:

CO1: Students will be able to classify the various blood components and their transfusion according to the clinical physiology.

CO2: Students will be able to demonstrate the physiology of cardio-vascular system, pulmonary system, and renal system, and its abnormalities.
CO3: Students will be able to detect hormonal imbalance.
CO4: Students will be able to monitor cardio-pulmonary parameters and management. CO5: Students will be able to check the reflexes of neuro-muscular system.

Program Outcomes (POs)

At the end of the program, students should be able to:

PO1. Demonstrate a comprehensive understanding of concepts in radiology, imaging technology, and radiation physics, and apply this knowledge in diverse clinical settings.
PO2. Exhibit critical thinking and problem-solving skills to evaluate radiographic images, identify errors, and ensure diagnostic accuracy.

PO3. Acquire competency in the operation and maintenance of conventional and advanced imaging modalities, ensuring patient safety and optimal image quality.

PO4. Work effectively as a member or leader in multidisciplinary healthcare teams and actively participate in clinical and research activities.

PO5. Apply appropriate quantitative and analytical techniques for radiation dose optimization, quality control, and image assessment.
PO6. Develop an aptitude for research, evidence-based practice, and continuous learning to keep pace with technological advancements in radiological sciences.
PO7. Demonstrate ethical responsibility, empathy, and sensitivity towards patients while adhering to professional standards and radiation protection principles.
PO8: Communicate effectively with patients, healthcare professionals, and the community to promote awareness of diagnostic imaging procedures, radiation safety, and healthcare standards.

Program Specific Outcomes (PSOs)

PSO1: Apply theoretical and practical knowledge of imaging modalities such as X-ray, CT, MRI, Ultrasound, and Nuclear Medicine in clinical diagnosis and patient management.

PSO2: Implement radiation protection measures and quality assurance protocols in diagnostic imaging departments to ensure patient, staff, and environmental safety.

Program Educational Objectives (PEOs)

PEO1: To prepare graduates who can competently perform and manage diagnostic imaging procedures with a high degree of technical proficiency, ethical values, and professional integrity.
PEO2: To nurture radiology professionals who engage in lifelong learning, research, and innovation, contributing to advancements in medical imaging technology and healthcare delivery.

SEMESTER-II

PAPER: Basic Physics with an introduction to Plasma

COURSE OUTCOMES:

CO1: Student will be able to discuss about study of a Atomic Structure.
CO2:Student will be able to illustrate about Heat,Temperature,Thermal conductivity,Stefan law,application in Diagnostic Radiology.
CO3:Student will be able to differentiate Radiation Spectrum.
CO4:Student will be able to analyze ,evaluate circuitry.
CO5::Student will be able to understand,apply the concepts of magnetism..

Program Outcomes (POs)

At the end of the program, students should be able to:
PO1. Demonstrate a comprehensive understanding of concepts in radiology, imaging technology, and radiation physics, and apply this knowledge in diverse clinical settings.
PO2. Exhibit critical thinking and problem-solving skills to evaluate radiographic images, identify errors, and ensure diagnostic accuracy.
PO3. Acquire competency in the operation and maintenance of conventional and advanced imaging modalities, ensuring patient safety and optimal image quality.
PO4. Work effectively as a member or leader in multidisciplinary healthcare teams and actively participate in clinical and research activities.
PO5. Apply appropriate quantitative and analytical techniques for radiation dose optimization, quality control, and image assessment.
PO6. Develop an aptitude for research, evidence-based practice, and continuous learning to keep pace with technological advancements in radiological sciences.
PO7. Demonstrate ethical responsibility, empathy, and sensitivity towards patients while adhering to professional standards and radiation protection principles.
PO8: Communicate effectively with patients, healthcare professionals, and the community to promote awareness of diagnostic imaging procedures, radiation safety, and healthcare standards.

Program Specific Outcomes (PSOs)

PSO1: Apply theoretical and practical knowledge of imaging modalities such as X-ray, CT, MRI, Ultrasound, and Nuclear Medicine in clinical diagnosis and patient management.
PSO2: Implement radiation protection measures and quality assurance protocols in diagnostic imaging departments to ensure patient, staff, and environmental safety.
PEO1: To prepare graduates who can competently perform and manage diagnostic imaging procedures with a high degree of technical proficiency, ethical values, and professional integrity.
PEO2: To nurture radiology professionals who engage in lifelong learning, research, and innovation, contributing to advancements in medical imaging technology and healthcare

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	PO8	PSO1	PSO2
CO1	3	2	2	1	2	2	1	1	3	2
CO2	3	3	3	1	3	2	2	1	3	2
CO3	3	3	3	1	3	2	2	1	3	3
CO4	3	3	3	2	3	2	1	1	3	3
CO5	3	2	2	1	2	2	1	1	3	2
Total	15	13	13	6	13	10	7	5	15	12

PAPER- RADIATION PHYSICS

Program Outcomes (POs)-

At the end of the program, students should be able to:

PO1: Demonstrate a comprehensive understanding of concepts in radiology, imaging technology, and radiation physics, and apply this knowledge in diverse clinical settings.

PO2: Exhibit critical thinking and problem-solving skills to evaluate radiographic images, identify errors, and ensure diagnostic accuracy.

PO3: Acquire competency in the operation and maintenance of conventional and advanced imaging modalities, ensuring patient safety and optimal image quality.

PO4: Work effectively as a member or leader in multidisciplinary healthcare teams and actively participate in clinical and research activities.

PO5: Apply appropriate quantitative and analytical techniques for radiation dose optimization, quality control, and image assessment.

PO6: Develop an aptitude for research, evidence-based practice, and continuous learning to keep pace with technological advancements in radiological sciences.

PO7: Demonstrate ethical responsibility, empathy, and sensitivity towards patients while adhering to professional standards and radiation protection principles.

PO8: Communicate effectively with patients, healthcare professionals, and the community to promote awareness of diagnostic imaging procedures, radiation safety, and healthcare standards.

Program Specific Outcomes (PSOs)

PSO1: Apply theoretical and practical knowledge of imaging modalities such as X-ray, CT, MRI, Ultrasound, and Nuclear Medicine in clinical diagnosis and patient management.

PSO2: Implement radiation protection measures and quality assurance protocols in diagnostic imaging departments to ensure patient, staff, and environmental safety.

Course Outcomes (COs)

CO1: Students will be able to describe the basic principles of atomic and nuclear structure, radioactivity, and various types of radiation relevant to medical imaging.

CO2: Students will be able to explain the process of X-ray production and analyse how radiation interacts with matter to influence image formation and quality.

CO3: Students will be able to apply radiation physics concepts to calculate exposure parameters, attenuation, and radiation dose in diagnostic radiology.

CO4: Students will be able to evaluate the biological effects of ionizing radiation and interpret mechanisms of radiation damage at cellular and tissue levels.

CO5: Students will be able to demonstrate appropriate radiation protection measures and follow safety standards and regulatory guidelines in clinical and laboratory environments.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2

CO1	3	2	2	0	2	1	2	0	3	2
CO2	3	3	3	0	3	1	2	0	3	3
CO3	3	3	2	0	3	2	2	0	3	3
CO4	2	2	2	0	3	3	3	2	2	3
CO5	2	2	3	2	3	2	3	3	2	3
TOTAL	**19**	**12**	**12**	**2**	**14**	**9**	**12**	**5**	**13**	**14**

PAPER: BASIC BIOCHEMISTRY AND MICROBIOLOGY

CO1: Discuss the classification, function and metabolism of carbohydrate.
CO2: Discuss the classification, function, and metabolism of protein.
CO3: Describe the types, function and metabolism of lipids, including their physiological roles.
CO4: Explain the historical background and basic concepts of microbiology including classification and morphology of bacteria.
CO5: Explain the structural and functional features of prokaryotic cells including gram positive and gram-negative bacteria.

PO-

PO1 Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.
PO2 Communication Skills: Able to share ideas clearly in writing and speech, listen actively, and communicate well with all healthcare professionals and patients.
PO3 Problem Solving & Reasoning: Able to analyze situations, think critically, and use knowledge to solve real-life healthcare problems effectively.
PO4 Cooperation/Team work: Able to work respectfully and efficiently with hospital team and other staff as part of a coordinated healthcare team.
PO5 Self-directed learning: Able to work independently in various healthcare settings and manage situations requiring quick and responsible action
PO6 Moral and ethical awareness/reasoning: Able to follow ethical principles, maintain honesty in all work, and respect confidentiality and professional conduct.
PO7 Lifelong learning: Able to continue learning new skills and knowledge to keep up with changes in healthcare and professional growth.
PO8: Clinical Competence and Technical Skills:
Able to apply practical and technical skills in operating, maintaining, and troubleshooting critical care equipment, perform patient monitoring procedures accurately, and ensure safe and effective delivery of critical care services in emergency and ICU settings.

PROGRAM EDUCATIONAL OUTCOMES (PEOs)

PEO 1: Professional Competence and Ethical Practice

Students will demonstrate strong foundational and applied knowledge in critical care technology, enabling them to provide high-quality patient monitoring and life-support services while adhering to ethical, moral, and professional standards within healthcare institutions.
(Derived from PO1, PO3, PO6, and PO8)

PEO 2: Lifelong Learning and Leadership in Healthcare

Students will continuously update their knowledge and technical skills to adapt to emerging technologies and healthcare advancements, effectively communicating and collaborating with multidisciplinary teams to assume leadership roles in critical care environments.
(Derived from PO2, PO4, PO5, and PO7)

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: Clinical Application and Technical Proficiency
Students will be able to competently operate, calibrate, and manage critical care instruments such as ventilators, defibrillators, and monitoring systems, ensuring accurate data collection and effective patient care in ICUs and emergency units.
(Linked to PO1, PO3, and PO8)

PSO 2: Patient-Centered Critical Care and Professional Collaboration
Graduates will be able to assess patient conditions, support clinicians in emergency decision-making, and effectively communicate and coordinate with healthcare teams to deliver safe, ethical, and efficient critical care services.

SEMESTER-III

PAPER: - RADIOLOGY AND DARKROOM ANALYSIS

COURSE OUTCOMES

CO1 Student will able to Describe the density and contrast of x-ray

CO2-Student will able to utilize lead apron ,lead thyroid shield badge during fluoroscopy

CO3- Student will able to Detect lesion in different body parts of Xray image

CO4- Student able to Detect different between Developer and fixer

CO5-Student able to know construct the Dark room .

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	2	0	3	2	0	1	3	2
CO2	2	2	3	0	2	1	3	2	2	3
CO3	2	3	2	0	3	2	0	1	3	2
CO4	3	1	2	0	2	1	0	1	2	2
CO5	3	1	3	0	2	1	0	1	3	2
TOTAL	**13**	**9**	**12**	**0**	**12**	**7**	**3**	**6**	**13**	**11**

PAPER: RADIATION PHYSICS II

COURSE OUTCOMES

CO 1: Students will be able to Illustrate the structure and working principal of Beam Restricting device and grid.

CO 2:: Students will be able to classify the type of interaction.

CO 3:Students will be able to Differentiate between within general radiation.

CO 4:Students will be able to Monitor x-ray equipment's and other radiology related equipment's

CO 5: Students will be able to Design the radiation detection.

PROGRAM OUTCOMES (POS):

At the end of the program, students should be able to:

PO1. Demonstrate a comprehensive understanding of concepts in radiology, imaging technology, and radiation physics, and apply this knowledge in diverse clinical settings.

PO2. Exhibit critical thinking and problem-solving skills to evaluate radiographic images, identify errors, and ensure diagnostic accuracy.

PO3. Acquire competency in the operation and maintenance of conventional and advanced imaging modalities, ensuring patient safety and optimal image quality.

PO4. Work effectively as a member or leader in multidisciplinary healthcare teams and actively participate in clinical and research activities.

PO5. Apply appropriate quantitative and analytical techniques for radiation dose optimization, quality control, and image assessment.

PO6. Develop an aptitude for research, evidence-based practice, and continuous learning to keep pace with technological advancements in radiological sciences.

PO7. Demonstrate ethical responsibility, empathy, and sensitivity towards patients while adhering to professional standards and radiation protection principles.

PO8: Communicate effectively with patients, healthcare professionals, and the community to promote awareness of diagnostic imaging procedures, radiation safety, and healthcare standards.

Program Specific Outcomes (PSOs)

PSO1: Apply theoretical and practical knowledge of imaging modalities such as X-ray, CT, MRI, Ultrasound, and Nuclear Medicine in clinical diagnosis and patient management.

PSO2: Implement radiation protection measures and quality assurance protocols in diagnostic imaging departments to ensure patient, staff, and environmental safety.

Program Educational Objectives (PEOs)

PEO1: To prepare graduates who can competently perform and manage diagnostic imaging procedures with a high degree of technical proficiency, ethical values, and professional integrity.

PEO2: To nurture radiology professionals who engage in lifelong learning, research, and innovation, contributing to advancements in medical imaging technology and healthcare

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	3	1	2	1	2	1	3	3
CO2	3	2	2	1	3	1	1	1	3	3
CO3	3	3	2	1	3	2	2	1	3	3
CO4	2	2	3	2	3	1	2	1	3	3
CO5	3	3	3	2	3	2	2	1	3	3
TOTAL	**15**	**12**	**13**	**7**	**14**	**7**	**9**	**5**	**15**	**15**

PAPER- RADIOGRAPHY POSITION

Program Outcomes (POs)

Students should be able to:

PO1. Demonstrate a comprehensive understanding of concepts in radiology, imaging technology, and radiation physics, and apply this knowledge in diverse clinical settings.
PO2. Exhibit critical thinking and problem-solving skills to evaluate radiographic images, identify errors, and ensure diagnostic accuracy.
PO3. Acquire competency in the operation and maintenance of conventional and advanced imaging modalities, ensuring patient safety and optimal image quality.
PO4. Work effectively as a member or leader in multidisciplinary healthcare teams and actively participate in clinical and research activities.
PO5. Apply appropriate quantitative and analytical techniques for radiation dose optimization, quality control, and image assessment.
PO6. Develop an aptitude for research, evidence-based practice, and continuous learning to keep pace with technological advancements in radiological sciences.
PO7. Demonstrate ethical responsibility, empathy, and sensitivity towards patients while adhering to professional standards and radiation protection principles.
PO8: Communicate effectively with patients, healthcare professionals, and the community to promote awareness of diagnostic imaging procedures, radiation safety, and healthcare standards.
Course Outcome:
CO:1 Students will able to explain the basic patient positioning techniques during radiographic procedures.
CO:2 Students will be able to demonstrate special positioning skill for patients with different pathological and physical conditions.
CO:3 Students will be able to differentiate appropriate equipment handling techniques in radiology departments.
CO:4 Students will be able to monitor various patient positioning methods to ensure optimal radiographic imaging.
CO:5 Students will be able to generate the relative positions of the X-ray tube and patient to determine suitable exposure factors during radiography.

Program Specific Outcomes (PSOs)

PSO1: Apply theoretical and practical knowledge of imaging modalities such as X-ray, CT, MRI, Ultrasound, and Nuclear Medicine in clinical diagnosis and patient management.

PSO2: Implement radiation protection measures and quality assurance protocols in diagnostic imaging departments to ensure patient, staff, and environmental safety.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	2	1	2	1	2	2	3	2
CO2	2	3	3	2	2	1	3	2	3	2
CO3	2	2	3	1	3	1	2	1	3	3
CO4	3	3	3	2	3	2	3	2	3	3
CO5	3	3	3	1	3	2	2	2	3	3
TOTAL	**13**	**13**	**14**	**7**	**13**	**7**	**12**	**9**	**15**	**13**

SEMESTER- V

PAPER: RADIOGRAPHY EQUIPMENT & TECHNIQUES:

CO 1: Students will be able to Illustrate different type of Cassette Structure & intensifying Screen.
CO 2: Students will be able to judge the X-ray tube overload protection circuit.
CO 3: Students will be able to monitor the different X-ray tube.
CO 4: Students will be able to demonstrate the component of Radiological equipment.
CO 5: Students will be able to invent the purpose and function of exposure timers.

PROGRAM OUTCOMES (POS):

At the end of the program, students should be able to:
PO1. Demonstrate a comprehensive understanding of concepts in radiology, imaging technology, and radiation physics, and apply this knowledge in diverse clinical settings.
PO2. Exhibit critical thinking and problem-solving skills to evaluate radiographic images, identify errors, and ensure diagnostic accuracy.
PO3. Acquire competency in the operation and maintenance of conventional and advanced imaging modalities, ensuring patient safety and optimal image quality.
PO4. Work effectively as a member or leader in multidisciplinary healthcare teams and actively participate in clinical and research activities.

PO5. Apply appropriate quantitative and analytical techniques for radiation dose optimization, quality control, and image assessment.
PO6. Develop an aptitude for research, evidence-based practice, and continuous learning to keep pace with technological advancements in radiological sciences.
PO7. Demonstrate ethical responsibility, empathy, and sensitivity towards patients while adhering to professional standards and radiation protection principles.

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	PO8	PSO1	PSO2
CO1	3	2	2	1	2	1	1	1	3	3
CO2	3	3	3	1	3	2	1	1	3	3

CO3	3	3	3	1	3	2	2	1	3	3
CO4	3	2	3	2	2	1	2	1	3	3
CO5	3	3	3	2	3	2	1	1	3	3
TOTAL	15	13	14	7	13	8	7	5	15	15

PAPER: Radiation Hazard and Preventive Strategies

CO1: Define the Radiation source

CO2: Implement Radiation in cancer patient

CO3: Differentiate work between AERB and BARC

CO4: Detect Radiological imaging

CO5: Create the latent image formation on the Film

CO–PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1:	3	1	1	0	2	1	2
CO2:	2	3	3	1	3	2	3
CO3:	3	2	2	1	2	2	3
CO4:	2	3	3	0	3	2	1
CO5:	3	2	2	0	2	1	1

PAPER: Adv CLINICAL NUTRITION

Course Outcomes (CO):

CO1: Recall and list the sources, functions, deficiency symptoms, and toxicities of major vitamins and minerals essential to human health and the techniques used in nutritional assessment and describe the structure and goals of national nutrition programs in India.

CO2: Demonstrate the principles of therapeutic nutrition in the planning of diet charts for common liver, cardiovascular, renal, and gastrointestinal disorders.

CO3: Differentiate between dietary requirements for various pathological states and analyze the impact of diet modifications in chronic diseases.

CO4: Monitor the Micronutrients deficiencies by observing Clinical signs and the effectiveness of community nutrition programs and evaluate nutritional interventions based on clinical and biochemical indicators

CO5: Designing diagnosis plan for confirmation of deficiencies and biochemical markers for the nutritional deficiencies based on clinical manifestations

Program Outcomes (PO)

At the end of the program, students should be able to:

PO1. Demonstrate a comprehensive understanding of concepts in radiology, imaging technology, and radiation physics, and apply this knowledge in diverse clinical settings.

PO2. Exhibit critical thinking and problem-solving skills to evaluate radiographic images, identify errors, and ensure diagnostic accuracy.

PO3. Acquire competency in the operation and maintenance of conventional and advanced imaging modalities, ensuring patient safety and optimal image quality.

PO4. Work effectively as a member or leader in multidisciplinary healthcare teams and actively participate in clinical and research activities.

PO5. Apply appropriate quantitative and analytical techniques for radiation dose optimization, quality control, and image assessment.

PO6. Develop an aptitude for research, evidence-based practice, and continuous learning to keep pace with technological advancements in radiological sciences.

PO7. Demonstrate ethical responsibility, empathy, and sensitivity towards patients while adhering to professional standards and radiation protection principles.

PO8: Communicate effectively with patients, healthcare professionals, and the community to promote awareness of diagnostic imaging procedures, radiation safety, and healthcare standards.

Program Specific Outcomes (PSO)

PSO1: Apply theoretical and practical knowledge of imaging modalities such as X-ray, CT, MRI, Ultrasound, and Nuclear Medicine in clinical diagnosis and patient management.

PSO2: Implement radiation protection measures and quality assurance protocols in diagnostic imaging departments to ensure patient, staff, and environmental safety.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO 8	PSO 1	PSO 2
CO1	0	1	0	2	0	0	0	1	0	0
CO2	0	1	0	3	0	1	1	2	1	1
CO3	0	1	0	3	0	1	1	2	1	1
CO4	1	1	1	3	1	1	1	1	2	1
CO5.	1	0	0	2	1	2	1	1	2	1
TOTAL	**2**	**4**	**1**	**13**	**2**	**5**	**4**	**7**	**6**	**4**

SEMESTER -VI

PAPER: RADIOGRAPHY TECHNIQUES OF BONES & JOINTS

CO1: Student will be able to identify the basic patient positioning during radiographic investigation.
CO2: Student will be able to illustrate special positioning skills for different physical,pathological conditions.
CO3: Student will be able to organize of equipment s while working in radiology departments.
CO4: Student will be able to monitor proper position during radiography.
CO5: Students will be able to design to relative radiographic position for achieve diagnostic-quality radiographic images.

PROGRAM OUTCOMES (POS)

At the end of the program, students should be able to:

PO1. Demonstrate a comprehensive understanding of concepts in radiology, imaging technology, and radiation physics, and apply this knowledge in diverse clinical settings.
PO2. Exhibit critical thinking and problem-solving skills to evaluate radiographic images, identify errors, and ensure diagnostic accuracy.
PO3. Acquire competency in the operation and maintenance of conventional and advanced imaging modalities, ensuring patient safety and optimal image quality.
PO4. Work effectively as a member or leader in multidisciplinary healthcare teams and actively participate in clinical and research activities.
PO5. Apply appropriate quantitative and analytical techniques for radiation dose optimization, quality control, and image assessment.
PO6. Develop an aptitude for research, evidence-based practice, and continuous learning to keep pace with technological advancements in radiological sciences.

PO7. Demonstrate ethical responsibility, empathy, and sensitivity towards patients while adhering to professional standards and radiation protection principles.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	3	2	2	2	1
CO2	3	3	3	2	2	1	3
CO3	2	2	3	2	3	2	2
CO4	3	3	3	2	3	1	2
CO5	3	3	3	2	3	2	3
Total	14	13	15	10	13	8	11

PAPER: ADVANCED IMAGING & CONTRAST MEDIA

Program Outcomes (POs)
Students should be able to:
PO1. Demonstrate a comprehensive understanding of concepts in radiology, imaging technology, and radiation physics, and apply this knowledge in diverse clinical settings.
PO2. Exhibit critical thinking and problem-solving skills to evaluate radiographic images, identify errors, and ensure diagnostic accuracy.
PO3. Acquire competency in the operation and maintenance of conventional and advanced imaging modalities, ensuring patient safety and optimal image quality.
PO4. Work effectively as a member or leader in multidisciplinary healthcare teams and actively participate in clinical and research activities.
PO5. Apply appropriate quantitative and analytical techniques for radiation dose optimization, quality control, and image assessment.
PO6. Develop an aptitude for research, evidence-based practice, and continuous learning to keep pace with technological advancements in radiological sciences.
PO7. Demonstrate ethical responsibility, empathy, and sensitivity towards patients while adhering to professional standards and radiation protection principles.

PO8: Communicate effectively with patients, healthcare professionals, and the community to promote awareness of diagnostic imaging procedures, radiation safety, and healthcare standards.

Program Specific Outcomes (PSOs)

PSO1: Apply theoretical and practical knowledge of imaging modalities such as X-ray, CT, MRI, Ultrasound, and Nuclear Medicine in clinical diagnosis and patient management.
PSO2: Implement radiation protection measures and quality assurance protocols in diagnostic imaging departments to ensure patient, staff, and environmental safety.

Course Outcomes for 6th Sem BMRIT (BOS-3)
CC-13: Advanced Imaging & Contrast Media
CO:1 Students will be able to explain the principles of different imaging instruments like MRI, PET, and Color Doppler.
CO:2 Students will be able to illustrate the application of fusion imaging in diagnostic radiology.
CO:3 Students will be able to differentiate the types and uses of teleradiology in clinical practice.
CO:4 Students will be able to detect the suitability of various contrast media for different imaging modalities.
CO:5 Students will be able to design a contrast media selection protocol for IVU, MCU, and RGU procedures.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	2	3	1	2	2	2	2	3	3
CO2	3	3	3	2	3	2	2	2	3	3
CO3	3	3	2	2	3	2	2	3	3	2
CO4	3	2	3	1	3	2	2	2	3	3
CO5	3	3	3	1	3	3	2	2	3	3
TOTAL	15	13	14	7	14	11	10	11	15	14

PAPER- SPECIAL RADIOGRAPHIC TECHNIQUES

Program Outcomes (POs)

Students should be able to:

PO1. Demonstrate a comprehensive understanding of concepts in radiology, imaging technology, and radiation physics, and apply this knowledge in diverse clinical settings.

PO2. Exhibit critical thinking and problem-solving skills to evaluate radiographic images, identify errors, and ensure diagnostic accuracy.

PO3. Acquire competency in the operation and maintenance of conventional and advanced imaging modalities, ensuring patient safety and optimal image quality.

PO4. Work effectively as a member or leader in multidisciplinary healthcare teams and actively participate in clinical and research activities.

PO5. Apply appropriate quantitative and analytical techniques for radiation dose optimization, quality control, and image assessment.

PO6. Develop an aptitude for research, evidence-based practice, and continuous learning to keep pace with technological advancements in radiological sciences.

PO7. Demonstrate ethical responsibility, empathy, and sensitivity towards patients while adhering to professional standards and radiation protection principles.

PO8: Communicate effectively with patients, healthcare professionals, and the community to promote awareness of diagnostic imaging procedures, radiation safety, and healthcare standards.

Program Specific Outcomes (PSOs)

PSO1: Apply theoretical and practical knowledge of imaging modalities such as X-ray, CT, MRI, Ultrasound, and Nuclear Medicine in clinical diagnosis and patient management.

PSO2: Implement radiation protection measures and quality assurance protocols in diagnostic imaging departments to ensure patient, staff, and environmental safety.

COURSE OUTCOME

CO:1 Students will be able to describe the principles and procedure of trauma radiography.

CO:2 Students will be able to demonstrate the operation of CR machines and orthopedic imaging techniques.

CO:3 Students will be able to analyze radiation protection techniques and exposure factors for pediatric patients.

CO:4 Students will be able to monitor the safe methods for moving and lifting pediatric and trauma patients.

CO:5 Students will be able to create a radiographic protocol for geriatric patient care.

CO-PO-PSO MAPPING:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1	3	3	3	2	2	2	2	2	3	2
CO2	3	3	3	2	3	2	2	2	3	3
CO3	3	3	3	2	3	2	3	2	3	3
CO4	2	3	2	3	2	2	3	3	2	3
CO5	2	3	2	3	2	2	3	3	3	3
TOTAL	**13**	**15**	**13**	**12**	**12**	**10**	**13**	**12**	**14**	**14**

Bloom's Taxonomy Verbs:

Remember (BT1)	**Understand (BT2)**	**Apply (BT3)**	**Analyze (BT4)**	**Evaluate (BT5)**	**Create (BT6)**
Cite	Add	Acquire	Analyze	Appraise	Abstract
Define	Approximate	Adapt	Audit	Assess	Animate
Describe	Articulate	Allocate	Blueprint	Compare	Arrange
Draw	Associate	Alphabetize	Breadboard	Conclude	Assemble
Enumerate	Characterize	Apply	Break down	Contrast	Budget
Identify	Clarify	Ascertain	Characterize	Counsel	Categorize
Index	Classify	Assign	Classify	Criticize	Code
Indicate	Compare	Attain	Compare	Critique	Combine
Label	Compute	Avoid	Confirm	Defend	Compile
List	Contrast	Back up	Contrast	Determine	Compose
Match	Convert	Calculate	Correlate	Discriminate	Construct
Meet	Defend	Capture	Detect	Estimate	Cope
Name	Describe	Change	Diagnose	Evaluate	Correspond
Outline	Detail	Classify	Diagram	Explain	Create
Point	Differentiate	Complete	Differentiate	Grade	Cultivate
Quote	Discuss	Compute	Discriminate	Hire	Debug
Read	Distinguish	Construct	Dissect	Interpret	Depict
Recall	Elaborate	Customize	Distinguish	Judge	Design
Recite	Estimate	Demonstrate	Document	Justify	Develop
Recognize	Example	Depreciate	Ensure	Measure	Devise
Record	Explain	Derive	Examine	Predict	Dictate
Repeat	Express	Determine	Explain	Prescribe	Enhance
Reproduce	Extend	Diminish	Explore	Rank	Explain
Review	Extrapolate	Discover	Figure out	Rate	Facilitate
Select	Factor	Draw	File	Recommend	Format
State	Generalize	Employ	Group	Release	Formulate
Study	Give	Examine	Identify	Select	Generalize
Tabulate	Infer	Exercise	Illustrate	Summarize	Generate

Trace	Interact	Explore	Infer	Support	Handle
Write	Interpolate	Expose	Interrupt	Test	Import
	Interpret	Express	Inventory	Validate	Improve
	Observe	Factor	Investigate	Verify	Incorporate
	Paraphrase	Figure	Layout		Integrate
	Picture graphically	Graph	Manage		Interface
	Predict	Handle	Maximize		Join
	Review	Illustrate	Minimize		Lecture
	Rewrite	Interconvert	Optimize		Model
	Subtract	Investigate	Order		Modify
	Summarize	Manipulate	Outline		Network
	Translate	Modify	Point out		Organize
	Visualize	Operate	Prioritize		Outline
		Personalize	Proofread		Overhaul
		Plot	Query		Plan
		Practice	Relate		Portray
		Predict	Select		Prepare
		Prepare	Separate		Prescribe
		Price	Subdivide		Produce
		Process	Train		Program
		Produce	Transform		Rearrange
		Project			Reconstruct
		Provide			Relate
		Relate			Reorganize
		Round off			Revise
		Sequence			Rewrite
		Show			Specify
		Simulate			Summarize
		Sketch			
		Solve			
		Subscribe			
		Tabulate			
		Transcribe			
		Translate			
		Use			