



SCHOOL OF ALLIED & HEALTH CARE SCIENCES AND TECHNOLOGY

MALLA REDDY VISHWAVIDYAPEETH

Suraram X Roads, Jeedimetla,
Hyderabad-500055

Website: <https://mrvv.edu.in/>

Program:

BACHELOR OF SCIENCE (B.SC.) ANAESTHESIA & OPERATION THEATRE TECHNOLOGY

2026

MALLA REDDY VISHWAVIDYAPEETH
SCHOOL OF ALLIED HEALTH SCIENCES AND
TECHNOLOGY

Bachelors of Anaesthesia & Operation Theatre Technology (BAOTT)

Vision

- To develop skilled anaesthesia and operation theatre technologists with strong clinical competence.
- To promote patient-centred, ethical, and safe perioperative healthcare practices.
- To advance knowledge and technical expertise in anaesthesia and operation theatre technology.
- To contribute to quality surgical, critical care, and emergency healthcare services.

Mission

- To provide comprehensive education in anaesthesia, operation theatre, and critical care technology.
- To train students in modern anaesthesia techniques, OT procedures, and biomedical equipment handling.
- To encourage research, innovation, and lifelong learning in perioperative sciences.
- To instil professional ethics, leadership qualities, teamwork, and effective communication skills.

Program Educational Objectives (PEOs)

- Graduates will excel as competent anaesthesia and operation theatre technologists in healthcare settings.
- They will demonstrate ethical practices, professionalism, and responsibility in patient care.
- They will adapt to evolving technologies in anaesthesia, surgery, and critical care.
- They will pursue higher education, research, leadership roles, and continuous professional development

Program Outcomes (POs)

- Apply knowledge of anatomy, physiology, anaesthesia, and surgical procedures effectively.
- Operate and maintain anaesthesia machines, OT equipment, monitors, and biomedical devices safely.
- Demonstrate critical thinking and problem-solving abilities in perioperative and emergency situations.
- Communicate effectively with patients, surgeons, anaesthesiologists, nurses, and healthcare teams.
- Follow infection control practices, patient safety standards, and ethical principles in clinical practice.
- Assist in anaesthesia administration, airway management, patient monitoring, and postoperative care competently.

Program Specific Outcomes (PSOs)

- Perform operation theatre preparation, sterilization, and surgical assistance procedures competently.
- Assist in general, regional, and local anaesthesia procedures effectively.
- Monitor patients before, during, and after surgical and anaesthesia procedures.
- Handle OT emergencies, critical care situations, and anaesthesia-related complications efficiently.
- Manage medical gas pipeline systems, CSSD procedures, and OT safety protocols.
- Demonstrate competency in handling advanced surgical and anaesthesia equipment including laparoscopic and monitoring systems.

Course Outcomes (COs)

- Perform operation theatre preparation, sterilization, and surgical assistance procedures competently.
 - Assist in general, regional, and local anaesthesia procedures effectively.
 - Monitor patients before, during, and after surgical and anaesthesia procedures.
 - Handle OT emergencies, critical care situations, and anaesthesia-related complications efficiently.
 - Manage medical gas pipeline systems, CSSD procedures, and OT safety protocols.
 - Demonstrate competency in handling advanced surgical and anaesthesia equipment including laparoscopic and monitoring systems.
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COURSE STRUCTURE

I year/I semester

Course Code	Course Title	Teaching Hour				Theory			Practical			Grand Total (Marks)
		L hrs.)	P/D	CL P	CR	SEE	IA	T	SEE	IA	T	
BAOT T-001	Basics of Healthcare Delivery System in India	80	.....	.....	4	40	10	50	.....	.....	.....	50
BAOT T-002	Medical Terminology & Record Keeping	50	.....	.....	3	40	10	50	.....	.....	.....	50
BAOT T-003	Anatomy	100	40	.....	6	80	20	100	40	10	.....	150
BAOT T-004	Physiology	100	40	.....	6	80	20	100	40	10	.....	150
BAOT T-005	Healthcare Quality & Patient Safety	40	60	.....	5	40	10	50	30	20	50	100
Total		370	140	.....	24	.....	....	350	.....	.....	50	500
Grand Total		510			.....							
												

1year/II Semester

Course Code	Course Title	Teaching Hour				Theory			Practical			Grand Total (Marks)
		L (hrs.)	P/D	CL P	CR	SEE	IA	T	SEE	IA	T	
BAOTT-006	Medical Law & Ethics, Principles of Management	60	.....	.....	4	40	10	50	.....	....	.....	50
BAOTT-007	Basics of Biomedical Sciences in Surgery & Anesthesia	40	60	.....	3	40	10	50	.....	....	.....	50
BAOTT-008	Biochemistry & Hematology	40+30	0+30	.....	3	40+40	10+10	100	30	20	50	150
BAOTT-009	Pathology & Microbiology	50+50	.....	.....	4	40+40	10+10	100	.....	....	.....	150
BAOTT-0010	Basic Concept in Pharmacology	40	.....	.....	2	40	10	50	.....	....	.....	100
BAOTT-0011	Basic Computer & Information Sciences, communication & Soft Skills	40	60	0	4	40	10	50	30	20	50	100
Total		350	150	.....	20	.....	....	400	.....	....	100	500

II year/III Semester

Course Code	Course Title	Teaching Hours			C R	Theory			Practical			Grand Total (Marks)
		L (hr)	P/ D	CL P		SEE	IA	T	SEE	IA	T	
BAOT T-012	Basic Techniques of Anesthesia	100	.....	50	5	80	20	100	40	10	50	150
BAOT T-013	Basics of Surgical Procedures	100	.....	50	5	80	20	100	40	10	50	150
BAOT T-014	CSSD & Manifold area	50	.....	100	4	40	10	50	.....	.....	.....	50
BAOT T-015	Industrial Orientation & Industrial Visit	50	.....	0	2	40	10	50	.....	.....	.....	50
Total		300	.....	200	16	.....	....	300	.....	.....	100	
Grand Total (Hours)		510			.....							400
												

II Year/IV Semester

Course Code	Course Title	Teaching Hour				Theory			Practical			Grand Total (Marks)
		L (hr s.)	P / D	C L P		CR	SEE	IA	T	SEE	IA	T
BAOTT-016	Advanced Anesthesia Techniques	100	...	50	5	80	20	100	40	10	50	150
BAOTT-017	Advanced Surgical Procedures	100	...	50	5	80	20	100	40	10	50	150
BAOTT-018	Basic Intensive CARE	50	...	100	4	40	10	50	30	20	50	100
BAOTT-019	Clinical Medicine & Management	50	...	0	2	40	10	50	.....	.....	.....	50
Total		300	...	200	16	.....	....	300	.....	.....	150	
Grand Total		500			.....							450
(Hours)					.....							

III year/V Semester

Cours e Code	Course Title	Teaching Hour				Theory			Practical			Grand Total (Marks)
		L hrs	P/ D	CL P	CR	SEE	IA	T	SEE	IA	T	
BAOTT-020	Specialize d Anesthesi a	100	.....	50	5	80	20	100	40	10	50	150
BAOTT-021	Specialize d Surgery	100	.....	50	5	80	20	100	40	10	50	150
BAOTT-022	Recent Advances in Anesthesi a & Surgical Field	50	.....	50	5	80	20	100	.....	..... .	..... .	100
BAOTT-023	Disaster Managem ent & Environ mental Science	100	.....	0	2	40	10	50	.....	..... .	..... .	50
Total		400	.....	150	17	.....	....	350	.....	.... .	100	450
Grand Total		510			.....							
(Hours)					..... .....							

III year/VI Semester

Year/VI Semester													
Course Code	Course Title	Teaching Hour				Theory			Practical			Grand Total (Marks)	
		L hrs	P / D	C L P	CR	SEE	IA	T	SEE	IA	T		
BAOT T-024	Specialized Anesthesia-2	100	... ..	50	5	80	20	100	40	10	50	150	
BAOT T-025	Specialized Surgery-2	100	... ..	50	5	80	20	100	40	10	50	150	
BAOT T-026	Specialized Anesthesia & Surgical-3	100	... ..	50	5	80	20	100	40	10	50	150	
BAOT T-027	Research Methodolog y & Biostatistics*	50	... ..	0	2	40	10	50	.....	.... .	.....	50	
Total		350	... ..	150	17	.....	....	350	.....	.... .	150	500	
Grand Total		500			.....								
(Hours)					..... ..... .....								

IV year/VII Semester & VIII Semester

Sl. No.	Course Titles	Hours		
		Theory	Practical	Total
BAOTT-028	AOTT Internship (should contain six months of Anaesthesia, (six months of surgery, and at least one month of each specialty)	-	1440	1440

| **L** – Lecture | **P/D**– Practical/Demonstration | **CR** –Credits | | **SEE** – Semester End Examination | **IA** – Internal Assessment | **CLP** – Clinical Postings |

Undergraduate program:

S. No	Course	Duration	Eligibility for admission
1	Bachelor of Anaesthesia & Operation Theatre Technology	4 years	Intermediate Bi.P.C (mathematics optional)/ Diploma (2yrs) holders (can directly be enrolled into 2 nd year) /10+2 or equivalent/

1.1 Medium of Instruction:

English shall be the medium of instruction for all the subjects of study and for examination of the course.

1.2 Duration of the course:

- 4 years
- Total number of hours – 6000
- Total Credits: 216

1.3 Examination Regulations:**1.3.1 Attendance:**

A candidate has to secure minimum 80% attendance in overall with at least-

1. 80% attendance in theoretical
2. 80% in Skills training (practical)

for qualifying to appear for the final examination. No relaxation, whatsoever, will be permissible to this rule under any ground including indisposition, etc.

1.3.2 Assessment:

- Cognitive Assessment
 1. Structured log book
 2. Viva-voce examination.
 3. Structured case presentation
 4. Formative assessment
 5. Summative assessment
 6. Case presentation
- Psychomotor Assessment
 1. Objective Structured Clinical Examination (OSCE)
 2. Objective Structured Practical Examination (OSPE)
 3. Mini Clinical Evaluation Exercise (Mini-CEX)
 4. Direct Observation of Procedural Skills (DOPS)
 5. Simulation-based assessment

Internal Assessments:

- a) Regular periodic assessment shall be conducted throughout the course. Each student in a semester is assessed internally twice by conducting one hour exam with maximum of 20 marks. Additionally, student also undergo a continuous assessment for maximum of 10 marks. The internal assessment shall carry a weightage of 50% and will contribute 50% to the final assessment at the end of the semester

- b) Exam patterns for internal assessment in each semester will be
1. Each of two internal examinations shall include a section of ten very short answer questions each carrying one mark, totaling to ten marks. Two long answer questions each carrying 5 marks, totaling to 10 marks. Thus, a total of 20 marks for each internal examination with the duration of 1 hour time
 2. Continuous assessment of the students shall be carried out throughout the semester. This will include evaluation of overall attendance, classroom performance, student behavior, participation in extracurricular activities, and other relevant aspects. Continuous assessment shall carry a weightage of 10 marks.
 3. Thus, a total of 50 marks for the internal examination. (20+20+10=50 marks). A candidate should secure a minimum of 40% marks in the internal assessment in each subject to be eligible to appear for the University examination.
 4. Candidates should score a minimum of 40% marks in theory and practical internal assessment examination separately to be eligible to appear in the University exam in that subject.
 5. For value added courses, only internal examination will be conducted. The assessment comprised of five assignments/presentations/case presentations each carrying 10 (i.e., $5 \times 10 = 50$ marks). Final written examination (1.5 h) will be for 50 marks with 5 questions each carrying 10 marks ($5 \times 10 = 50$ marks). The minimum pass is 40% marks.

1.3.2 University Examinations (External):

- a) University Examination shall be conducted at the end of every semester.
- b) A candidate who meets the requirement of attendance and internal assessment marks, as stipulated by the University shall be eligible to appear for the University Examination.
- c) Examination will be of 3 hours duration (for theory). The exam pattern for those subjects (100 marks) will be
 1. Very short answer questions – 15 each carrying 2 marks ($15 \times 2 \text{ M} = 30$ marks)
 2. Short answer questions, 5 questions each carrying 8 marks ($5 \times 8 \text{ M} = 40$ marks)
 3. Three Essay questions, out of which two questions need to be answered, each carrying 15 marks ($2 \times 15 \text{ M} = 30$ marks). Thus, a total of 100 marks.

1.3.3. The question pattern for the practical examination

- (a) Spotters/major practical /minor practical / Viva / practical record

1.3.4. Pass Criteria

The minimum pass marks for internal assessment are 40% and for the University Examination is 50% i.e. a student should score a total of 50% (adding the internal and external examination) to pass in each subject.

I-YEAR/ I-SEMESTER

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		L hrs.)	P/ D	CL P		SEE	IA	T	SEE	IA	T	
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Total		370	140		24			350			50	500
Grand Total		510										

BAOTT-001: Introduction to Healthcare Delivery System in India

L T P C
4 0 0 4
 (80hrs)

Learning Objectives

- Understand the structure of the Indian healthcare delivery system.
- Compare healthcare systems of India with developed countries.
- Understand national health policies and programmes.
- Learn epidemiology, demography, and disease surveillance concepts.
- Understand AYUSH systems and integration in healthcare.

Course Outcomes

- CO1-Describe primary, secondary, and tertiary healthcare systems in India.
- CO2-Analyze national health policies and healthcare programmes.
- CO3-Evaluate community participation and private healthcare roles.
- CO4- Apply epidemiological concepts in healthcare delivery.

- CO-5 Understand disease prevention, surveillance, and immunization systems.

UNIT I:

Introduction to Healthcare Delivery System

15 HOURS

- Healthcare delivery system in India
- Primary, secondary, and tertiary healthcare
- Community participation in healthcare
- Healthcare systems in developed countries
- Private healthcare sector
- National Health Mission
- National Health Policy

UNIT II:

National Health Programmes

10 HOURS

- Background of National Health Programmes
- Objectives and action plans
- Targets and operations
- Achievements and constraints
- National disease control programmes
- Immunization programmes

UNIT III:

AYUSH System of Medicine

15 HOURS

- Introduction to Ayurveda
- Yoga and Naturopathy
- Unani system
- Siddha system
- Homeopathy
- Integration of various systems of medicine

UNIT IV:

Health Scenario, Demography & Vital Statistics

15 HOURS:

- Health scenario of India: past, present, and future
- Demography and concepts
- Vital events and vital statistics
- Census and healthcare planning
- Importance of demographic data in health policy

UNIT V:

Epidemiology

25 HOURS

- Principles of epidemiology
- Natural history of disease
- Epidemiological study methods

- Communicable diseases
- Non-communicable diseases
- Disease transmission
- Host defense mechanisms
- Immunization and cold chain
- Disease surveillance and monitoring

BAOTT-002: Medical Terminology & Record Keeping

L	T	P	C
3	0	0	3
(50h)			

Learning Objectives

- Understand medical terminology and anatomical terms.
- Learn word roots, prefixes, and suffixes.
- Develop skills in interpreting medical records and reports.
- Learn electronic health record management.
- Understand abbreviations and documentation systems.

Course Outcomes

- Use medical terminology correctly in healthcare settings.
- Interpret medical abbreviations and reports accurately.
- Maintain medical records effectively.
- Apply electronic health record systems in hospitals.
- Demonstrate proper documentation skills.

UNIT I:

Introduction to Medical Terminology **10 HOURS**

- Derivation of medical terms
- Word roots, prefixes, and suffixes
- Formation of plurals
- Combined morphemes
- Basic medical terminologyStructure of RBC (shape & size)

UNIT II:

Formation & Interpretation of Medical Terms: **10 HOURS**

- Formation of medical terms
- Combining roots and suffixes

- Medical abbreviations and symbols
- Pronunciation and spelling
- Clinical terminology basics

UNIT-III

System-wise Medical Terminology 15 HOURS

- Integumentary system terminology
- Musculoskeletal terminology
- Respiratory system terminology
- Cardiovascular terminology
- Nervous system terminology
- Endocrine system terminology

UNIT IV :

Medical Records & Documentation 10 HOURS

- Medical records and reports
- Interpretation of medical orders
- Patient documentation
- Consent forms
- Hospital records maintenance

UNIT V:

Electronic Health Records 5 HOURS

- Electronic Health Record (EHR) systems
- Data entry and management
- Digital documentation
- Confidentiality and security of records

BAOTT-003: Anatomy	L	T	P	C
	5	0	1	6
	(100h)		(40hrs)	

Learning Objectives

- Understand basic anatomical terminology and body systems. \
- Identify bones, muscles, organs, and body structures.
- Learn anatomy of thorax, heart, lungs, nervous system, and digestive system.
- Understand surface anatomy and radiological anatomy.
- Develop basic anatomical identification skills.

Course Outcomes

- Identify major bones and organs of the human body.
- Explain structure and functions of body systems.
- Apply anatomical knowledge in OT and anesthesia practice.
- Interpret surface anatomy and radiological images.

- Demonstrate understanding of musculoskeletal and nervous systems.

UNIT I:

Introduction to Anatomy & Osteology

25 HOURS

- Basic anatomical terminology
- Osteology of upper limb
- Clavicle, scapula, humerus
- Radius and ulna
- Lower limb bones
- Femur, tibia, fibula
- Hip bone and sacrum
- Vertebral column

UNIT II:

Thorax, Lungs & Heart

20 HOURS

- Thoracic cage anatomy
- Intercostal spaces
- Pleura and ribs
- Trachea and bronchial tree
- Surface anatomy of heart
- Chambers and valves of heart
- Coronary circulation
- Pericardium

UNIT III:

Musculoskeletal & Excretory System

16 HOURS

- Muscles of thorax
- Muscles of upper limb
- Flexor and extensor groups
- Origin, insertion, and action
- Kidneys and ureters
- Urinary bladder

UNIT IV:

Digestive System

18 HOURS

- Oral cavity anatomy
- Digestive enzymes
- Gastrointestinal tract
- Liver and pancreas
- Digestion and absorption
- Common digestive disorders

UNIT V:

Nervous System

20 HOURS

- Structure of neurons
- Central nervous system
- Brain and spinal cord

- Peripheral nervous system
- Cranial nerves
- Spinal nerves
- Neurophysiology basics

PRACTICALS

40 HOURS

- Bone identification
- Surface anatomy demonstration
- Organ anatomy
- Radiology and X-ray interpretation
- Thoracic anatomy models
- Reproductive organ anatomy

Reference Books

- Human Anatomy (Vol-I,II,III) B D Chaurasia,
- Ross and Wilson Anatomy and Physiology,
- Human Anatomy for Students, B.D Ghosh.

BAOTT-004: Physiology

L	T	P	C
5	0	1	6
(100h)		(40H)	

Course Outcomes (CO)

CO1: Explain cellular physiology, acid-base balance, and blood physiology.

CO2: Describe cardiovascular and respiratory system physiology and interpret ECG findings.

CO3: Explain renal, reproductive, endocrine, and nervous system physiology.

CO4: Describe gastrointestinal physiology and special senses.

CO5: Perform basic physiology practicals including vital signs, ECG, spirometry, and blood grouping.

UNIT I

Cell and Blood Physiology

18 HOURS

- The Cell
 - a) Acid base balance and disturbances of acid base balances
 - Alkalosis
 - Acidosis
- The Blood – 1
 - a) Composition of blood, functions of blood and plasma proteins, blood cascade, bleeding and clotting time
 - b) Pathological and physiological variation of RBC
 - c) Function of haemoglobin
 - d) Erythrocyte sedimentation rate (ESR)
 - e) WBC – Total count (TC), Differential count (DC) and functions
 - f) Platelets – formation, normal level and functions
 - g) Blood groups and Rh factor

UNIT II

Cardiovascular System

15 HOURS

- Physiology of the heart
- Heart sounds
- Cardiac cycle and cardiac output
- Auscultation
- Arterial pressures and blood pressure
- Hypertension
- Electrocardiogram (ECG)

UNIT III –

Respiratory and Excretory System

20 HOURS

- Respiratory System
 - Respiratory ventilation
 - Oxygenation
 - Lung volumes and lung capacities

Excretory System

- Renal system
- Urine volume and specific gravity measurements
- Renal function tests including GFR
- Renal tubular function
- Renal handling of electrolytes and water
- Acid-base balance and renal regulation of pH

UNIT IV

Reproductive, Nervous and Endocrine System

27 HOURS

Reproductive System

- Formation of semen and spermatogenesis
- Menstrual cycle
- Central Nervous System
- Functions of CSF
- Endocrine System
- Functions of pituitary, thyroid, parathyroid, adrenal and pancreatic hormones

UNIT V

Digestive System and Special Senses

20 Hours

Digestive System –

- Physiological anatomy of GIT
- Food digestion in mouth, stomach and intestine
- Absorption of food
- Role of bile in digestion
- Special Senses – 10 Hours
- Vision testing and visual acuity
- Auditory tests and hearing assessment
- Taste and olfaction perception
- Vestibular system and balance control
- Proprioception and kinesthetic sense

PRACTICALS

– 40 HOURS

- Determination of blood groups (Blood grouping, Rh factor determination)
- Vital signs measurement (Blood pressure, heart rate, respiratory rate, body temperature measurement using sphygmomanometer, stethoscope and thermometer)
- Electrocardiography – ECG (Electrode placement, ECG waveform recording, interpretation of ECG, identification of abnormalities)
- Spirometry (Tidal volume, vital capacity, forced expiratory volume, peak expiratory flow rate assessment)
- Examination of respiratory system (Counting respiratory rate, measuring inspiration and expiration, assessment of respiratory movements)

Reference Books

- Essentials of Medical Physiology, K Sembulingam,
- Comprehensive Textbook of Medical Physiology, G K Pal.
- Practical Physiology G K Pal & Pravati Pal
- . Ganong's Review of Physiology by Barrett, Barman, Brooks and Yuan

BAOTT-005: Health Care Quality & Patient Safety

L	T	P	C
2	0	2	4
(40H)		(60H)	

LEARNING OBJECTIVES

At the end of the course, students will be able to:

- Understand the concepts and principles of healthcare quality and patient safety.
- Identify common patient safety issues and medical errors in healthcare settings.
- Explain quality assurance and quality improvement methods in hospitals.
- Understand infection prevention and control measures in healthcare practice.
- Apply safe practices in operation theatre, ICU, and patient care areas.
- Recognize the importance of communication and teamwork in patient safety.
- Understand biomedical waste management and safety regulations.
- Describe risk management and incident reporting systems in hospitals.

Course Outcomes (CO)

- CO1: Explain emergency care and life support skills.
- CO2: Apply infection prevention and control measures.
- CO3: Demonstrate biomedical waste management procedures.
- CO4: Explain healthcare quality assurance principles.
- CO5: Apply patient safety protocols in healthcare settings.

UNIT I

Basics of Emergency Care and Life Support Skills

25 Hours

- Vital signs and primary assessment
- Basic emergency care
- First aid and triage
- Ventilations using BVM
- Choking and rescue breathing
- One and two rescuer CPR

- AED usage
- Patient movement during emergencies

UNIT II

Infection Prevention and Control

15 Hours

- Sterilization
- Disinfection
- Hand hygiene
- Personal protective equipment
- Prevention of healthcare associated infections
- Infection control programme
- NABH and JCI guidelines

UNIT III

Biomedical Waste Management and Environmental Safety

8 Hours

- Biomedical waste definition
- Waste minimization
- Segregation and disposal
- Color coding
- Liquid biomedical waste
- Radioactive waste
- Chemical and drug waste
- PPE usage
- Cross infection control

UNIT IV

Quality Assurance and Management

12 Hours

- Concepts of quality of care
- Quality improvement approaches
- Standards and norms
- Quality improvement tools
- NABH guidelines

PRACTICALS

40 HOURS

I YEAR/II SEMESTER

Course Code	Course Title	Teaching Hour				Theory			Practical			Grand Total (Marks)
		L (hrs.)	P/D	CL P	CR	SEE	IA	T	SEE	IA	T	
BAOTT-006	Medical Law & Ethics, Principles of Management	60	.....	.....	4	40	10	50	.....	....	.....	50
BAOTT-007	Basics of Biomedical Sciences in Surgery & Anesthesia	40	60	.....	3	40	10	50	.....	....	.....	50
BAOTT-008	Biochemistry & Hematology	40+30	0+30	.....	3	40+40	10+10	100	30	20	50	150
BAOTT-009	Pathology & Microbiology	50+50	.....	.....	4	40+40	10+10	100	.....	....	.....	150
BAOTT-0010	Basic Concept in Pharmacology	40	.....	.....	2	40	10	50	.....	....	.....	100
BAOTT-0011	Basic Computer & Information Sciences, communication & Soft Skills	40	60	0	4	40	10	50	30	20	50	100
Total		350	150	.....	20	.....	....	400	.....	....	100	500

BAOTT-006: Medical Law and Ethics, Professionalism & Values, Principles of Management

L T P C
4 0 0 4
(60H)

LEARNING OBJECTIVES –

- Understand the basic principles of medical law and healthcare ethics.
- Explain legal responsibilities and professional accountability in healthcare practice.
- Describe patient rights, informed consent, and confidentiality.

- Understand ethical issues related to patient care and clinical practice.
- Demonstrate professionalism, moral values, and professional behavior in healthcare settings.

Course Outcomes (CO)

CO1: Explain medical ethics and legal aspects in healthcare.

CO2: Describe professionalism and professional values.

CO3: Apply management principles in healthcare organizations.

CO4: Explain personnel and financial management.

CO5: Demonstrate legal and ethical healthcare practices..

UNIT I

Medical Law and Ethics

15 Hours

- Medical ethics
- Code of conduct
- Confidentiality
- Malpractice and negligence
- Informed consent
- Patient rights
- Euthanasia
- Organ transplantation

UNIT II

Medico Legal Aspects

15 Hours

- Medical records
- Medico legal cases
- Confidentiality of records
- Release of medical information
- Retention of records
- Professional indemnity insurance
- Standardized protocols
- Informed consent procedures

UNIT III

Professionalism and Values

10 Hours

- Professional ethics act
- Integrity
- Objectivity
- Professional competence
- Confidentiality
- Professional behavior
- Accountability
- Team work
- Cultural issues

UNIT IV

Principles of Management

20 Hours

- Definitions of management
- Functions of management
- Planning
- Organizing
- Motivation theories
- Communication
- Leadership
- Coordination
- Budgetary control

UNIT V

Personnel and Financial Management

10 Hours

- Personnel management
- Staffing
- Recruitment
- Training
- Performance appraisal
- Financial management
- Hospital financial management
- Insurance and health schemes

BAOTT-007: Basics of Biomedical Sciences in Surgery and Anaesthesia

L	T	P	C
3	0	2	5
(40H)		(60H)	

LEARNING OBJECTIVES

- Understand the basic concepts of anatomy, physiology, and biochemistry related to surgery and anaesthesia.
- Explain the structure and functions of major organ systems of the human body.
- Understand the physiological changes occurring during surgery and anaesthesia.
- Describe the role of microbiology and pathology in surgical and anaesthesia practice.
- Understand basic pharmacological principles related to anaesthetic and surgical drugs.
- Correlate biomedical science concepts with perioperative patient care.

Course Outcomes (CO)

- CO1: Explain biomedical engineering concepts in surgery and anesthesia.
- CO2: Describe surgical and anesthesia devices.
- CO3: Explain biomedical imaging principles.
- CO4: Describe anesthesia monitoring systems.
- CO5: Apply biomedical technology concepts in OT practice.

UNIT I**Introduction to Biomedical Engineering****4 Hours**

- Biomedical engineering in surgery and anesthesia
- Scope and applications
- Basic human physiology related to surgery and anaesthesia
- Introduction to medical instrumentation principles
- Patient safety, risk management, and quality assurance
- Role of biomedical engineers, ethical and legal aspects

UNIT II**Surgical and Anesthesia Devices****15 Hours**

- OT table, OT light
- Infusion pumps, TCI pumps
- Video laryngoscope, Bronchoscope
- Diathermy, Drills, ESU, LASER, Ultrasonic devices, RF devices, Harmonic scalpels
- 12 lead ECG
- Transducers, EtCO₂ monitor
- Pulse oximeter, Blood pressure monitor

UNIT III**Surgical Microscope and Laparoscopic Equipment****4 Hours**

- Surgical microscope
- Laparoscopic cart
- Scopes
- Veress needle
- Trocars
- Laparoscopic instruments

UNIT IV**Biomedical Imaging and Surgical Navigation****11 Hours**

- X-ray
- CT
- MRI
- Image guided surgery
- Image processing
- Surgical navigation systems
- Tracking and registration techniques

UNIT V**Anesthesia Delivery and Monitoring****6 Hours**

- Anesthesia machines
- Delivery systems
- Monitoring devices
- Physiological monitoring
- Closed loop anesthesia systems

PRACTICALS**60 HOURS****Reference Books**

- Fundamentals of Biomedical Instrumentation by Dr. O.N. Pandey (Author)
- Handbook of medical instrumentation by R S Kanpur.
- The Anesthesia Technologist's Manual by Emily S Guimaraes, Matthew Davis, Jeffrey R Kirsch, Glenn Woodworth.
- Surgical Technology for the surgical technologist by association of surgical technologists

BAOTT-008: Biochemistry & Haematology

L	T	P	C
4	0	1	5
(70H)		(30H)	

Course Outcomes (CO)

CO1: Explain vitamins, minerals, acids and bases in human physiology.

CO2: Describe hematological investigations and blood disorders.

CO3: Interpret coagulation parameters and blood transfusion practices.

CO4: Explain biochemical balance and metabolic functions.

CO5: Perform basic hematology laboratory procedures.

UNIT I**Vitamins, Minerals and Nutrition****12 Hours**

- Fat soluble vitamins (A, D, E, K)
- Water soluble vitamins
- B-complex vitamins
- Principal elements (Calcium, Phosphorus, Magnesium, Sodium, Potassium, Chlorine, Sulfur)
- Trace elements
- Calorific value of foods
- Basal metabolic rate (BMR)
- Respiratory quotient (RQ)

UNIT II**Acids, Bases and Buffers****10 Hours**

- Acids and bases
- Definition of pH
- Henderson–Hasselbalch equation
- Buffers
- Indicators
- Normality
- Molarity
- Molality

UNIT III

Hemoglobin and Blood Cell Disorders**(10 Hours)**

- Hemoglobin
- Blood cell counts
- Differential count
- Anemia
- Polycythemia
- Thrombocytopenia

UNIT IV**Coagulation Parameters and Disorders****10 Hours**

- Bleeding time (BT)
- Clotting time (CT)
- Prothrombin time (PT)
- International normalized ratio (INR)
- Activated partial thromboplastin time (APTT)
- Coagulation disorders

UNIT V**Blood Transfusion and Complications****8 Hours**

- Blood transfusion
- Hazards of blood transfusion
- Complications of blood transfusion

Practicals – Hematology**(40 Hours)**

- Phlebotomy
- CBC
- RBO typing
- Cross matching of blood

Reference Books

- Biochemistry, U Satyanarayan,
- Biochemistry, DM. Vasudevan,
- An Introduction to Hematology, Nandini Mukherjee.

BAOTT-009: Pathology & Microbiology

L	T	P	C
4	0	0	4
(100H)			

Course Outcomes (CO)

- CO1: Explain basic pathological changes and inflammatory processes.
- CO2: Describe immunity disorders and infectious diseases.
- CO3: Explain morphology and growth of microorganisms.
- CO4: Identify common pathogens and laboratory diagnostic methods.

CO5: Apply sterilization, disinfection and infection control principles.

UNIT I

Cellular Pathology and Inflammation

15 Hours

- Introduction to pathology
- Cellular response to stress and noxious stimuli
- Cellular adaptations of growth and differentiation
- Cell injury and cell death
- Causes and mechanisms of cell injury
- Reversible and irreversible cell injury
- Necrosis
- Acute inflammation
- Chemical mediators of inflammation
- Chronic inflammation

UNIT II

Immunity Disorders, Infectious Diseases and Neoplasia

15 Hours

- General features of immune system
- Disorders of immune system
- Microbial pathogenesis
- Viral infections
- Bacterial infections
- Rheumatic heart disease
- Fungal infections
- Parasitic infections
- Neoplasia
- Benign and malignant tumors
- Epidemiology
- Carcinogenic agents
- Clinical features of tumors

UNIT III

Environmental Disorders and Basic Microbiology

20 Hours

- Environmental diseases
- Occupational exposures
- Nutrition and disease
- Coronary artery disease
- Classification of microorganisms
- Size, shape and structure of bacteria
- Use of microscope in bacteriology
- Nutrition and growth of bacteria
- Culture media
- Antimicrobial sensitivity test

UNIT IV

Sterilization, Immunology and Systematic Bacteriology

25 Hours

- Sterilization and disinfection
- Hot air oven ,Autoclave
- Serum inspissator , Pasteurization
- Antiseptics and disinfectants
- Immunity , Vaccines and immunization schedule ,Widal
- VDRL ,ASLO ,CRP ,RF ,ELISA
- Rapid tests for HIV and HBsAg
- Staphylococci ,Streptococci ,Pneumococci ,Gonococci ,Meningococci ,C. diphtheriae ,
- Mycobacteria ,Clostridia ,Bacillus ,Shigella ,Salmonella , E. coli
- Klebsiella , Proteus , Vibrio cholerae , Pseudomonas ,Spirochetes.

UNIT V

Parasitology, Mycology and Virology

25 Hours

- E. histolytica ,Plasmodium ,Tape worms
- Intestinal nematodes , Candida , Cryptococcus ,Dermatophytes
- Opportunistic fungi
- General properties of viruses
- Herpes virus , Hepatitis virus ,HIV ,Rabies virus ,Poliomyelitis virus

Reference Books

- Microbiology, Ananthanarayan and Paniker's,
- CP. Baveja. Textbook of Microbiology for nurses.
- Pathology, Harsh Mohan e. Basic Pathology by Robbins

BAOTT-010 Basic Concepts in Pharmacology

L	T	P	C
3	0	0	3
(40H)			

Course Outcomes (CO)

- **CO1:** Understand the basic principles of pharmacology, pharmacokinetics, pharmacodynamics, and routes of drug administration.
- **CO2:** Explain the indications, contraindications, dosage, actions, and adverse effects of commonly used anesthetic and emergency drugs.
- **CO3:** Demonstrate knowledge of sedatives, analgesics, muscle relaxants, inhalational agents, and local anesthetics used in anesthesia practice.
- **CO4:** Apply pharmacological concepts in perioperative and emergency patient management.
- **CO5:** Identify the role of emergency medications and reversal agents in critical care situations.

UNIT I

Introduction to Pharmacology and Drug Administration

5 Hours

- Definition and scope of pharmacology
- Importance of pharmacology in anesthesia practice

- Pharmacokinetics
- Pharmacodynamics
- Routes of drug administration

UNIT II

Sedatives, Analgesics and Anticholinergics

10 Hours

- NSAIDs Drugs : NSAIDs used in clinical practice
- Antisialagogues: Atropine , Glycopyrrolate
- Sedatives / Anxiolytics
- Narcotics: Morphine , Pethidine , Fentanyl , Pentazocine , Tramadol
- Antiemetics: Metoclopramide , Ondansetron , Dexamethasone

UNIT III

Anesthetic Agents and Muscle Relaxants

10 Hours

- Thiopentone , Diazepam , Midazolam , Ketamine
- Propofol , Etomidate
- Depolarizing – Suxamethonium , Non-depolarizing – Vecuronium Atracurium Rocuronium
- Oxygen (O₂)
- Nitrous Oxide (N₂O)
- Air
- Ether
- Halothane
- Isoflurane
- Sevoflurane
- Desflurane

UNIT IV

Reversal Agents and Local Anesthetics

5 Hours

- Neostigmine
- Glycopyrrolate
- Atropine
- Naloxone
- Flumazenil
- Xylocaine
- Bupivacaine
- Prilocaine jelly
- Emla ointment
- Etidocaine
- Ropivacaine

UNIT V

Emergency Drugs

10 Hours

- Adrenaline , Atropine , Ephedrine , Mephentermine
- Bicarbonate , Calcium , Potassium

- Dopamine ,Dobutamine , Amiodarone , Aminophylline ,Hydrocortisone
- Antihistaminics ,Beta-blockers
- Calcium-channel blockers
- Xylocard ,Nitroglycerin
- Sodium nitroprusside ,Bronchodilators
- Diuretics ,Frusemide ,Mannitol

Reference Books

- Essentials of Medical Pharmacology, KD Tripathi
- Medical Pharmacology, Uday Kumar (Author)

BAOTT-011 Basic Computers and Information Science, Communication and Soft Skills

L	T	P	C
2	0	2	4
(40H)		(60H)	

Course Outcomes (CO)

- **CO1:** Understand the fundamentals of computer systems, operating systems, and software applications.
- **CO2:** Demonstrate proficiency in MS Word, Excel, and PowerPoint applications.
- **CO3:** Explain computer networks, internet applications, and the role of computers in healthcare settings.
- **CO4:** Develop effective verbal and written communication skills for healthcare environments.
- **CO5:** Apply soft skills and communication strategies during professional interactions.

UNIT I

Introduction to Computers and Input/Output Devices

8 Hours

- Characteristics of computer
- Block diagram of computer
- Generations of computer
- Computer languages
- Keyboard
- Point and draw devices
- Data scanning devices
- Digitizer ,Electronic card reader
- Voice recognition devices ,Vision-input devices
- Monitors ,Printers ,Plotters
- Screen image projector ,Voice response systems

UNIT II

Processor, Memory, Storage Devices and Operating Systems

6 Hours

- Central Processing Unit (CPU) ,Main memory
- Sequential access devices

- Direct access devices
- Magnetic tape ,Magnetic disk
- Optical disk ,Mass storage devices
- Operating system concepts
- Types of operating systems
- Desktop ,Taskbar ,Icons,Folder operations
- Shortcuts ,Window operations

UNIT III

MS Office Applications

10 Hours

- Creating and editing documents ,Formatting text
- Spell checking ,Printing documents
- Tables ,Mail merge ,Worksheets
- Entering information
- Formatting
- Printing worksheets
- Creating graphs ,Creating presentations ,Formatting slides ,Graphs in presentations

UNIT IV

Computer Networks and Internet Applications (6 Hours)

- LAN ,MAN ,WAN
- Internet ,Intranet
- Network topologies
- Components of network ,E-mail ,File Transfer Protocol ,Telnet
- World Wide Web ,Web browsers ,Use of internet
- Computer usage in healthcare environments

UNIT V

Communication and Soft Skills

10 Hours

- Grammar and usage ,Conversations ,Discussions ,Dialogues
- Short presentations ,Pronunciation ,Letters ,E-mails ,Reports ,Case studies
- Patient data collection ,Journal writing
- Basic concepts of communication
- Health communication ,Types of communication ,Communication process
- Barriers of communication ,Overcoming communication barriers

PRACTICALS (COMPUTERS AND COMMUNICATION)

– 30 Hours

- MS Word practicals
- MS Excel practicals
- MS PowerPoint practicals
- Software installation

- Data entry efficiency
- File and folder management
- Internet and e-mail usage
- Computer applications in clinical settings
- Spoken communication exercises
- Presentation skills
- Letter writing
- Report writing
- Case study preparation
- Role play and patient interaction exercises

II YEAR/III SEMESTER

Course Code	Course Title	Teaching Hours				Theory			Practical			Grand Total (Marks)
		L (hr)	P/ D	CL P		C R	SEE	IA	T	SEE	IA		T
BAOT T-012	Basic Techniques of Anesthesia	100	.....	50	5	80	20	100	40	10	50	150
BAOT T-013	Basics of Surgical Procedures	100	.....	50	5	80	20	100	40	10	50	150
BAOT T-014	CSSD & Manifold area	50	.....	100	4	40	10	50	.....	.....	.....	50
BAOT T-015	Industrial Orientation & Industrial Visit	50	.....	0	2	40	10	50	.....	.....	.....	50
Total		300	.....	200	16	.....	....	300	.....	.....	100	
Grand Total		510			.....							400
(Hours)					.....							

BAOTT-012 Basic Techniques of Anaesthesia

L	T	P/CLP	C
4	0	1	5
(100H)		(50H)	

Course Outcomes (CO)

- **CO1:** Understand preoperative assessment and patient preparation for anesthesia.
- **CO2:** Explain the design, components, and functioning of anesthesia machines and safety systems.
- **CO3:** Demonstrate knowledge of anesthetic induction, airway management, and monitoring techniques.
- **CO4:** Apply principles of pain management and perioperative care in surgical procedures.
- **CO5:** Identify and manage anesthesia-related complications and emergencies.

UNIT I**Preoperative Assessment and Anesthesia Machine****20 Hours**

- Preoperative evaluations ,Patient history ,Physical examinations
- Assessment of anesthesia risks ,Planning of patient care
- Design of anesthesia machine ,Components of anesthesia machine ,Functionality
- Flow systems ,CO₂ absorbents ,Circuit types
- Humidification devices

UNIT II**Fluid Management and Emergency Medications****20 Hours****Perioperative Fluid Management**

- Crystalloids
- Colloids
- Fluid management strategies
- Perioperative considerations

Perioperative Emergency Medications

- Indications
- Administration
- Management of emergency drugs

Premedication and Preoxygenation

- Premedication
- Preoxygenation
- Denitrogenation

UNIT III –**Anesthetic Induction and Airway Management****(20 Hours)**

- Induction techniques
- Airway devices
- Patent airway maintenance

Induction and Inducing Agents

- Induction agents
- Sellick's maneuver

Vaporizers and Intubation

- Principles of vaporizers
- Types of vaporizers
- Intubation
- Reversal agents

UNIT IV**Maintenance of Anesthesia and Pain Management****20 Hours**

- Balanced anesthesia
- Inhalational anesthetics
- Intravenous anesthetics
- Vital sign monitoring
- Depth of anesthesia
- Oxygenation monitoring

Pain Management and Analgesia

- Systemic analgesics
- Regional anesthesia
- Patient-controlled analgesia

UNIT V**Anesthetic Considerations and Complications****(20 Hours)**

- Appendectomy
- Cholecystectomy
- Hernia repair
- Laparotomy
- Labor and delivery
- Caesarean section
- Gynecological surgeries
- Obstetric emergencies

Management of Anesthesia-related Complications

- Cardiovascular complications
- Respiratory complications
- Allergic reactions
- Adverse events management

Practical / Clinical Posting Topics (45 Hours)

- Preoperative assessment and patient preparation
- History taking and physical examination
- Risk stratification for anesthesia care
- Anesthesia machine components and functioning
- Safety systems in anesthesia machine
- Regional anesthesia procedures
- Peripheral nerve blocks
- Epidural techniques
- Management of anesthesia-related complications
- Airway obstruction management
- Hypotension management
- Allergy management

- Simulation and role-playing exercises

REFERENCE BOOKS

- Drugs & Equipment in Anesthetic Practice by Arun Kumar Paul,
- Short textbook on Anesthesia, Ajay Yadav
- Short Textbook of Anesthesia, Bajaj Kumar
- Understanding Anesthesia Equipment Dorsch & Dorsch, e. Wards Anesthesia Equipment Andrew & Ali Diba.

BAOTT-013 Basics of Surgical Procedures

L	T	P/CLP	C
4	0	1	5
(100H)		(50H)	

Course Outcomes (CO)

- **CO1:** Understand operation theatre layout, WHO checklist, and sterilization procedures.
- **CO2:** Explain principles and techniques of general surgical procedures.
- **CO3:** Demonstrate knowledge of aseptic techniques and sterile field maintenance.
- **CO4:** Identify surgical diseases, instruments, and wound closure techniques.
- **CO5:** Apply infection prevention and patient positioning techniques during surgical procedures.

UNIT I

Operation Theatre and Aseptic Techniques

20 Hours

- WHO checklist
- Carbolization
- Fumigation
- Spaulding's classifications of zones
- Hand hygiene
- Gowning
- Gloving
- Sterile draping techniques

UNIT II

General Surgical Procedures and Diseases

20 Hours

- Appendectomy
- Cholecystectomy
- Hernia repair
- Appendicitis
- Hernias
- Cholecystitis
- Gastrointestinal cancers
- Peptic ulcer disease

UNIT III**Obstetric and Gynecologic Procedures****20 Hours**

- Ectopic pregnancy
- Pelvic inflammatory disease
- Endometriosis
- Fibroids
- Ovarian cysts
- Cervical cancer
- Ovarian cancer
- Caesarean section
- Hysterectomy
- Ovarian cystectomy

UNIT IV**Wound Closure and Surgical Instruments****20 Hours**

- Surgical incision types
- Sutures
- Staples
- Adhesive tapes
- Wound dressing principles
- Surgical instruments in general surgery
- Surgical instruments in obstetrics and gynecology
- Instrument handling
- Instrument maintenance

UNIT V**Infection Control and Patient Positioning****20 Hours**

- Skin preparation
- Antimicrobial prophylaxis
- Aseptic practices
- Patient positioning techniques
- Safety considerations
- Surgical accessibility
- Surgical outcomes optimization

Practical / Clinical Posting Topics**(45 Hours)**

- Operation theatre layout demonstration
- WHO surgical safety checklist
- Sterile and non-sterile zones
- Suturing materials
- Suturing techniques
- Sterile area maintenance
- Gloving techniques

- Gowning techniques
- Draping techniques
- Identification of surgical instruments
- Uses of surgical instruments
- Patient positioning techniques
- Communication and coordination during surgery
- Simulation exercises in surgical settings

REFERENCE BOOKS

- Fullers Surgical Technology, Joanna Kotcher Fuller
- D C Dutta textbook OG Gynecology, Hiralal Konar
- Surgical Technology for the surgical technologist by association of surgical technologists.
- Textbook on Operation Theatre Technology, Bhagwan Ramachandran.

BAOTT-014 CSSD & Manifold Area

L	T	P/CLP	C
2	0	2	4
(50H)		(100H)	

Course Outcomes (CO)

- **CO1:** Understand the role and functions of CSSD in infection control and sterilization.
- **CO2:** Explain sterilization, decontamination, packaging, and storage procedures in CSSD.
- **CO3:** Demonstrate knowledge of quality assurance and infection control practices.
- **CO4:** Identify manifold system components and medical gas management procedures.
- **CO5:** Apply troubleshooting and maintenance techniques for CSSD and manifold equipment.

UNIT I

Introduction to CSSD and Sterilization Methods

13 Hours

- Role of CSSD
- Importance of CSSD
- Infection control
- Sterile instruments and equipment
- Steam sterilization
- Autoclaving
- Ethylene oxide sterilization
- Hydrogen peroxide plasma sterilization
- Chemical sterilization

UNIT II

Decontamination and Instrument Preparation

(7 Hours)

- Manual cleaning
- Mechanical cleaning
- Ultrasonic cleaning

- Enzymatic cleaning
- Instrument cleaning
- Inspection
- Assembly
- Packaging techniques

UNIT III

Storage, Quality Assurance and Infection Control

14 Hours

- Inventory control
- FIFO system
- Labelling
- Documentation
- Biological monitoring
- Chemical monitoring
- Regulatory compliance
- Hand hygiene
- PPE usage
- Aseptic techniques
- Prevention of cross-contamination

UNIT IV

Equipment Maintenance and Manifold Systems

8 Hours

- Sterilizers
- Washers
- Drying cabinets
- Troubleshooting procedures
- Medical gases
- Design and layout
- Gas outlets and connections
- Gas identification and labelling

UNIT V

Gas Control, Safety and Emergency Procedures

8 Hours

- Pressure regulation devices
- Safety practices
- Liquid medical oxygen
- Gas shutdown procedures
- Troubleshooting
- Problem-solving
- Regulations and compliance

Practical / Clinical Posting Topics (90 Hours)

CSSD Procedures (60 Hours)

- Autoclave operation
- Chemical sterilization methods

- Manual cleaning techniques
- Ultrasonic cleaner operation
- Instrument decontamination
- Inventory management
- Sterile storage procedures

Manifold Area (40 Hours)

- Hospital manifold system components
- Gas sources and regulators
- Safety alarms and devices
- Emergency equipment handling
- Gas shut-off valves
- Pressure relief devices
- Emergency alarms
- Troubleshooting manifold systems
- Maintenance of manifold systems

REFERENCE BOOKS

- Essentials of Applied Microbiology for Nurses Including Infection Control and Safety by Apurba S Sastry, Sandhya Bhat.
- medical gases: Health Technical Memorandum Medical gas pipeline systems, by Dept. of Health, UK Health Departments.

BAOTT-015 Industrial Orientation and Industrial Visit

L	T	P	C
3	0	0	3
(50H)			

Course Outcomes (CO)

- **CO1:** Understand the structure and functioning of healthcare and medical industries.
- **CO2:** Explain the importance of industrial visits in professional learning.
- **CO3:** Demonstrate knowledge of industrial workflows, ethics, and professional conduct.
- **CO4:** Observe and interact with professionals in healthcare-related industries.
- **CO5:** Prepare reports and presentations based on industrial visit experiences.

UNIT I

Introduction to Industrial Settings

10 Hours

- Medical device manufacturing companies
- Pharmaceutical companies
- Hospitals
- Healthcare facilities
- Practical exposure
- Real-world applications
- Professional work environments

UNIT II**Preparation and Orientation****10 Hours**

- Scheduling
- Logistics
- Safety guidelines
- Organizational structure
- Departments
- Functions
- Roles and responsibilities

UNIT III**Observation and Interaction****10 Hours**

- Industrial operations
- Processes and workflows
- Interaction with professionals
- Challenges and best practices

UNIT IV**Ethical Considerations and Reflective Learning****10 Hours**

- Confidentiality
- Intellectual property
- Workplace rules
- Professional conduct
- Observation analysis
- Practical implications
- Relevance to operation theatre and anesthesia technology

UNIT V**Reporting and Documentation****10 Hours**

- Report preparation
- Presentation skills
- Key learnings
- Industrial observations
- Future professional relevance
-

II YEAR/IV SEMESTER

Course Code	Course Title	Teaching Hour			CR	Theory			Practical			Grand Total (Marks)
		L (hrs.)	P / D	C L P		SEE	IA	T	SEE	IA	T	
BAOTT-016	Advanced Anesthesia Techniques	100	...	50	5	80	20	100	40	10	50	150
BAOTT-017	Advanced Surgical Procedures	100	...	50	5	80	20	100	40	10	50	150
BAOTT-018	Basic Intensive CARE	50	...	100	4	40	10	50	30	20	50	100
BAOTT-019	Clinical Medicine & Management	50	...	0	2	40	10	50	.....	.....	.....	50
Total		300	...	200	16	.....	....	300	.....	.....	150	
Grand Total		500			.....							450
(Hours)					.....							

BAOTT-016 Advanced Anesthesia Techniques

L	T	P	C
4	0	1	5
(100H)		(50H)	

COs

- **CO1:** Describe anaesthetic considerations in ENT and ophthalmic surgeries.
- **CO2:** Explain airway management techniques used in ENT procedures.
- **CO3:** Demonstrate anaesthetic techniques for ophthalmic surgeries.
- **CO4:** Analyze local and regional anaesthesia techniques for head and neck procedures.
- **CO5:** Evaluate and manage complications related to ENT and ophthalmic surgeries.

UNIT I**Anaesthetic Considerations in ENT Surgeries****20 Hours**

- Anaesthetic considerations for ear, nose, and throat surgeries
- Tonsillectomy
- Adenoidectomy
- Sinus surgery
- Challenges in airway management during ENT surgeries
- Pain management protocols in ENT procedures

UNIT II:**Airway Management in ENT Procedures****(20 Hours)**

- Fibreoptic intubation
- Supraglottic airway devices
- Video laryngoscopy
- Securing airway during ENT surgeries
- Management of difficult airway situations

UNIT III:**Anaesthetic Techniques for Ophthalmic Surgeries****20 Hours**

- Anaesthesia for cataract extraction
- Retinal surgeries
- Glaucoma procedures
- Patient positioning in ophthalmic surgeries
- Sedation and monitoring techniques

UNIT IV:**Local and Regional Anaesthesia Techniques****20 Hours**

- Local anaesthetics for head and neck surgeries
- Nerve blocks
- Regional anaesthesia techniques
- Administration techniques
- Advantages and limitations of regional anaesthesia

UNIT V:**Management of Complications in ENT and Ophthalmic Surgeries****20 Hours**

- Complications in ENT surgeries
- Complications in ophthalmic surgeries
- Airway obstruction management
- Emergency airway manoeuvres
- Ocular emergencies
- Prevention and management strategies

Practical / Clinical Postings**(45 Hours)**

- Patient positioning and airway access during tonsillectomy and adenoidectomy
- Selection and administration of anaesthetic agents in ENT surgeries
- Anaesthetic techniques for sinus surgery
- Fiberoptic intubation techniques using airway manikins
- Insertion and positioning of supraglottic airway devices
- Topical anaesthesia techniques for cataract extraction
- Peribulbar and retrobulbar block techniques
- Simulation of difficult airway scenarios
- Management of airway obstruction in ENT surgeries
- Ocular emergency management simulations

REFERENCE BOOKS

- Drugs & Equipment in Anesthetic Practice by Arun Kumar Paul,
- short textbook on Anesthesia, Ajay Yadav
- The Anesthesia Technician & Technologists Manual Glenn Woodworth. g. Miller's Anesthesia.

BAOTT-017 Advanced Surgical Procedures

L	T	P	C
4	0	1	5
(100H)		(50H)	

COs

- **CO1:** Describe advanced ENT and ophthalmic surgical procedures.
- **CO2:** Identify diseases in otolaryngology and ophthalmology.
- **CO3:** Explain laser-assisted and minimally invasive surgical techniques.
- **CO4:** Demonstrate endoscopic surgical procedures.
- **CO5:** Evaluate and manage complications in ENT and ophthalmic surgeries. . .

UNIT I:**Surgical Procedures in ENT****20 Hours**

- Tonsillectomy
- Septoplasty
- Laryngectomy
- Sinus surgery
- Specialized instruments and techniques in ENT surgery
- Patient positioning in ENT procedures

UNIT II:**Diseases in Otolaryngology (ENT)****20 Hours**

- Chronic sinusitis
- Tonsillitis

- Deviated septum
- Otitis media
- Vocal cord nodules and polyps
- Obstructive sleep apnea
- Laryngeal cancer
- Nasal polyps
- Salivary gland disorders
- Cochlear implantation

UNIT III:

Ophthalmic Diseases and Surgical Techniques

20 Hours

- Cataracts and cataract extraction
- Intraocular lens implantation
- Glaucoma and trabeculectomy
- Retinal detachment repair
- Corneal transplantation
- Refractive surgeries (LASIK, PRK)
- Vitrectomy
- Retinoblastoma management

UNIT IV:

Laser and Endoscopic Surgical Procedures

20 Hours

- Laser safety training
- Protective eyewear and fire safety
- Laser plume management
- Laser warning signage and interlock systems
- Endoscopic sinus surgery
- Laryngoscopy
- Tracheostomy
- Laser-assisted tonsillectomy
- Laser refractive surgeries

UNIT V:

Minimally Invasive Surgery and Complication Management

20 Hours

- Minimally invasive approaches in ENT and ophthalmology
- Robotic-assisted procedures
- Advantages and limitations of minimally invasive surgery
- Management of complications in ENT surgeries
- Management of complications in ophthalmic surgeries
- Prevention and recognition of adverse events

PRACTICALS

(45 Hours)

- Identification of ENT and ophthalmic surgical instruments
- Arrangement techniques for tonsillectomy procedures
- Handling of specialized ENT instruments
- Nasal packing and airway patency techniques

- Endoscopic sinus surgery simulations
- Arrangement of instruments for laryngoscopic examination
- Visualization of vocal cords using laryngoscope models
- Simulated ophthalmic surgical procedures
- Practice of endoscopic procedures in ENT and ophthalmology
- Management of complications during ENT and ophthalmic surgeries

REFERENCE BOOKS

- Fullers Surgical Technology, Joanna Kotcher Fuller
- Diseases in ENT, Head & Neck Surgery, PL Dhingra & Shruti
- Laparoscopic Surgery, R. K. Mishra d. Surgical Technology

BAOTT-018 Basic Intensive Care

L	T	P	C
3	0	1	4
(50H)		(50H)	

COs

- **CO1:** Describe principles of intensive care equipment and monitoring devices.
- **CO2:** Explain care and maintenance of ventilators and ICU apparatus.
- **CO3:** Apply oxygen therapy and airway management techniques.
- **CO4:** Demonstrate physiotherapy, feeding, and suctioning procedures in ICU care.
- **CO5:** Evaluate emergency ventilation methods and critical care management.

UNIT I:

ICU Equipment and Ventilator Care

20 Hours

- Care and maintenance of ventilators
- Suction machines
- Monitoring devices
- Sterilization and disinfection of ventilators
- Beds, lights, and ICU apparatus
- Air conditioning and pollution control in ICU

UNIT II:

Patient Care and Airway Management

20 Hours

- Care of unconscious adult and paediatric patients
- Suctioning techniques
- Posturing of semiconscious and unconscious patients
- Oxygen therapy
- Maintenance of clear airway
- Types of masks
- Different types of airways

UNIT III:**Ventilation and Respiratory Support****20 Hours**

- Ventilation during patient crisis
- Resuscitator and bag valve mask assembly
- Short-term ventilation
- Transport ventilators
- Jet ventilation
- Volume cycled ventilators
- Time cycled ventilators
- Pressure cycled ventilators
- High frequency ventilators

UNIT IV:**Monitoring and Diagnostic Techniques****20 Hours**

- ABG techniques and analysis
- Spirometers and expired gas measurement
- Blood pressure monitoring apparatus
- Oscillo tonometer
- Aneroid manometer BP instrument
- Temperature monitoring
- Cardiac monitors
- Respiratory monitors

UNIT IV:**Monitoring and Diagnostic Techniques****(20 Hours)**

- ABG techniques and analysis
- Spirometers and expired gas measurement
- Blood pressure monitoring apparatus
- Oscillo tonometer
- Aneroid manometer BP instrument
- Temperature monitoring
- Cardiac monitors
- Respiratory monitors

Practical / Clinical Postings (90 Hours)

- Care and maintenance of ventilators
- Ventilator cleaning, sterilization, and disinfection
- Troubleshooting ventilator alarms and issues
- Bed positioning and ICU apparatus handling
- ICU air conditioning and pollution control practices
- Care of unconscious adult and paediatric patients
- Oxygen therapy using masks and nasal cannulas
- Endotracheal tube insertion and airway management
- Bag-valve mask ventilation techniques
- Physiotherapy and postural drainage techniques
- Ryle's tube insertion and enteral feeding

- Hemofiltration and hemodialysis machine handling
- Monitoring of ICU patients during critical care procedures
- Communication and psychological support role-play sessions

REFERENCE BOOKS

- Principles of Critical Care, Udwadia Erach Farokh (Author)
- The Protocol Book of Intensive Care, Soumitra Kumar.
- Oxford's Handbook of Critical Care, M Singer, A. Webb
- Essentials of Critical Care Nursing, Jaya Kuruvilla.

BAOTT-019 Clinical Medicine & Related Management

L	T	P	C
2	0	0	2
(50H)			

Course Outcomes (CO)

- **CO1:** Identify cardiovascular examination and investigations.
- **CO2:** Explain common cardiovascular diseases and management.
- **CO3:** Describe respiratory examination and investigations.
- **CO4:** Analyze respiratory diseases and emergency management.
- **CO5:** Apply clinical knowledge in respiratory and cardiovascular emergencies.

UNIT 1:

Cardiovascular Examination & Investigations

(12 Hours)

- Clinical examination of CVS
- Pulse examination
- Blood pressure measurement
- Heart sounds and murmurs
- ECG interpretation
- Echocardiography
- Cardiac enzymes
- Stress test
- Cardiac catheterization basics

UNIT 2:

Cardiac Diseases

12 Hours

- Ischemic heart disease
- Angina
- Myocardial infarction
- Valvular heart diseases
- Common arrhythmias
- Atrial fibrillation
- Ventricular tachycardia
- Bradycardia management

UNIT 3:**Hypertension & Heart Failure****10 Hours**

- Hypertension
- Complications of hypertension
- Heart failure
- Left and right heart failure
- Cardiomyopathies
- Medical management principles

UNIT 4:**Respiratory Examination & Investigations****10 Hours**

- Respiratory system examination
- Pulmonary function tests
- Chest X-ray
- ABG analysis
- CT thorax
- Bronchoscopy basics

UNIT 5:**Respiratory Diseases & Management****16 Hours**

- Asthma
- COPD
- Pneumonia
- Pulmonary tuberculosis
- Bronchiectasis
- Lung abscess
- Pneumothorax
- Pleural effusion
- Carcinoma lung
- Respiratory failure
- Oxygen therapy
- Ventilatory support
-

REFERENCE BOOKS

- .Harrison`s principles of Internal Medicine
- Toohey`s Medicine, R Indrani.

IV YEAR/V SEMESTER

Course Code	Course Title	Teaching Hour				Theory			Practical			Grand Total (Marks)
		L hrs	P/ D	CL P	CR	SEE	IA	T	SEE	IA	T	
BAOTT -020	Specialized Anesthesia	100	.....	50	5	80	20	100	40	10	50	150
BAOTT -021	Specialize d Surgery	100	.....	50	5	80	20	100	40	10	50	150
BAOTT -022	Recent Advances in Anesthesia & Surgical Field	50	.....	50	5	80	20	100	.....	..... .	..... .	100
BAOTT -023	Disaster Management & Environ mental Science	100	.....	0	2	40	10	50	.....	..... .	..... .	50
Total		400	.....	150	17	.....	....	350	.....	..... .	10 0	450
Grand Total		510			.....							
(Hours)					.....							
												

BAOTT-020 Specialized Anaesthesia–1

L	T	P	C
4	0	1	5
(100H)		(50H)	

Course Outcomes (CO)

- CO1: Describe anesthesia for orthopedic surgeries.
- CO2: Explain pediatric anesthesia principles safely.
- CO3: Apply management of pediatric patients with congenital anomalies.
- CO4: Analyze anesthesia techniques for urological surgeries.
- CO5: Perform regional anesthesia techniques and pain management.

UNIT 1:**Orthopedic Anesthesia****20 Hours**

- Anesthesia for fracture fixation
- Joint replacement surgeries
- Spine surgeries
- Positioning in orthopedic surgery
- Blood loss management
- Tourniquet use
- Intraoperative monitoring
- Postoperative pain management

UNIT 2:**Pediatric Anesthesia****20 Hours**

- Pediatric anatomy and physiology
- Preoperative evaluation
- Pediatric airway management
- Induction techniques
- Maintenance of anesthesia
- Pediatric fluid therapy
- Pediatric emergencies

UNIT 3:**Congenital Anomalies & Anesthesia****20 Hours**

- Congenital heart diseases
- Cleft lip and palate
- Neural tube defects
- Hydrocephalus
- Airway abnormalities
- Intraoperative monitoring
- Postoperative care

UNIT 4:**Urological Anesthesia****20 Hours**

- Anesthesia for prostatectomy
- Nephrectomy
- Cystoscopy
- TURP syndrome
- Lithotripsy procedures
- Positioning in urology
- Fluid management

UNIT 5:**Regional Anesthesia Techniques****20 Hours**

- Spinal anesthesia
- Epidural anesthesia
- Peripheral nerve blocks
- Local anesthetics
- Complications of regional anesthesia
- Ultrasound-guided blocks
-

Practicals Hours)

(45

- Pediatric intubation
- Spinal anesthesia simulation
- Peripheral nerve blocks
- Orthopedic positioning
- Regional anesthesia setup

REFERENCE BOOKS

- Drugs & Equipment in Anesthetic Practice by Arun Kumar Paul
- Short textbook on Anesthesia, Ajay Yadav
- Understanding Anesthesia Equipment Dorsch & Dorsch

BAOTT-021 Specialized Surgery–1

L	T	P	C
4	0	1	5
(100H)		(50H)	

Course Outcomes (CO)

CO1: Understand orthopedic diseases and surgeries.

CO2: Explain pediatric surgical diseases and procedures.

CO3: Understand urological diseases and surgeries.

CO4: Apply minimally invasive surgical techniques.

CO5: Understand postoperative rehabilitation and perioperative care.

UNIT 1:

Orthopedic Diseases & Surgeries

(35 Hours)

- Osteoarthritis
- Fractures ,Herniated disc ,Scoliosis
- Carpal tunnel syndrome ,Rotator cuff tear
- Ligament injuries ,Spinal stenosis ,Bone tumors
- Osteoporosis
- Joint replacement surgeries ,ORIF ,Arthroscopy
- Spine surgeries

UNIT 2:**C-Arm & Radiation Safety****5 Hours**

- Principles of C-arm
- Radiation hazards
- Radiation protection
- Lead aprons and shielding
- Pediatric radiation safety
- Contrast media safety

UNIT 3:**Pediatric Surgical Diseases & Procedures****30 Hours**

- Cleft lip and palate
- Pediatric hernia
- Hypospadias
- Cryptorchidism
- PUJO
- Pyloric stenosis
- Hirschsprung disease
- Clubfoot
- Pediatric trauma
- Pediatric laparoscopy

UNIT 4:**Urological Diseases & Surgeries****20 Hours**

- Kidney stones
- ESWL
- Ureteroscopy
- TURP
- Bladder cancer
- Prostate cancer
- Renal tumors
- Nephrectomy
- Cystectomy
- Urological scopes

UNIT 5:**Minimally Invasive Surgery & Postoperative Care****10 Hours**

- Arthroscopy
- Laparoscopy
- Robotic surgery
- Trocar insertion
- Camera navigation
- Postoperative rehabilitation
- Pain management

Practicals**(45 Hours)**

- Orthopedic instruments
- Arthroscopy setup
- Pediatric sterile techniques
- Catheterization
- Laparoscopic instruments

REFERENCE BOOKS

- Fullers Surgical Technology, Joanna Kotcher Fuller
- Laparoscopic Surgery, R. K. Mishra
- Surgical Technology for the surgical technologist by association of surgical technologists.

BAOTT-022 Recent Advancements in Anesthesia and Surgical Fields

L	T	P	C
3	0	2	5
(50H)		(50H)	

Course Outcomes (CO)**CO1:** Understand minimally invasive surgical advancements.**CO2:** Explain ERAS protocols and patient safety measures.**CO3:** Understand modern anesthesia techniques and monitoring.**CO4:** Apply perioperative pain management strategies.**CO5:** Understand emerging surgical technologies and innovations.**UNIT 1:****Minimally Invasive Surgery****15 Hours**

- Laparoscopic surgery
- Robotic surgery
- Endoscopic surgery
- NOTES procedures
- Single-incision surgery

UNIT 2:**ERAS & Patient Safety****30 Hours**

- ERAS protocols
- Surgical safety checklist
- Infection prevention
- Simulation training
- Team communication

UNIT 3:**Advanced Anesthetic Techniques****15 Hours**

- TIVA

- TCI
- BIS monitoring
- CNAP monitoring
- Neuromuscular monitoring

UNIT 4:

Perioperative Pain Management & Imaging

20 Hours

- Multimodal analgesia
- Regional anesthesia
- Non-opioid analgesics
- Ultrasound guidance
- 3D imaging systems

UNIT 5:

Surgical Innovations & Endoscopy

20 Hours

- Artificial intelligence in surgery
- Virtual reality
- Augmented reality
- 3D printing
- Advanced endoscopy

PRACTICALS 45 HOURS

- BIS monitoring
- TIVA setup
- Robotic surgery observation
- Endoscopy instruments
- OT safety drills

REFERENCE BOOKS

- Fullers Surgical Technology, Joanna Kotcher Fuller
- SRB’s manual of Surgery, Sriram Bhat M,
- Miller’s Anesthesia

BAOTT-023 Disaster Management & Environmental Sciences

L	T	P	C
2	0	0	2
(100H)			

Course Outcomes (CO)

- **CO1:** Identify fundamentals, types, and preparedness measures in disaster management.
- **CO2:** Describe emergency response, resource allocation, rehabilitation, and psychological impact management.
- **CO3:** Demonstrate knowledge of safe water, water purification, waterborne diseases, and air pollution control.
- **CO4:** Apply concepts of radiation safety, environmental protection, and housing health measures.
- **CO5:** Evaluate waste disposal methods, biomedical waste management, sanitation, and hygiene practices

UNIT 1:**Disaster Management Basics****10 Hours**

- Fundamentals of disaster management
- Types of disasters
- Emergency preparedness
- Risk reduction

UNIT 2:**Emergency Response & Resource Management****10 Hours**

- Resource allocation
- Logistics management
- Rehabilitation
- Psychological impact management

UNIT 3:**Water & Air Pollution****15 Hours**

- Safe water
- Water purification
- Water pollution
- Waterborne diseases
- Air pollution

UNIT 4:**Radiation & Environmental Protection****10 Hours**

- Radiation hazards
- Noise pollution
- Environment protection act
- Housing and health

UNIT 5:**WASTE DISPOSAL & HYGIENE****(15 HOURS)**

- Solid waste disposal
- Liquid waste disposal
- Biomedical waste management
- Sanitation and hygiene

PRACTICALS/MOCK DRILLS (can be conducted)

- Disaster mock drill ,Waste segregation
- PPE demonstration ,Water purification methods

REFERENCE BOOKS

- Community advances with recent advances by Suryakantha
- Review of Preventive and Social Medicine (including biostatistics) by Dr. Vivek Jain c.
Environmental Science by Y K Singh

IV YEAR/VI SEMESTER

Course Code	Course Title	Teaching Hour				Theory			Practical			Grand Total (Marks)	
		L hrs	P / D	C L P	CR	SEE	IA	T	SEE	IA	T		
BAOT T-024	Specialized Anesthesia-2	100	... ..	50	5	80	20	100	40	10	50	150	
BAOT T-025	Specialized Surgery-2	100	... ..	50	5	80	20	100	40	10	50	150	
BAOT T-026	Specialized Anesthesia & Surgical-3	100	... ..	50	5	80	20	100	40	10	50	150	
BAOT T-027	Research Methodology & Biostatistics*	50	... ..	0	2	40	10	50	.....	.....	.....	50	
Total		350	... ..	150	17	.....	....	350	.....	.....	150	500	
Grand Total		500			.....								
(Hours)					.....								

BAOTT-024 Specialized Anaesthesia-2

L	T	P	C
4	0	1	5
(100H)		(50H)	

Course Outcomes (CO)

- CO1: Describe anesthesia for cardiovascular and thoracic surgeries.
- CO2: Demonstrate central venous and arterial line procedures safely.
- CO3: Explain cardiac bypass anesthesia techniques.
- CO4: Analyze neuro-anesthesia principles and monitoring.
- CO5: Evaluate management of hemodynamic changes during major surgeries.

UNIT 1:**Cardiovascular & Thoracic Anesthesia****15 Hours**

- CABG anesthesia
- Valve replacement anesthesia
- Lung resection anesthesia
- Thoracic positioning

UNIT 2:**Central Venous & Arterial Access****10 Hours**

- IJV cannulation
- Femoral line
- PICC line
- Subclavian line
- Arterial line insertion
- Allen's test

UNIT 3:**Cardiac Bypass Anesthesia****(15 Hours)**

- Cardiopulmonary bypass
- Heparinization
- ACT monitoring
- Valve surgeries

UNIT 4:**Hemodynamic Management****20 Hours**

- Hypotension management
- Hypertension management
- Fluid therapy
- Vasopressors
- TEE basics

UNIT 5:**Neuro-Anesthesia & Monitoring****40 Hours**

- Neuro-anesthesia principles
- Intracranial pressure management
- TIVA in neurosurgery
- Neurophysiological monitoring
- Neurosurgical positioning

PRACTICALS**50 HOURS**

- CVP insertion simulation
- Arterial line setup
- TIVA setup
- Neuro-monitoring observation

REFERENCE BOOKS

- Understanding Anesthesia Equipment Dorsch & Dorsch
- .Wards Anesthesia Equipment Andrew & Ali DibA,

BAOTT-025 Specialized Surgery–2

L	T	P/CLP	C
4	0	1	5
(100H)		(50H)	

Course Outcomes (CO)

CO1: Understand diseases and surgeries in CTVS.

CO2: Explain congenital heart defects and surgical repair.

CO3: Understand neurosurgical procedures and positioning.

CO4: Apply intraoperative monitoring principles.

CO5: Manage perioperative complications in CTVS and neurosurgery.

UNIT 1:**DISEASES IN CTVS****25 HOURS**

- Coronary artery disease
- CABG
- Valvular heart disease
- Aortic aneurysm
- Arrhythmias
- Lung cancer
- PAD and DVT

UNIT 2:**Congenital Heart Defects****10 Hours**

- ASD
- VSD
- Tetralogy of Fallot
- Congenital heart repair surgeries

UNIT 3:**CTVS Procedures****15 Hours**

- CABG procedure
- Valve replacement
- Thoracotomy
- Lung resection

UNIT 4:**Neurosurgical Procedures & Monitoring****30 Hours**

- Craniotomy
- Spinal fusion
- Tumor resection
- Deep brain stimulation
- Cranial pins and horseshoe headrest
- Neuro-monitoring

Unit 5:**Perioperative Complications & Management****20 Hours**

- Hemodynamic instability
- Bleeding management
- Neurological complications
- Crisis management

PRACTICALS**50 HOURS**

- CPB machine setup
- Neurosurgical positioning
- TEE observation
- Monitoring devices
- Crisis simulations

REFERENCE BOOKS

- Fullers Surgical Technology, Joanna Kotcher Fuller
- The Neurosurgical Instrument Guide, Christopher.S. Eddleman
- Surgical Technology for the surgical technologist by association of surgical technologists.

BAOTT-026 Specialized Anaesthesia & Surgery – 3

L	T	P/CLP	C
4	0	1	5
(100H)		(50H)	

Course Outcomes (CO)

- **CO1:** Describe principles and workflow of robotic-assisted surgeries.
- **CO2:** Explain anaesthetic considerations in robotic and NORA procedures.
- **CO3:** Apply BIS, NMT, ultrasound, and navigation systems in anaesthesia practice.
- **CO4:** Analyze perioperative management in organ transplantation surgeries.
- **CO5:** Evaluate postoperative care and immunosuppression in transplant recipients.

UNIT I**Robotic-Assisted Surgical Procedures****20 Hours**

- Introduction to robotic surgery
- Principles of robotic-assisted surgeries
- da Vinci Surgical System

- Robotic-assisted prostatectomy
- Robotic-assisted hysterectomy
- Robotic-assisted colorectal surgery
- Roles of OT and Anaesthesia team professionals
- Instrument docking and console operation
- Patient positioning in robotic surgeries
- Pneumoperitoneum management
- Safety measures in robotic procedures

UNIT II

Anaesthetic Techniques & Monitoring Systems

20 Hours

- Anaesthetic considerations in robotic surgeries
- Anaesthetic agents used in robotic procedures
- Airway management during robotic surgery
- BIS monitoring
- Neuromuscular monitoring (NMT)
- Ultrasound in anaesthesia practice
- Ultrasound-guided regional anaesthesia
- Navigation systems in surgery
- Interpretation of monitoring data
- Patient safety and monitoring protocols

UNIT III

Non-Operative Room Anaesthesia (NORA)

20 HOURS

- Introduction to NORA ,Scope and importance of NORA
- Anaesthesia in interventional radiology
- Anaesthesia in endoscopy
- Anaesthesia in cardiac catheterization
- Anaesthesia in bronchoscopy
- Sedation techniques and protocols
- Radiation safety and precautions
- Pediatric NORA
- Regional anaesthesia in NORA
- Critical care anaesthesia outside ICU
- Patient selection and risk assessment
- Equipment and emergency preparedness
- Teamwork and communication in NORA
- Quality improvement and patient outcomes

UNIT IV

Organ Transplantation Procedures

20 HOURS

- Introduction to organ transplantation ,Kidney transplantation ,Liver transplantation
- Heart transplantation ,Organ preservation techniques
- Graft implantation ,Vascular anastomosis
- Immunosuppression strategies
- Ethical considerations in transplantation
- Organ donation and allocation

- Cross-matching techniques
- Immunological considerations
- Multidisciplinary transplant team approach

UNIT V

Postoperative Care & Immunosuppression

20 HOURS

- Postoperative care protocols in transplant surgeries
- Monitoring graft function
- Immunosuppressive drug regimens
- Drug interactions and dose adjustments
- Infection prevention strategies
- Management of postoperative complications
- Long-term follow-up care
- Patient counselling and education
- Rehabilitation after transplantation
- Ethical and legal responsibilities

PRACTICALS

Specialized Anaesthesia & Surgery – 3

50 HOURS

Robotic-Assisted Surgical Procedures

- Hands-on practice with robotic surgical systems
- Instrument docking and robotic arm manipulation
- Console operation training
- Team coordination during robotic surgery
- Patient positioning techniques

BIS, NMT, Ultrasound & Navigation

- BIS electrode placement and monitoring
- Neuromuscular monitoring techniques
- Ultrasound-guided nerve block practice
- Navigation system demonstrations
- Interpretation of monitoring values

NORA

- Sedation techniques in non-operating room settings
- Airway management in NORA
- Radiation safety practices
- Infection control in NORA
- Emergency management simulation

Organ Transplantation

- Organ preservation demonstrations

- Cross-matching laboratory techniques
- Perioperative transplant management scenarios
- Immunosuppressive drug monitoring
- Postoperative infection prevention exercises

REFERENCE BOOKS

- .Miller's Anesthesia
- Advances In Anesthesia For Laparoscopic Surgeries Regional Anesthesia And The Road Ahead
- Fullers Surgical Technology, Joanna Kotcher Fuller d. Laparoscopic Surgery, R.K .Mishra

BAOTT-027 Research Methodology & Biostatistics

L	T	P	C
2	0	0	2

(50H)

Course Outcomes (CO)

- **CO1:** Describe basic concepts of research methodology.
- **CO2:** Identify research problems and formulate research questions.
- **CO3:** Apply ethical principles in healthcare research.
- **CO4:** Analyze data using basic biostatistics concepts.
- **CO5:** Prepare a structured research proposal and report.

UNIT I

Introduction to Research Methods

10 HOURS

- Meaning and objectives of research
- Types of research
- Importance of research in healthcare
- Research process
- Literature review
- Identifying research gaps
- Formulation of research objectives
- Hypothesis formulation

UNIT II

Research Problem & Ethical Issues

10 HOURS

- Identifying research problems
- Research questions
- Variables in research
- Ethical principles in research
- Informed consent
- Confidentiality and privacy
- Ethical committee approval

- Plagiarism and research misconduct

UNIT III

Research Design & Sampling Methods

15 HOURS

- Research design overview
- Experimental research design
- Observational research design
- Qualitative and quantitative research
- Sampling techniques
- Probability sampling
- Non-probability sampling
- Sample size determination
- Pilot study

UNIT IV

Biostatistics & Types of Data

15 HOURS

- Introduction to biostatistics
- Types of data
- Measures of central tendency
- Measures of dispersion
- Graphical presentation of data
- Probability concepts
- Correlation and regression
- Hypothesis testing
- Statistical significance
- Interpretation of statistical results

UNIT V

Research Tools & Proposal Development

10 HOURS

- Research tools and instruments
- Questionnaire preparation
- Interview techniques
- Data collection methods
- Data analysis basics
- Research report writing
- Referencing styles
- Developing a research proposal
- Presentation of research findings

Research Methodology & Biostatistics

Literature

review exercises

- Questionnaire preparation
- Sampling technique demonstrations
- Data collection practice
- Preparation of informed consent forms

- Statistical calculations using sample data
- Graph and chart preparation
- Research proposal preparation
- Presentation of mini research projects
- Interpretation of biostatistical data

REFERENCE BOOKS

- Research methodology by C R Kothari

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IV YEAR /VII&VIII SEMESTER

Course Code	Course Title	Hours	Credits
BAOTT-028	B.AOTT Internship (Anesthesia, Surgery, Specialties)	1440 Hours	32 Credits

BAOTT-028: B.AOTT Internship (Anaesthesia, Surgery & Specialties)**Total hours - 1440****Course Outcomes (CO)**

- **CO1:** Apply theoretical and practical knowledge effectively in clinical settings.
- **CO2:** Demonstrate competency in anaesthesia and operation theatre procedures.
- **CO3:** Assist safely in beginning, intermediate, and advanced surgical procedures.
- **CO4:** Analyze roles within multidisciplinary healthcare teams.
- **CO5:** Evaluate professionalism, ethical practice, patient care, and communication skills.

Course Description

The internship period provides students with an opportunity to strengthen their clinical knowledge, practical skills, confidence, and professional competency in anaesthesia, operation theatre technology, and specialized surgical procedures.

During the internship, students undergo hands-on clinical training in real healthcare settings under the supervision of qualified professionals. Students are expected to apply all theoretical and practical knowledge learned during classroom teaching and laboratory sessions.

INTERNSHIP COURSE WORK

The internship course work is designed to provide students with supervised practical training in real healthcare settings. During the internship period, students are exposed to hospital environments where they apply the theoretical knowledge and practical skills learned during the academic program. The internship helps students develop professional competence, confidence, communication skills, and clinical decision-making abilities.

Major Components of Internship Course Work:

- Clinical postings in different departments
- Observation and assistance in clinical procedures
- Patient care and monitoring activities
- Handling and maintenance of medical equipment
- Infection control and sterilization practices
- Emergency and trauma care exposure
- Clinical documentation and record maintenance
- Participation in case discussions, demonstrations, and ward rounds

- Maintenance of logbook and daily activity records

Clinical Activities During Internship

- Assisting in patient admission, preparation, shifting, and positioning
- Monitoring and recording vital signs such as pulse, blood pressure, temperature, respiration, and oxygen saturation
- Assisting healthcare professionals during clinical, surgical, and emergency procedures
- Preparing patients for diagnostic and therapeutic procedures
- Preparing and maintaining operation theatre setup before and after procedures
- Arranging surgical instruments, anesthesia equipment, and emergency trays
- Assisting in anesthesia procedures and perioperative patient care
- Assisting in emergency and trauma patient management
- Supporting cardiopulmonary resuscitation (CPR) and basic life support procedures
- Handling and maintenance of medical and monitoring equipment
- Observing and assisting in ICU and critical care management
- Maintaining aseptic techniques and sterile environment during procedures
- Performing sterilization and disinfection procedures
- Implementing infection prevention and biomedical waste management protocols.
- Assisting in medication preparation and administration under supervision
- Observing and assisting in post-operative patient care and recovery monitoring
- Participating in ward rounds, case discussions, demonstrations, and clinical meetings
- Maintaining patient records, clinical documentation, and logbooks
- Recording clinical observations and daily activities systematically

Protocol for Internship Postings

S. No.	Department/Area of Posting	Nature of Posting	Duration of Posting
1	Anesthesia Department	Regular	5 Months
2	Critical Care Unit	Regular	1 Month
3	General Surgery, Obstetrics & Gynecology	Regular	1 Month
4	Uro Surgery & Pediatric Surgery	Regular	1 Month
5	CTVS & Neurosurgery	Regular	1 Month
6	Emergency/Trauma OT & Orthopedics OT	Regular	1 Month
7	Robotic Surgery	Regular	1 Month
8	Minor Surgery	Regular	1 Month

Evaluation of Internees

A. Daily Evaluation

- Interns will be evaluated daily by the Head of the Department during postings.
- Log Book maintenance is compulsory.

B. Final Evaluation

- Final assessment will be done by faculty and technical staff.
- Evaluation is based on performance, skills, attendance, and Log Book.
- Certificate will be issued after successful completion of internship.

C. Internship Duration

- Duration: 1 Year
- Working Hours: Minimum 1440 hours
- Duty Hours: 8 hours per day
- Lunch Break: 1 hour

Expected Outcomes

- Ability to prepare and maintain anaesthesia and OT equipment.
- Provide proper care and support to surgical patients.
- Work effectively with the surgical and healthcare team.
- Handle emergencies appropriately during procedures.
- Maintain professional and ethical behavior.
- Participate in continuous learning and professional development.
- Apply critical thinking in perioperative care.
- Maintain proper documentation and records.
- Ensure patient safety, comfort, and well-being.
- Follow infection control and safety protocols.