

PROGRAM OUTCOME (POs)

Course Code	B.Sc. OPERATION THEATRE & ANESTHESIA TECHNOLOGY
PO1	Clinical Proficiency - Demonstrate advanced knowledge and technical skills in operation theatre procedures, anesthesia techniques, and perioperative care.
PO2	Patient Safety and Care - Apply principles of patient safety and ethical standards in the management of anesthesia and operation theatre environments, ensuring optimal care and minimizing risks.
PO3	Communication and Collaboration - Exhibit effective communication skills to collaborate with surgical teams, anesthesiologists, and other healthcare professionals, ensuring cohesive patient care.
PO4	Critical Thinking and Problem-Solving - Utilize critical thinking and problem-solving abilities to assess and manage complex clinical situations in anesthesia and surgery, adapting to dynamic environments.
PO5	Professionalism and Ethics - Uphold professional ethics, demonstrate responsibility, and commit to continuous learning in the field of operation theatre and anesthesia technology.
PO6	Leadership and Management - Develop leadership and management skills to coordinate and oversee operation theatre activities, manage resources, and ensure smooth workflow.
PO 7	Technology Integration - Operate and maintain anesthesia equipment, surgical instruments, and other advanced medical technologies, ensuring their proper use in clinical settings.
PO8	Holistic Development - Integrate a holistic approach to patient care, considering the physical, psychological, and social aspects of health to ensure comprehensive and compassionate treatment.

Course Outcomes (COs)

Course Code	B.Sc. OPERATION THEATRE & ANESTHESIA TECHNOLOGY
SEMESTER I	
BOTAT 101 L	Human Anatomy Part I
CO1	Define basic technical terminology and language associated with medical anatomy
CO2	Identify and describe the gross anatomy of various tissues and organs in the human body along with Skeletal and Muscular Systems
CO3	Understand and demonstrate the anatomy of Respiratory system, Circulatory system, Digestive system and Excretory system with it's clinical application
BOTAT 102 L	Human Physiology Part I
CO1	Describe basic physiological principles involved in normal functioning of the human body and thier applications in comprehending the pathophysiology of various diseases.
CO2	To understand the basic mechanism operating and regulating different organ systems.
CO3	Ability to identify techniques to evaluate the funtioning of organ systems and interpret the results as normal or abnormal.
BOTAT 103 L	General Biochemistry & Nutrition
CO1	Understand the fundamental principles of biochemistry, including the chemistry and functions of biomolecules such as carbohydrates, proteins, lipids and nucleic acids.
CO2	Gain insights into the principles of bioenergetics and enzymology in human body.
CO3	Understand the basics of collection, handling and processing analysis of blood and urine samples for clinical diagnostics.
BOTAT 104 L	Introduction to National Health Care System (Multidisciplinary/Interdisciplinary)

CO1	Understand the measures of the health services and high-quality health care
CO2	Gain Basic insight into the main features of Indian health care delivery system and how it compares with the other systems of the world.
CO3	Introduction to Background objectives, action plan, targets, operations,in various National Heath Programmes.
CO4	Introduction the AYUSH System of medicines.

BOTAT 105 P	Community Engagement and Clinical Visit (Including related practicals to the Parent course)
CO1	Understand the role of health professional in community
CO2	Personality Development
AEC 001 L	English and Communication Skills
CO1	Develop ability to read, write and speak better in English language
CO2	Grow personally and professionally to develop confidence in the field of healthcare.
AEC 002 L	Environmental Sciences
CO1	Understand and define terminology commonly used in environmental sciences
CO2	Understand the concepts of ecosystems, biodiversity and its conservation
CO3	Understand the relationship between humans and environment
CO4	Discuss the factors affecting the availability of natural resources, their conservation and management.
CO5	Discuss the goals, targets, challenges and global strategies for sustainable development
SEMESTER II	
BOTAT 106 L	Human Anatomy Part II
CO1	Understand and demonstrate the anatomy of Reproductive system, Endocrine system, Nervous system, Sensory system and Lymphatic system with its clinical application
BOTAT 107 L	Human Physiology Part II
CO1	Understand the basic physiological functions of Special senses and Skin,.
CO2	To understand the basic mechanism, operation and regulation of different systems such as Nervous system, Endocrine system, Reproductive system and Excretory system
CO3	Ability to identify techniques to examination of the physiological functioning of sensory and motor systems and interpret the results as normal or abnormal.
BOTAT 108 L	General Microbiology
CO1	Understanding the Basic principles of Microbiology with General Methods for recovery, identification of pathogens, culture techniques, procedures, antibiotic testing and sterilization techniques.
CO2	Understand the applications of universal safety precautions.
CO3	Adept knowledge about the systemic bacteriology including morphology, species, lab diagnosis, isolation and identification.
CO4	Basic knowledge of pathogenic diseases and their clinical features
BOTAT 109 L	Basic Pathology & Hematology
CO1	Know the basic concepts in hematology and clinical pathology
CO2	Ability to collect blood and urine sample under guidance
CO3	Ability to perform urine experiments under guidance
BOTAT 110 L	Introduction to Quality and Patient Safety (Multidisciplinary / Interdisciplinary)
CO1	Understand the basic concepts of Quality in Health Care System and develop skills to implement sustainable quality assurance programs in the health system.
CO2	Understand the basics of emergency care and life support skills.
CO3	Understanding of the concepts for infection prevention and control.

CO4	Knowledge on the principles of on-site disaster management and prevent harm to workers, property, the environment and the general public.
CO5	Ability to apply healthcare quality improvement and patient safety principles, concepts, and methods at the micro, meso and macro system levels.

BOTAT 111 P	Community Engagement and Clinical Visit (Including related practicals to the Parent course)
CO1	Understand the role of health professional in community
CO2	Personality Development
SEC 001 L	Medical Bioethics & IPR
CO1	Ability to recognise and understand ethical concerns in research and healthcare sector.
CO2	Adapt skills to rationally justify decisions by understanding the complexity and multi - dimensionality of medical or clinical ethical concerns.
CO3	Gain awareness about significance of patent, copyright, plagiarism and their applications in legal problems
SEC 002 L	Human Rights & Professional Values
CO1	Acquire conceptual clarity and develop respect for norms and values of freedom, equality, fraternity and justice
CO2	Awareness of civil society organizations and movements promoting human rights
CO3	Understand the difference between values of human rights and their duties
SEMESTER III	
BOTAT 112 L	Introduction To Operation Theatre Technology (OT)
CO1	Demonstrate a comprehensive understanding of the physical layout of a surgical suite, the importance of transition zones, pre-procedure protocols, and the medico-legal aspects related to consent and patient safety in the operation theatre.
CO2	Acquire detailed knowledge of sterilization and disinfection methods, including the use of various sterilizers, cleaning procedures, and infection control measures, ensuring a sterile and safe operation theatre environment.
CO3	Develop the skills to manage the perioperative environment, including patient transportation, hazard mitigation, and the maintenance and cleaning of OT equipment, ensuring optimal functioning and patient safety.
BOTAT 113 L	Introduction to Anesthesia Technology (AT)
CO1	Gain a thorough understanding of the history of anesthesia and develop expertise in various anesthesia techniques, including general, regional, and monitored anesthesia care, with a focus on preparation, patient positioning, drug administration, and managing side effects.
CO2	Demonstrate competence in pre-procedure protocols, including patient identification, equipment checks, and record-keeping, ensuring that all necessary anesthesia and resuscitation equipment is available, functional, and properly maintained.
CO3	Perform comprehensive pre-anesthetic evaluations, including patient history, physical examination, and necessary investigations, while effectively managing intraoperative monitoring, anesthesia maintenance, and postoperative recovery, including handling potential complications.
BOTAT 114 L	Principles of Anesthesia
CO1	Demonstrate a thorough understanding of medical gas supply systems, including the types, care, and identification of gas cylinders, color coding, central gas pipelines, and the operation and maintenance of safety devices and alarms.
CO2	Develop competence in the operation and maintenance of anesthesia machines and breathing systems, including understanding their components, classification, and safe use during anesthesia administration
CO3	Acquire practical skills in IV catheterization, patient monitoring, administration of medications, and nursing care during medical illnesses, with a focus on safe practices and effective patient care.
GEC 001 L	Pursuit of Inner Self Excellence (POIS)
CO1	Students will become self-dependent, more debility for their study and career related matter ecisive and develop intuitive
CO2	Student's ability to present their ideas will be developed.
CO3	Enhanced communication skills, public speaking & improved Presentation ability.

CO4	Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused.
CO5	Students will observe significant reduction in stress level.
CO6	With the development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.
GEC 002 L	Organizational Behavior
CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives.
CO2	Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.
CO3	Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques.
SEMESTER IV	
BOTAT 116 L	Basic Techniques of Anesthesia
CO1	Develop a thorough understanding and practical skills in basic life support (BLS) techniques, including circulation, airway, and breathing management, along with the effective use of resuscitation equipment such as AEDs, defibrillators, and administration of CPR drugs.
CO2	Conduct comprehensive pre-anesthetic evaluations with a focus on patients with complex medical conditions such as ischemic heart disease, respiratory disorders, CNS diseases, and more, while preparing and managing anesthesia drugs and techniques specific to these conditions.
CO3	Acquire the knowledge and skills necessary to manage blood transfusions safely, including understanding blood groups, cross-matching, monitoring for transfusion reactions, and ensuring proper documentation, as well as providing comprehensive post-operative care and pain management.

BOTAT 117 L	Medical Emergencies & Its management
CO1	Develop advanced skills in managing difficult airway situations, including difficult mask ventilation, intubation challenges, CVCI (Can't Ventilate, Can't Intubate) scenarios, and emergency airway management techniques such as cricothyrotomy and fiberoptic intubation.
CO2	Demonstrate competence in first aid for fractures, dislocations, and sprains, management of intraoperative emergencies such as cardiac arrest, and preparedness for trauma and emergency surgeries, including the management of OT fires and electrical mishaps.
CO3	Acquire skills in managing acute post-operative pain using various analgesic delivery systems, including patient-controlled analgesia and neuraxial analgesia, and in preventing and managing post-operative complications such as malignant hyperthermia, shivering, and electrolyte imbalances.
BOTAT 118 L	Medicine Relevant to OT Technology
CO1	Demonstrate thorough understanding and proficiency in various sterilization techniques, including chemical, thermal, and mechanical methods, to ensure the safety and effectiveness of operation theatre procedures.
CO2	Apply appropriate disinfection and sterilization protocols for surgical instruments, anesthetic equipment, and specialized devices like endoscopes, ensuring compliance with healthcare standards.
CO3	Critically evaluate and troubleshoot the sterilization processes, identifying potential pitfalls and ensuring the reliability of methods such as autoclaving, UV treatment, and laminar airflow systems.
AEC 003 L	Computers and Applications
CO1	Introduction to Hardware and processing of computers and storage devices.
CO2	Adept knowledge of computer software and applications such as Microsoft office (Word, Excel and Power Point)
CO3	Application of operating systems, computer networks & internet in Health Care Settings.
AEC 004 L	Good Clinical Laboratory Practice and Research Skills
CO1	Proficiency an adept knowledge of Good Clinical Laboratory Practice (GCLP), ethical principles and guidelines to ensure patient rights and welfare in clinical research.
CO2	Understand the importance of Ethical Guidelines and Good Documentation Practices (GDP) in conducting Clinical Research.
CO3	Effectively understand the Basics of Biostatistics, Research Study Designing, Methodology, Implementation and Grant Application.
SEMESTER V	
BOTAT 120 L	Basics of Surgical Procedures
CO1	Demonstrate a thorough understanding of surgical history, the role of the surgeon, and the importance of teamwork and anticipating the needs of the surgical team. Students will also be proficient in identifying and managing hemorrhage, understanding different types of wounds and their healing processes, and applying aseptic techniques for skin preparation and wound care.
CO2	Develop skills in preparing instrument trolleys for various types of surgeries, including general, orthopedic, cardiac, plastic, neuro, urological, gynecological, and ophthalmological procedures. Students will also gain knowledge about different types of sutures and suture needles used in these surgeries.
CO3	Acquire the ability to handle various aspects of surgical procedures, including emergency procedures, by understanding surgical terminology, types of incisions, tourniquet use, and the management of surgical wounds and infections.

BOTAT 121 L	CSSD Procedures
CO1	Understand and apply the principles and functions of CSSD, including waste disposal, protective clothing, and disinfection safeguards in the reception area.
CO2	Efficiently sort, pack, and sterilize equipment, including using appropriate materials and methods to indicate sterilization.
CO3	Master various sterilization techniques (moist heat, dry heat, ETO, H ₂ O ₂) and apply general principles to ensure effective sterilization.
BOTAT 122 L	Advance Anesthetic Techniques
CO1	Understand the heart's function as a pump, the cardiac cycle, cardiac contractility, stroke volume, and cardiac output. Be able to measure cardiac output and interpret various ECG leads and normal ECG readings, including identification of common arrhythmias.
CO2	Understand circulatory shock, cardiac failure, and arterial pressure regulation. Gain knowledge of hypertension treatments and the operation of the heart-lung machine, including its parts, functions, and associated risks.
CO3	Master the principles and various modes of intermittent positive pressure ventilation (IPPV), including operating room ventilators, patient care, disinfection, and complications management. Understand the role of artificial ventilation and related equipment in maintaining acid-base balance and overall respiratory function.
DSE 001 L	Basics of Clinical Skill Learning
CO1	Ability to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines
CO2	Understand about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients
DSE 002 L	Hospital Operation Management
CO1	Understand and apply the knowledge of Medico-Legal regulations and Medical Ethics in Healthcare System.
CO2	Ability to utilize Hospital Information system in Hospital services.
CO3	Understand the operation management of Equipment's and medical records in Health Care services.

SEMESTER VI	
BOTAT 124 L	Basic Intensive Care
CO1	Understand and operate electronic systems used in surgery and anesthesia, including monitoring equipment, data recording devices, and alarms.
CO2	Accurately maintain and manage records related to surgical and anesthetic procedures, including patient data, procedural documentation, and equipment logs.
CO3	Integrate electronic data from various sources to ensure comprehensive patient care and effective communication within the surgical and anesthetic teams.
BOTAT 125 L	Specialized Surgery and Anesthesia
CO1	Master positioning, monitoring techniques, and equipment used in cardiothoracic surgeries. Understand principles of temperature monitoring and utilize cardiac, blood pressure, ECG, respiratory monitors, and echocardiography. Proficiently perform arterial and venous cannulations.
CO2	Understand positioning, monitoring techniques, and equipment requirements for neurological, abdominal, and plastic surgeries. Adapt anesthesia and surgical requirements to specific procedures, ensuring effective patient care.
CO3	Manage positioning, monitoring, and equipment for renal, pediatric, and emergency surgeries. Implement precautions for hepatitis B & C positive patients and adapt techniques for specialized conditions.
CO4	Execute precise positioning, monitoring, and equipment use for orthopedic, ophthalmic, and gynecological surgeries, tailored to specific needs.
BOTAT 126 L	Electronics & Record Keeping Surgery and Anesthesia
CO1	Operate and maintain essential OT equipment including operation tables, diathermy machines, operation lights, endoscopy equipment, and operating microscopes. Implement electrical safety precautions and perform basic electronics maintenance.
CO2	Efficiently manage and maintain records for drugs, disposables, and equipment in OT and ICU. Ensure accurate inventory management, adhere to disposal regulations, and maintain authentic records for patient care and operational efficiency.