

Bachelor of Science **(Anesthesia and Operation Theatre Technology)**

Programme Outcomes

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

PO1: Clinical Proficiency: Graduates will demonstrate competence in executing anesthesia procedures and operating theater techniques, applying foundational knowledge and skills acquired during the program.

PO2: Critical Thinking and Problem-Solving: Graduates will analyze and assess complex challenges in anesthesia and operation theater settings, showcasing the ability to apply critical thinking skills and evidence-based decision-making for effective problem resolution.

PO3: Effective Communication Skills: Graduates will communicate clearly and professionally, both in written and verbal forms, with patients, colleagues, and healthcare teams, ensuring accurate transmission of intricate medical information related to anesthesia and operation theater technology.

PO4: Team Collaboration and Interdisciplinary Skills: Graduates will collaborate effectively in interdisciplinary healthcare teams, recognizing the significance of teamwork in delivering optimal patient care and contributing positively to the overall functioning of healthcare environments within anesthesia and operation theater contexts.

PO5: Professionalism and Ethical Practice: Graduates will exhibit professionalism and ethical behavior in their roles as anesthesia and operation theater technologists, upholding standards of practice, respecting patient rights and dignity, and adapting to evolving ethical considerations in the field.

Programme Specific Outcome

At the end of the program, the student will be able to:

PSO 1: Demonstrate Proficiency in Anesthesia and Operation Theater Technology: Understand and apply the fundamental principles of Anesthesia and operation theater, including a comprehensive understanding of anatomy, physiology, pharmacology, and medical terminology supplemented with the latest advancements in diagnostic and therapeutic anesthesia and operation theater interventions.

PSO 2: Apply Advanced Procedures in Anesthesia and Operation Theater Technology: Employ contemporary methodologies in anesthesia technology, integrating perioperative care and therapeutic approaches for the diagnosis, treatment, and management of health conditions.

PSO 3: Utilize Computational Tools in Anesthesia and Operation Theater Technology: Apply computational analysis tools to effectively interpret data, retrieve relevant information, and draw informed conclusions for clinical decision-making within the field of anesthesia and operation theater technology.

PSO 4: Foster Interdisciplinary Problem Solving: Implement an interdisciplinary and transdisciplinary approach to real-time problem-solving in the field of anesthesia and operation theater technology, utilizing project-based and project-centric learning methods to address complex challenges in healthcare.

Course Outcomes

Semester 1

Subject Name	Course Outcomes
Physiology – I	<p>CO 1: Summarize the circulatory system's structure and functions, including blood components and hemostasis, and explain blood group systems.</p> <p>CO 2: Explain cardiovascular system physiology, covering heart structure, cardiac cycle, blood pressure regulation, and ECG interpretation.</p> <p>CO 3: Describe digestive system anatomy and functions, including organs like the stomach, pancreas, liver, and intestines.</p> <p>CO 4: Discuss respiratory system functions and anatomy, including gas transportation and lung expansion factors.</p> <p>CO 5: Identify hormones from endocrine glands and analyze their roles in disorders like dwarfism, diabetes, and thyroid dysfunction</p>
Pathology – I	<p>CO 1: Summarize the fundamental concepts in histopathology including the receiving and processing of specimens.</p> <p>CO 2: Describe the principles of cytology its types, and various diagnostic techniques and staining methods.</p> <p>CO 3: Interpret clinical findings from various body fluids, enabling them to formulate relevant conclusions within the context of patient cases.</p> <p>CO 4: Explain the hazards associated with biomedical waste, practice proper waste segregation, and be aware of universal precautions</p> <p>CO 5: Demonstrate the procedures involved in setting up a pathology museum.</p>
English – I	<p>CO 1: Demonstrate a coherent and systematic knowledge of the field of English literature showing an understanding of current theoretical and literary developments in the specific field of English studies.</p> <p>CO 2: Demonstrate a set of basic skills in literary communication and explication of literary practices and processes with clarity.</p>
Computer Applications	<p>CO 1: Understand computer fundamentals, including hardware components, software types, and network basics, to establish a strong foundation in computing principles.</p> <p>CO 2: Develop knowledge of computer networks, internet basics, and communication tools, facilitating efficient web browsing, online research, and effective communication through email, instant messaging, and video conferencing.</p> <p>CO 3: Gain proficiency in operating systems, file management, and software applications, enabling effective use of computers for tasks such as word processing, spreadsheets, presentations, and database management.</p>

Semester 2

Subject Name	Course Outcomes
Anatomy II	<p>CO 1: Outline the parts of various systems in the body</p> <p>CO 2: Locate various organs corresponding to the 9 regions of the abdomen</p> <p>CO 3: Analyze the structure of various components of different systems in the abdomen corresponding to their functions</p> <p>CO 4: Associate the basic anatomy of all the systems to the operating of the human body as a unit</p> <p>CO 5: Correlate Human Anatomy to its radiological visualization helping in diagnosis</p>
Pathology II	<p>CO 1: Describe the normal constituents of blood, their structure and function.</p> <p>CO 2: Implement the use of SI units and conventional units in healthcare handling instruments and glassware used in a hospital.</p> <p>CO 3: Relate the hematological tests, interpret results, and apply knowledge of normal values.</p> <p>CO 4: Demonstrate the basic principles of blood banking, concepts of antigens, antibodies, blood group systems, and various methods of blood group determination.</p> <p>CO 5: Classify the blood transfusion reactions, and blood components, their preparation, preservation, storage, and transportation</p>
Introduction to anesthesia and operation theatre technology I	<p>CO 1: Outline the layout and care protocols of surgical suites, including sterilization techniques and perioperative environment maintenance.</p> <p>CO 2: Demonstrate proper instrument sterilization, OT cleaning, and adherence to WHO checklist for safe surgery.</p> <p>CO 3: Explain anesthesia machine components, safety features, and anesthesia techniques for patient care.</p> <p>CO 4: Analyze intraoperative monitoring devices like pulse oximetry and ECG for ensuring patient safety.</p> <p>CO 5 : Evaluate airway equipment such as laryngoscopes and endotracheal tubes for effective airway management during surgery.</p>
English II	<p>CO 1: Demonstrate a coherent and systematic knowledge of the field of English literature showing an understanding of current theoretical and literary developments in relation to the specific field of English studies.</p> <p>CO 2 : Demonstrate a set of basic skills in literary communication and explication of literary practices and process with clarity.</p>
Legal aspects of healthcare	<p>CO 1. Identify key medical ethics concepts like malpractice, informed consent, and euthanasia, and their significance in healthcare.</p> <p>CO 2. Explain medico-legal aspects of medical records and propose strategies for maintaining legal compliance.</p> <p>CO 3. Evaluate the importance of professional indemnity insurance and protocols to prevent medical errors, and devise methods for obtaining informed consent.</p> <p>CO 4. Differentiate employer and employee legal responsibilities in healthcare settings and analyze their implications.</p>

	CO 5. Discuss medical-legal issues such as standard of care, confidentiality, and ethical analysis of policies, considering Indian law's impact on clinical practice and research.
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Semester 3

Subject Name	Course Outcomes
Biochemistry – I	<p>CO 1: State the elements, molecules and macromolecules that make up the living system.</p> <p>CO 2: Design the structure function relationship that exists and understand what elements/compounds/functional groups were chosen for the role they play in the biological system.</p> <p>CO 3: Extract the knowledge and understanding between various biomolecules of diverse functions.</p> <p>CO 4: Relate the understanding of biochemical processes in biological systems</p>
Microbiology – I	<p>CO 1 . Describe Koch's postulates and their significance in microbiological research</p> <p>CO 2. Differentiate between various types of culture media, including simple, enriched, selective, and differential media</p> <p>CO 3. Apply the principles of sterilization and disinfection using physical agents like heat (moist and dry heat), filtration, and radiation</p> <p>CO 4. Evaluate the results of biochemical tests (Catalase, Coagulase, Oxidase, IMViC, sugar fermentation, urease) for bacterial identification.</p> <p>CO 5. Formulate an understanding of antibodies, their properties, structures, and the classes of immunoglobulins.</p>
Introduction to anesthesia and operation theatre technology -II	<p>CO 1. Understand the fundamental principles of anesthesia and operation theatre technology.</p> <p>CO 2. Demonstrate an understanding of the principles underlying different anesthesia techniques and the functioning of operation theatre equipment.</p> <p>CO 3. Apply the technique of asepsis and principles of surgical hygiene in the operation theatre setting.</p> <p>CO 4. Analyze ethical considerations and professional conduct principles in the context of surgical and anesthesia practices in the operation theatre.</p>
Medicine relevant to specialization	<p>CO 1. State the etiopathology, and manifestation of diseases, as well as the basic techniques of diagnosis and treatment of various diseases.</p> <p>CO 2. Identify the abnormal conditions of various systems including Cardiovascular, respiratory, renal endocrine, CNS.</p> <p>CO 3. Implement high-quality patient care, including the management of acute and chronic illnesses and assisting in the development of treatment plans</p>

	<p>CO 4. Execute the clinical skills, including physical examination, patient assessment, and diagnosis</p> <p>CO 5. Relate the diagnostic finding with the disease condition.</p>
Healthcare Administration	<p>CO 1. Discuss the knowledge and skills required to proficiently manage a healthcare organization.</p> <p>CO 2. Implement safety measures effectively within a healthcare organization to enhance operational excellence.</p> <p>CO 3. Organize the management strategies and safety measures implemented to safeguard hospitals and their stakeholders.</p> <p>CO 4. Interpret the dynamics of industrial relations within healthcare organizations.</p> <p>CO 5. Implement comprehensive quality management programs, integrating ISO clauses, quality control tools, and accreditation processes in healthcare settings.</p>

Semester : 4

Biochemistry – II	<p>CO 1. Understand the fundamental chemistry and knowledge of different solutions</p> <p>CO 2 . Appreciate what are acids, bases, salts and indicators and also know about acid base balance</p> <p>CO 3. Describe the sample collection procedure to analyze various biochemical parameters</p> <p>CO 4 . Understand the basic nutritional requirements and its applications in clinical healthcare.</p>
Microbiology – II	<p>CO 1. Recall the causative agents of hospital infections and describe their modes of transmission</p> <p>CO 2. Describe the diseases caused by medically important bacteria & demonstration of their laboratory diagnostic techniques</p> <p>CO 3. Apply knowledge of parasitology to identify and describe the morphology, pathogenesis, and clinical features of medically important parasites</p> <p>CO 4. Analyze the basics of virology, including morphology, pathogenesis, and clinical features of medically important viruses</p> <p>CO 5. Develop a comprehensive understanding of mycology, including the morphology, pathogenesis, and clinical features of medically important fungi</p>
biochemistry -ii practical	<p>CO 1. Implement the practical knowledge of basic laboratory techniques</p> <p>CO 2. Use the practical understanding in sketching the technique to determine the concentration of colored compounds in solution</p>

<p>MICROBIOLOGY -II PRACTICAL</p>	<p>CO 1. Interpret the principles behind Gram staining and Acid-fast staining. CO 2. Demonstrate the proper use and setup of sterilization equipment. CO 3. Apply the principles of culture techniques, including the preparation of various culture media. CO 4. Analyze the outcomes of Antimicrobial susceptibility tests.</p>
<p>ANESTHESIA AND OPERATION THEATRE TECHNOLOGY- CLINICAL</p>	<p>CO 1. Identify the components of preoperative preparation, including pre-anesthetic assessment, history taking, physical examination, and obtaining informed consent. CO 2. Describe the various investigations involved in preoperative assessment, such as biochemical, hematological, and radiological tests, and the criteria used for accepting a patient for surgery. CO 3. Demonstrate the administration and monitoring of emergency drugs used in the perioperative period, including their indications, dosages, and routes of administration. CO 4. Analyze the techniques and equipment used for anesthesia induction and intubation, including the choice of airway devices and methods to manage complications during intubation. CO 5. Evaluate the procedures involved in emergence, termination, and recovery from anesthesia, including postoperative monitoring, patient transfer to the recovery room, and management of complications.</p>

Semester:6

<p>Applied Microbiology - II</p>	<p>CO 1. Demonstrate an advanced understanding of microbial pathogens relevant to Cardiac Care procedures CO 2. Evaluate the impact of microbial challenges on Cardiac Care procedures, applying evidence-based decision-making to propose effective solutions. CO 3. Communicate microbial risk assessments clearly and professionally, both in writing and verbally, to facilitate effective communication with patients, colleagues, and healthcare teams CO 4. Integrate microbiological knowledge into interdisciplinary healthcare teams, recognizing the importance of microbial considerations in delivering optimal patient care.</p>
<p>Applied pathology II</p>	<p>CO 1. Define and discuss Atherosclerosis and Ischemic Heart Disease (IHD), identifying associated risk factors, pathogenesis, morphology, and their clinical significance. CO 2. Explain Pericardial Effusion including causes, effects, and diagnosis, and comprehend the basic defects and effects of important types of congenital heart diseases. CO 3. Describe morphological types of Anemia, its diagnosis and classify Bleeding Disorders, analyzing causes and effects of important types. CO 4. Interpret the pathology and complications of Chronic Obstructive Airway Diseases (COPD) and differentiate between obstructive and restrictive pulmonary diseases. CO 5. Discuss the health implications of tobacco-related diseases, chemical and drug injuries, and alcoholism.</p>

Applied Pharmacology - II	<p>CO 1. Analyze the general considerations of antimicrobial drugs</p> <p>CO 2. Evaluate the therapeutic uses and potential adverse effects of cardiovascular drugs</p> <p>CO 3. Explain the relevant physiology of urine formation and distinguish between the mechanisms of action of diuretics and antidiuretics, including their clinical applications and potential side effects.</p> <p>CO 4. Discuss the pharmacological management of blood disorders, including the role of hematinic and erythropoietin</p> <p>CO 5. Describe the pharmacological principles underlying drugs acting on the central nervous system, hormones, chemotherapeutic agents, and anesthetic agents, including their modes of action and clinical applications.</p>
Anesthesia Technology - Advanced	<p>CO 1. Analyse the Anaesthetic Considerations for Various Surgical Specialties</p> <p>CO 2. Apply Advanced Life Support Techniques in Emergency Situations</p> <p>CO 3. Evaluate Anaesthetic Management for Special Patient Populations</p> <p>CO 4. Create Comprehensive Pain Management Plans</p>
Biostatistics	<p>CO 1. Understand the concepts and basic terminologies of Biostatistics in healthcare and modern research.</p> <p>CO 2. Apply various measures of central tendency correctly and appropriately during data analysis.</p> <p>CO 3. Evaluate and justify the best method to visually represent given datasets.</p> <p>CO 4. Analyse simple database using appropriate biostatistical tools and packages.</p>
Ethics and Values	<p>CO 1. . Understand patient-centric ethics and assess implications of medical technologies.</p> <p>CO 2. Analyze ethical theories in medical ethics and apply them to resolve dilemmas.</p> <p>CO 3. Evaluate key documents in medical ethics and critique the role of ethics committees.</p> <p>CO 4. Explain ethical considerations in the physician-patient relationship and compare medical duties.</p> <p>CO 5. Discuss professional and research ethics, proposing strategies for ethical conduct.</p>