

B.Sc. - Medical Lab Technology

Programme Outcomes (POs)

- PO1. Develop understanding of human anatomy and physiology as it relates to health and disease
- PO2. Demonstrate knowledge of clinical procedures and diagnostic testing in various healthcare settings
- PO3. Acquire competency in medical terminology and documentation
- PO4. Communicate effectively with patients and healthcare professionals
- PO5. Demonstrate understanding of ethical and legal issues related to healthcare delivery
- PO6. Familiarize with healthcare management and healthcare delivery systems
- PO7. Critically analyze healthcare research and evidence-based practice
- PO8. Showcase competency in interprofessional collaboration and teamwork
- PO9. Develop lifelong learning and professional development to adapt to changing healthcare environments.

Programme Specific Outcomes (PSOs)

- PSO1. The program will provide students with a thorough understanding of the principles and techniques of medical laboratory technology, including laboratory techniques, instrumentation, and quality control procedures.
- PSO2. Students will have the opportunity to gain hands-on clinical experience through practical training and laboratory exercises, allowing them to apply their knowledge and skills in real-world settings
- PSO3. Students will learn how to interpret laboratory results and communicate them to healthcare professionals, including physicians and nurses, in a clear and concise manner.
- PSO4. Students will develop strong communication skills, including the ability to effectively communicate with patients, families, and healthcare professionals.
- PSO5. Students will learn about the ethical and legal issues related to medical laboratory technology, including patient confidentiality, informed consent, and medical malpractice.

Course Outcomes

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Semester	Subject Code	Subject	Course Outcomes
1	21BASMLT101	ANATOMY I	<p>CO1: Understand the structure and function of the human body, including the organization of the various body systems (e.g., skeletal, muscular, cardiovascular, respiratory, digestive, urinary, and nervous).</p> <p>CO2: Acquire knowledge about the anatomy and physiology of the cell and tissues, including the different types of cells, tissues, and organs and their roles in maintaining homeostasis.</p> <p>CO3: Summarize the structure and function of the skeleton, including the bones, joints, and the musculoskeletal system.</p> <p>CO4: Learn about anatomy and physiology of the muscles, including the different types of muscles, the mechanisms of muscle contraction, and the functional relationships between the muscles and bones.</p>
	21BASMLT102	PHYSIOLOGY I	<p>CO1: Understand the fundamental principles of cell physiology, including membrane transport, cellular metabolism, and the regulation of cellular activities.</p> <p>CO2: Acquire knowledge about regulation of fluid, electrolyte, and acid-base balance in the body, including the mechanisms of osmoregulation and the role of the kidneys.</p> <p>CO3: Understand physiological mechanisms of cardiovascular function, including the regulation of blood pressure, blood flow, and heart rate.</p> <p>CO4: Understand physiological mechanisms of respiratory function, including the control of breathing, gas exchange, and acid-base balance.</p> <p>CO5: Understand the physiological mechanisms of digestive function, including the regulation of digestive secretions, motility, and nutrient absorption.</p>

Semester	Subject Code	Subject	Course Outcomes
	21BASMLT103	PATHOLOGY - [CLINICAL PATHOLOGY HEMATOLOGY & BLOOD - BANKING - I]	<p>CO1: Understand the principles and techniques of hematology, including blood cell counting, morphological evaluation of blood cells, and the diagnosis of hematological disorders.</p> <p>CO2: Acquire knowledge about classification and diagnosis of blood cell disorders, including anemias, leukemias, lymphomas, and bleeding and clotting disorders.</p> <p>CO3: Learn about the principles and practices of blood banking, including blood collection, processing, storage, and transfusion.</p> <p>CO4: Perform laboratory testing and evaluation of blood components, including compatibility testing, cross-matching, and infectious disease screening.</p> <p>Co5: Understand ethical and legal considerations related to blood banking, including informed consent and confidentiality.</p>
	21MENVIOVE2	ENVIRONMENTAL STUDIES	<p>CO1: Understand the scientific principles of ecology, including the study of ecosystems, populations, communities, and biodiversity.</p> <p>CO2: Understand the physical and biological processes that shape the natural environment, including geology, climatology, and hydrology.</p> <p>CO3: Summarize the impacts of human activities on the environment, including pollution, climate change, and deforestation.</p> <p>CO4: Understand the principles of environmental sustainability, including resource management, conservation, and renewable energy.</p> <p>CO5: Learn about the policies and regulations aimed at protecting the environment, including environmental law and international environmental agreements.</p>
	21BASMLTD01	IMMUNOHEMATOLOGY & BLOOD BANKING	<p>CO1: Understand the basic concepts of blood components, their functions, and transfusion reactions.</p> <p>CO2: Acquire Knowledge of the immune system, antigens, and antibodies, and how they relate to blood typing and cross-matching.</p> <p>CO3: Understand the principles and techniques of blood collection, processing, storage, and transfusion.</p> <p>CO4: Perform blood typing, cross-matching, and compatibility testing.</p> <p>CO5: Acquire knowledge of blood component preparation, labelling, and administration.</p> <p>CO6: Understand of the various blood disorders and their treatment options, including transfusions and blood product administration.</p>

Semester	Subject Code	Subject	Course Outcomes
	21ENG1L02	English– I	<p>CO1: 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>CO2: Demonstrate a set of basic skills in literary communication and explication of literary practices and process with clarity.</p>

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Semester	Subject Code	Subject	Course Outcomes
2	21BASMLT201	ANATOMY - II	<p>CO1: Understand of the anatomy and function of the cardiovascular, respiratory, digestive, and urinary systems.</p> <p>CO2: Acquire the knowledge of the anatomy and function of the endocrine and reproductive systems.</p> <p>CO3: Understand of the anatomy and function of the nervous system, including the brain and spinal cord.</p> <p>CO4: Acquire the Knowledge of the anatomy and function of the musculoskeletal system, including the bones, joints, and muscles.</p> <p>CO5: Apply anatomical concepts and principles to the diagnosis and treatment of medical conditions.</p> <p>CO6: Acquire knowledge of the interrelationships between different body systems and how they work together to maintain homeostasis.</p>

Semester	Subject Code	Subject	Course Outcomes
	21BASMLT202	PHYSIOLOGY - II	<p>CO1: Understand the physiological principles and mechanisms that regulate the functions of the cardiovascular, respiratory, digestive, and urinary systems.</p> <p>CO2: Acquire knowledge of the physiological mechanisms that regulate the endocrine and reproductive systems.</p> <p>CO3: Understand the neural and muscular mechanisms that regulate movement and coordination.</p> <p>CO4: Acquire the knowledge of the physiological processes that regulate body temperature, fluid balance, and electrolyte balance.</p> <p>CO5: Apply physiological concepts and principles to the diagnosis and treatment of medical conditions.</p> <p>CO6: Acquire knowledge of the interrelationships between different body systems and how they work together to maintain homeostasis.</p>
	21BASMLT203	PATHOLOGY - II	<p>CO1: Understand of the causes, mechanisms, and progression of diseases affecting the cardiovascular, respiratory, digestive, and urinary systems.</p> <p>CO2: Acquire Knowledge of the causes, mechanisms, and progression of diseases affecting the endocrine and reproductive systems.</p> <p>CO3: Understand of the causes, mechanisms, and progression of diseases affecting the nervous and musculoskeletal systems.</p> <p>CO4: Acquire Knowledge of the pathological mechanisms involved in the development of cancer.</p> <p>CO5: Apply pathological concepts and principles to the diagnosis and treatment of medical conditions.</p> <p>CO6: Acquire Knowledge of the interrelationships between different body systems and how they contribute to the development of disease.</p>

Semester	Subject Code	Subject	Course Outcomes
	21BASMLT204	CLINICAL HAEMATOLOGY - I	<p>CO1: Understand the normal structure and function of blood cells and the bone marrow.</p> <p>CO2: Acquire Knowledge of the various blood disorders, including anemias, leukemias, and coagulation disorders.</p> <p>CO3: Understand the diagnostic tests used to evaluate blood disorders, including complete blood count (CBC), peripheral blood smear analysis, and coagulation studies.</p> <p>CO4: Perform basic haematological procedures, such as blood collection, processing, and analysis.</p> <p>CO5: Acquire Knowledge of the principles and techniques of bone marrow aspiration and biopsy.</p> <p>CO6: Understand of the various treatment options for blood disorders, including blood transfusions, chemotherapy, and bone marrow transplantation.</p>
	21BASMLTD02	CLINICAL ENZYMOMOLOGY & AUTOMATION	<p>CO1: Understand the principles of enzyme kinetics and their applications in the diagnosis of diseases.</p> <p>CO2: Acquire knowledge of the various types of enzymes and their specific roles in metabolism.</p> <p>CO3: Understand the diagnostic tests used to evaluate enzyme activity and dysfunction, such as serum enzyme assays and immunoassays.</p> <p>CO4: Perform basic enzymology procedures, such as sample collection, processing, and analysis.</p> <p>CO5: Acquire Knowledge of the various types of automated instruments used in clinical enzymology and their applications.</p> <p>CO6: Understand the principles of quality control and quality assurance in clinical enzymology.</p>

Semester	Subject Code	Subject	Course Outcomes
	21ENG2L02	English – II	<p>CO1: Understanding of major literary works and their cultural, historical, and philosophical contexts</p> <p>CO2: Understanding of the relationship between literature and social, political, and cultural issues, and the ways in which literature can be used to critique and challenge dominant ideologies.</p> <p>CO3: Exposure to a variety of cultural perspectives and the development of an appreciation for diversity and inclusivity.</p>

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Semester	Subject Code	Subject	Course Outcomes
3	21BASBIO301	BIOCHEMISTRY I	<p>CO1: Understand the fundamental principles of biochemistry, including the structure and function of biological macromolecules.</p> <p>CO2: Acquire knowledge of the metabolic pathways involved in the utilization of energy and the production of cellular components.</p> <p>CO3: Understand the regulation of metabolic processes and the mechanisms by which cells respond to changes in their environment.</p> <p>CO4: Acquire Knowledge of the biochemical basis of inherited diseases and disorders.</p> <p>CO5: Analyse and interpret biochemical data, including spectrophotometric and chromatographic techniques.</p> <p>CO6: Knowledge of the principles and techniques of protein purification and characterization.</p>

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	21BASMLT302	MICROBIOLOGY-I	<p>CO1: Understand the diversity of microorganisms and their role in the environment, human health, and industrial processes.</p> <p>CO2: Understand the basic structures and functions of microorganisms, including their cellular and molecular biology.</p> <p>CO3: Apply the methods used for the isolation, cultivation, and identification of microorganisms.</p> <p>CO4: Learn about the interactions between microorganisms and their hosts, including the mechanisms of pathogenesis and the host immune response.</p> <p>CO5: Acquire knowledge about the principles and applications of sterilization, disinfection, and infection control.</p>
	21BASMLT303	CLINICAL HAEMATOLOGY-II	<p>CO1: Understand the normal structure and function of blood cells and the various components of the blood.</p> <p>CO2: Acquire Knowledge of pathogenesis, diagnosis, and treatment of hematologic disorders, including anemia, leukemias, lymphomas, myelomas, bleeding and clotting disorders, and others.</p> <p>CO3: Understand the principles of laboratory diagnosis and the interpretation of results for hematologic disorders.</p> <p>CO4: Understand the use of diagnostic techniques such as peripheral blood smears, bone marrow biopsies, and flow cytometry in the evaluation of hematologic disorders.</p> <p>CO5: Summarize the role of hematopoietic stem cell transplantation in the treatment of hematologic disorders.</p>
	21BASBIO301L	PRACTICAL BIOCHEMISTRY	<p>CO1: Knowledge of the theory and principles underlying biochemistry experiments and the ability to apply this knowledge to analyze data and interpret results.</p> <p>CO2: Development of critical thinking and problem-solving skills through the design and execution of independent laboratory projects.</p> <p>CO3: Acquisition of skills in laboratory safety, including the proper handling of hazardous chemicals and materials.</p>

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	21BASMLT302L	PRACTICAL MICROBIOLOGY	<p>CO1: Understand the microbiology laboratory techniques and procedures, such as staining, cultivation, and isolation of microorganisms.</p> <p>CO2: Identify and characterize different microorganisms using a variety of laboratory techniques.</p> <p>CO3: Exposure to state-of-the-art microbiology techniques and equipment, as well as current research in the field.</p> <p>CO4: Develop critical thinking and problem-solving skills through the design and execution of independent laboratory projects.</p> <p>CO5: Enable to communicate scientific information effectively, both orally and in writing.</p>
	21CENG3A02	COMMUNICATIVE ENGLISH	<p>CO1: To enhance the understanding of LSRW skills and various approaches to language.</p> <p>CO2: Providing an in-depth academic exposure about various forms of communication to enable students to be better speakers and users of language.</p> <p>CO3: Demonstrate a coherent and systematic knowledge of the field of communication through understanding of current linguistic and literary developments.</p> <p>CO4: Demonstrate a set of basic skills in literary communication and explication of literary practices and process with clarity.</p> <p>CO5: Write analytically in a variety of formats, including essays, speeches, and reflective writings.</p>
	21BASMLT3D01	PARASITOLOGY & VIROLOGY	<p>CO1 - Understand basics of parasitology and Virology</p> <p>CO2 - Explain various medically important Protozoa, Helminths and Virus</p> <p>O3- Gain Knowledge about pathogenesis and clinical manifestation of parasitic and viral infections</p> <p>CO4- Demonstrate methods used for laboratory diagnosis</p>

Semester	Subject Code	Subject	Course Outcomes
	21BASMLT3D02	DIAGNOSTIC CYTOLOGY	<p>CO1: Understand the basic principles and techniques of diagnostic cytology, including sample collection, preparation, and examination</p> <p>CO2: Acquire knowledge about the inflammatory and autoimmune diseases, and the ability to recognize these conditions based on cellular and morphological features.</p> <p>CO3: Understand the role of diagnostic cytology in the evaluation of various body systems, such as the respiratory, gastrointestinal, genitourinary, and reproductive systems.</p> <p>CO4: Acquire the knowledge of the interpretation of cytological specimens and the ability to correlate cytological findings with clinical and pathological findings.</p> <p>CO5: Understanding of the limitations and potential sources of error in diagnostic cytology</p>

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Semester	Subject	Course Outcomes
4	Biochemistry-II	CO1: Understand the metabolic pathways and regulation CO2: Acquire Knowledge of the structure and function of enzymes CO3: Understand the biochemistry of carbohydrates, lipids, and nucleic acids CO4: Acquire Knowledge of the structure and function of proteins
	Microbiology-II	CO1: Develop a comprehensive understanding of the diversity of microorganisms and their impact on human health and the environment. CO2: Understand the basic concepts of microbial pathogenesis, including mechanisms of infection, host defenses, and treatment strategies. CO3: Develop skills in identifying, isolating, and characterizing different types of microorganisms, including bacteria, viruses, fungi, and parasites. CO4: Understand the principles of antimicrobial therapy, including the selection and use of antibiotics and other antimicrobial agents. CO5: Develop critical thinking skills and the ability to apply knowledge and laboratory techniques to solve problems related to microbiology.
	Diagnostic Molecular Biology	CO1: To familiarize students with Molecular Biology which chiefly deals with interactions among various systems of the cell, including those between DNA, RNA and proteins and learning how these are regulated. CO2: To gain an understanding of chemical and molecular processes that occurs in and between cells. CO3: To gain insight into the most significant molecular and cell-based methods used today to expand our understanding of biology. CO4: Understanding the regulation of gene expression in prokaryotes using operon concept and Eukaryotes. CO5: Identify problems associated with production of recombinant proteins and protein purification and devising strategies to overcome problem.

Semester	Subject	Course Outcomes
	Practical Biochemistry-II	<p>CO1: Develop a comprehensive understanding of the fundamental principles and techniques of biochemistry.</p> <p>CO2: Gain hands-on experience with a variety of biochemical techniques, including protein purification, enzyme kinetics, spectrophotometry, and chromatography.</p> <p>CO3: Understand the structure and function of biological macromolecules, including proteins, nucleic acids, and lipids.</p> <p>CO4: Study the metabolism of carbohydrates, lipids, and amino acids and the regulation of metabolic pathways.</p> <p>CO5: Develop the ability to analyze and interpret biochemical data</p>
	Practical Diagnostic Molecular Biology	<p>CO1: Understand the basic principles and applications of molecular biology techniques in the field of medical diagnostics.</p> <p>CO2: Gain hands-on experience with various molecular biology techniques, including DNA extraction, polymerase chain reaction (PCR), gel electrophoresis, and sequencing.</p> <p>CO3: Develop the ability to analyze and interpret molecular biology data, including DNA and RNA sequence data, and to use these data to diagnose genetic disorders and infectious diseases.</p> <p>CO4: Acquire an understanding of the ethical and legal considerations involved in the use of molecular biology techniques in medical diagnostics.</p> <p>CO5: Develop skills in the design and implementation of molecular biology experiments, including the optimization of conditions for specific reactions and the troubleshooting of common problems.</p>
	Database Management	<p>CO1: Provide the knowledge of Hospital Management system</p> <p>CO2: Determine the ability to archive data, manage and retrieve the necessary Hospital Management data</p> <p>CO3: Create different visual representation of data</p> <p>CO4: acquire knowledge of front end and back end of internet</p> <p>CO5: Apply programming fundamentals using programming tools.</p>
	Indian Constitution	<p>CO1: learn and understand the Indian Constitution and follow as a citizen.</p> <p>CO2: To Remember, Understand and Apply the Indian Constitution and also citizen following the constitution within the framework.</p> <p>CO3: To understand the concept of CM and State Governor, PM and President, appointment of Supreme Court, High Court and Consumer Court - Judge's.</p> <p>CO4: To understand the existing houses and functioning system of it.</p>

