

**College of Paramedical Sciences
Teerthanker Mahaveer University**

B.Sc. (Medical Laboratory Techniques)

Programme Outcome

PO-1	:	Understanding ways of functioning effectively as an individual independently and as a member in diverse team in multidisciplinary settings (Attitude)
PO-2	:	Understanding requirements of continuous education as a function of growth and maintenance of professional competence (Lifelong learning)
PO-3	:	Describing environmental consciousness and societal concerns in achieving sustainable development (Environment and Sustainability)
PO-4	:	Applying computer skills in health care system and taking entrepreneurial decisions (Entrepreneurship)
PO-5	:	Applying knowledge to assess societal, health, safety and legal issues related to professional practice (Social interaction & effective citizenship)
PO-6	:	Applying systematized problem solving techniques to identify and correct procedural errors to verify the accuracy of laboratory result obtained (Problem analysis and solving)
PO-7	:	Applying appropriate techniques, resources and tools with an understanding of limitations (Technology savvy/usage)
PO-8	:	Evaluating professional conduct and interpersonal communicational skills effectively with society at large (Communication)

Programme Specific Outcome

PSO-1	:	Understanding the concepts, theories & principles of medical laboratory techniques and applied sciences.
PSO-2	:	Understanding the role of various GOI, NGOs, health programmes/ policies and Organizations
PSO-3	:	Applying quality control measures, safety procedures and maintenance of laboratory equipment's and lab accreditation systems.
PSO-4	:	Applying techniques for collection and preservation of biological Samples.
PSO-5	:	Analysing the process of accreditation and certification in different health care systems.
PSO-6	:	Evaluating the results and explaining underlying principle in each investigation.

Course Outcomes

BML-S- 101	CO-1	Describing different terminology and recognizing organs, organ system
	CO-2	Understanding the major structures of human body.
	CO-3	Differentiating the various organ system and its related disorders
	CO-4	Explaining various organ systems and employ knowledge of human

		anatomy to solve questions regarding functions, diseases and sample collection
	CO-5	Analyzing appropriate sample collection site
BML-S-102	CO-1	Understanding the function & structure of cells, tissues and major human organs system/parts.
	CO-2	Understanding physiological processes accurately and using relevant scientific terminology and nomenclature.
	CO-3	Understanding physiological processes accurately and using relevant scientific terminology and nomenclature.
	CO-4	Explaining the interrelation between different organ systems to maintain biological equilibrium
	CO-5	Classifying functions of various organ systems and employ its knowledge to understand diseases
	CO-6	Applying various experimental techniques related to physiology
BML-S-103	CO-1	Understanding the formation of blood & its composition
	CO-2	Describing different stage of cells development.
	CO-3	Understanding the concept of Haemopoiesis, biomedical waste management, & microscopy
	CO-4	Applying the specific technique for sample collection, its preservation & biomedical waste management.
	CO-5	Analyzing infected blood samples and sites for hematological investigations
BML-S-104	CO-1	Understanding the role and responsibilities of medical lab technologist
	CO-2	Understanding principle, working and maintenance of various laboratory instruments
	CO-3	Understanding different types of solutions and their preparations
	CO-4	Applying appropriate methods for collection, handling and processing of different body fluids
	CO-5	Analyzing body fluids on the basis of physical, chemical and microscopic examinations
BML-S-105	CO-1	Understanding the Concept of Community Health, preventive Medicine & Family Welfare.
	CO-2	Understanding the Nutrition and major Nutritional disorders and their prevention
	CO-3	Describing epidemiology and aetiology of communicable disease
	CO-4	Applying National health policy programmes, Universal Immunization and Vaccines schedules
	CO-5	Analyzing population related problems and its effect on growth and development
BML-S-106	CO-1	Understanding theories and concepts of microorganisms.
	CO-2	Understanding microscope, its components and maintenance
	CO-3	Describing the morphology of eukaryotic and prokaryotic cells
	CO-4	Applying microscopy to study basic features of microorganisms
	CO-5	Analyzing different stains and staining techniques
TMUGE101	CO-1	Remembering and understanding of the basic of English grammar and vocabulary.
	CO-2	Understanding of the basic Communication process

	CO-3	Applying correct vocabulary and tenses in sentences construction.
	CO-4	Analyzing communication needs and developing communication strategies using both verbal & non-verbal method.
	CO-5	Drafting applications in correct format for common issues.
	CO-6	Developing self-confidence.
BML-S-201	CO-1	Understanding basic anatomy of different organ and organ system
	CO-2	Understanding endocrine system of body and their functions
	CO-3	Describing the major structures of human body
	CO-4	Analyze various organ systems and its related disorders
	CO-5	Applying a holistic approach to human health and medical research
BML-S-202	CO-1	Understanding the mechanism of action of different organ systems
	CO-2	Understanding electrolytes with respect to alkalosis and acidosis.
	CO-3	Describing reproductive system an sexual characteristics
	CO-4	Analyzing special senses and functions
	CO-5	Evaluating abnormalities and various physical conditions
BML-S-203	CO-1	Understanding the blood banking techniques & the principle on which these are based.
	CO-2	Understanding of basic mechanism of coagulation & its related disorders
	CO-3	Describing immunohaematology and blood banking technology
	CO-4	Applying of technique for routine investigations in clinical haematology laboratory
	CO-5	Analyzing the cause of disease by examining CSF, Sputum, Semen, Stool
BML-S-204	CO-1	Understanding the concepts and theories of biomolecules
	CO-2	Understanding the chemistry of carbohydrates, proteins, lipids and amino acids.
	CO-3	Describing the mechanism of enzyme action and identify the classes and factors affecting action
	CO-4	Analyzing different diseases associated with abnormalities of biomolecules
	CO-5	Evaluating the biochemical test results.
BML-S-205	CO-1	Understanding the fundamental concepts of computers with the present level of knowledge of the student
	CO-2	Understanding the concepts of hardware, software and memories associated with it
	CO-3	Describing binary, hexadecimal, and octal number system and their arithmetic
	CO-4	Understanding the MS OFFICE and its applications.
	CO-5	Applying MS office programs to create personal and academic documents.
BML-S-206	CO-1	Understanding the concept of infections and its transmission
	CO-2	Understanding the types and properties of disinfectant and sterilization
	CO-3	Describing Segregation, Treatment, Disposal of biomedical waste
	CO-4	Applying safety measures used in laboratory
	CO-5	Analyzing specimen collection sites for epidemiological investigations,
TMUGE201	CO-1	Remembering & understanding the basics of English Grammar and Vocabulary

	CO-2	Understanding the basics of Listening, Speaking & Writing Skills
	CO-3	Understanding principles of letter drafting and various types of formats.
	CO-4	Applying correct vocabulary and grammar in sentence construction while writing and delivering presentations
	CO-5	Analyzing different types of listening, role of Audience & Locale in presentation
	CO-6	Creating Official Letters, E-Mail & Paragraphs in correct format.
BML-S- 301	CO-1	Understanding the concept of haematopoiesis, functions & disorders of blood cells, coagulation mechanism & its disorders.
	CO-2	Understanding the normal& abnormal morphology of blood cells.
	CO-3	Describing about anemia, causes, classification & pathogenesis.
	CO-4	Applying specific diagnostic test used to identifying different types of anemia
	CO-5	Applying the technique to preparation & staining of blood film for microscopic examination
BML-S-302	CO-1	Understanding the concept of metabolism of carbohydrates, protein and lipid.
	CO-2	Understanding Diabetes, its types, clinical features and diabetic profile test.
	CO-3	Describing digestion and absorption and transportation of biomolecules
	CO-4	Applying principles and applications of the analytical instruments used in the routine clinical laboratory
	CO-5	Evaluating the concentration of proteins and lipid profile test along with their risk factors
BML-S-303	CO-1	Understanding composition and preparations of various liquids and solids Culture Media
	CO-2	Understanding theories and applying skills related to growth and Nutrition of Bacteria-
	CO-3	Describing the concept of Culture and Sensitivity for treatment
	CO-4	Applying various Biochemical test used in Microbiology on patients sample from Clinic and Hospital
	CO-5	Analyzing specimen of aerobes and anaerobes by inoculation of Culture Media
BML-S-304	CO-1	Understanding the basic concepts of immunology and immune response mechanism.
	CO-2	Understanding the discoveries and innovation done by various scientist in field of immunology & serology and about antigen antibody
	CO-3	Applying scientific approach and technique to the serological sample for investigating the antigen or antibody
	CO-4	Applying various technique like ELISA, RIA to the samples for the diagnostic report
	CO-5	Evaluating normal & abnormal reports by antigen antibody detection using various techniques.
BML-S-305	CO-1	Understanding the Concept of Fixation & different types of fixative used in laboratory.
	CO-2	Understanding the section cutting techniques & develop the ability to prepare slide used for microscopy.

	CO-3	Describing the functions, types, location & structure of cells & tissues
	CO-4	Applying the techniques for usage, care & maintenance of equipment's used.
	CO-5	Analyzing the basic steps of tissue processing.
BML-S-307	CO-1	Understanding basic concepts in the context of ecological and environmental sciences.
	CO-2	Understanding and describing biodiversity and also summarize bio geographical distribution of India.
	CO-3	Describing concepts and methods to apply in environmental communication and public awareness
	CO-4	Applying the ethical and cultural conduct in environmental activities.
	CO-5	Analyzing the ideas about energy resources in today's scenario and discussing about alternate energy sources.
TMUGE301	CO-1	Remembering and understanding the English grammar and vocabulary
	CO-2	Understanding the art of public speaking and strategies of reading comprehension.
	CO-3	Applying correct vocabulary and sentence construction during public speaking or professional writing.
	CO-4	Aanalysing different types of sentences like simple, compound and complex.
	CO-5	Creating skills for Drafting notice, agenda and minutes of the meeting
TMUGS-301	CO-1	Utilizing effective verbal and non-verbal communication techniques in formal and informal settings
	CO-2	Understanding and analysing self and devising a strategy for self-growth and development.
	CO-3	Adapting a positive mindset conducive for growth through optimism and constructive thinking
	CO-4	Utilizing time in the most effective manner and avoiding procrastination.
	CO-5	Making appropriate and responsible decisions through various techniques like SWOT, Simulation and Decision Tree
	CO-6	Formulating strategies of avoiding time wasters and preparing to-do list to manage priorities and achieve SMART goals.
BML-S-401	CO-1	Understand the etiology, pathogenesis, clinical features and laboratory investigations of anemia
	CO-2	Understanding leukemia, its causes, classification & laboratory investigations.
	CO-3	Understanding the etiology, classification, pathogenesis of thalassemia
	CO-4	Describing the concepts of Bone marrow examination including the method of processing & staining
	CO-5	Analyzing clinical features and laboratory investigations of thalassemia.
	CO-6	Applying the specific techniques used for diagnosis of haemoglobinopathies.
BML-S- 402	CO-1	CO1 Understanding various type of function test and metabolic acidosis & alkalosis
	CO-2	Understanding tumor markers and their applications
	CO-3	Applying basic procedures of different parameters used to assess organ function test

	CO-4	Analyzing buffer systems of body and related disorders
	CO-5	Evaluating the results of diagnosis of organ function in Biochemistry Laboratory
BML-S- 403	CO-1	Understanding the concepts of antibiotics and antimicrobial agents
	CO-2	Understanding the ethics and legality in use of laboratory animals
	CO-3	Describing preservation of Microorganism by periodic subculture, cold storage deep freezing and lyophilisation methods.
	CO-4	Applying the methods of quality assessment for determination of microbial load in water.
	CO-5	Analyzing various samples for microbial examinations
	CO-6	Evaluating water quality for PH, salinity ,alkalinity , dissolved oxygen etc.
BML-S- 404	CO-1	Understanding immunological disorders and their significance
	CO-2	Understanding various auto immune disorders and their markers
	CO-3	Applying scientific approach and technique to the serological sample for investigating the antigen, antibody and tumor markers
	CO-4	Analyzing the compatibility of tissue for transplantation, antigen antibody detection in sample to diagnose any immunological or autoimmune disorders using various techniques.
	CO-5	Evaluating serum sample for any immunological disorders
BML-S-405	CO-1	Understanding the principle, working, processing & staining of tissue used for electron and fluorescence microscope
	CO-2	Understanding the concept of immunohistochemistry, principle, types and its applications
	CO-3	Describing terminology & characteristics of malignant cell.
	CO-4	Applying staining techniques used for demonstration of minerals and pigments.
	CO-5	Applying theories & staining of carbohydrates
	CO-6	Analyzing minerals and pigments in tissue samples in context to microorganisms and lipids
BML-S- 407	CO-1	Understanding physiology and pathology of cell and organelles
	CO-2	Describing inflammation and mechanism of phagocytosis
	CO-3	Understanding the concept of cell injury mechanism, its disorders and laboratory testing
	CO-4	Analyzing modes of infections, prevention and control with suitable examples like Dengue ,tumor, nutritional excess and imbalances etc
	CO-5	Analyzing protein malnutrition and disease associated with it
	CO-6	Evaluating the role and effect of metals in deficiency diseases
TMUGE401	CO-1	Remembering and understanding the English grammar and vocabulary
	CO-2	Understanding the essentials of effective listening and speaking.
	CO-3	Understanding the corporate expectations and professional ethics
	CO-4	Applying correct vocabulary and sentence construction during professional writing or job interviews.
	CO-5	Aanalyzing different types of interviews
	CO-6	Developing the skills to create resume, C.V. or cover letter
TMUGS-401	CO-1	Communicating effectively in a variety of public and interpersonal settings.
	CO-2	Applying concepts of change management for growth and development

		by understanding inertia of change and mastering the Laws of Change.
	CO-3	Analyzing scenarios, synthesizing alternatives and thinking critically to negotiate, resolve conflicts and develop cordial interpersonal relationships
	CO-4	Functioning in a team and enabling other people to act while encouraging growth and creating mutual respect and trust
	CO-5	Handling difficult situations with grace, style, and professionalism
BML-S-501	CO-1	Understanding the basic concepts of blood groups, blood collection and describing the blood banking technique & its use.
	CO-2	Describing the basics transplantation. about stem cell banking and bone marrow
	CO-3	Applying scientific approach and technique for screening blood in blood bank and segregate their component for recipient.
	CO-4	Analyzing blood sample for infectious transfusion transmitted disease before transfusion, quality in blood bank
	CO-5	Evaluating a donor for donating blood based on donor selection criteria
BML-S-502	CO-1	Describing concepts and theories of enzymes
	CO-2	Understanding Enzyme kinetics, physiological significances and enzyme Inhibition.
	CO-3	Applying Automation, principle, working and maintenance of various clinical chemistry analysers, point of care testing
	CO-4	Analysing enzyme activity, factors affecting enzyme level in serum/ plasma.
	CO-5	Evaluating enzyme concentration in different samples
BML-S-503	CO-1	Understanding the various phases of bacterial growth.
	CO-2	Describing morphology and pathogenicity of gram positive and gram negative bacteria
	CO-3	Applying the various techniques of media preparation
	CO-4	Analysing the various serological and Antibiotic sensitivity techniques used for microbiological analysis
	CO-5	Analysing clinical features and lab diagnosis of different bacteria
BML-S-504	CO-1	Understanding the basic about parasite & host parasite relationship
	CO-2	Describing the pathogenesis and lifecycle of parasite
	CO-3	Applying diagnostic technique for screening of parasitic disease
	CO-4	Analyzing the sample for any infection and its reporting
	CO-5	Evaluating parasitological samples using diagnostic techniques
BML-S-505	CO-1	Understanding concepts of aspiration and exfoliative cytology
	CO-2	Understanding the importance of diagnosis of Sex Chromatin Tumour markers & Immunocytochemistry.
	CO-3	Applying appropriate techniques for collection and processing of different samples
	CO-4	Analysing the processing of Cytological Specimen: Fixation, blocking & mounting.
	CO-5	Evaluating different samples through pap staining
BML-S-506	CO-1	Understanding ethical principles and accreditation for clinical laboratories
	CO-2	Applying all general & clinical safety measures to reduce the risk of infection.

	CO-3	Applying methods for interpretation and release of examination results for quality assurance
	CO-4	Evaluating the validating, instrument calibration & importance of medical audit (NABL) to enhance the quality of laboratory.
	CO-5	Creating pre & post exposure guidelines of some infectious diseases
BML-S-601	CO-1	Understanding the secretion, function & regulation of hormones.
	CO-2	Understanding about drug abuse and all investigation for drug screening
	CO-3	Analyzing thyroid dysfunctions function test and disorder associated with its
	CO-4	Analyzing infertility profile with its hyper and hypo secretions
	CO-5	Evaluating the toxic effect of alcohol, lead, zinc & mercury in the human body.
BML-S-604	CO-1	Understanding the pathogenesis and prevention of microorganisms
	CO-2	Describing various antigen antibody reactions
	CO-3	Applying different laboratory tests for diagnosis of microorganisms
	CO-4	Applying the knowledge gained to various laboratory procedures
	CO-5	Analysing various microbiological and serological techniques for isolation of pathogenic microorganism
	CO-6	Evaluating samples through various culture techniques used for growing microorganisms
BML-S-605	CO-1	Describing the nature and properties of various pathogenic viruses
	CO-2	Understanding the concept of viral taxonomy and their modes of transmission
	CO-3	Applying various serological techniques used for detection of virus.
	CO-4	Applying general principles of viral vaccination for quality health care
	CO-5	Analysing various rapid serological techniques for diagnosis of pathogenic virus.
	CO-6	Evaluating viral diseases through specific rapid card tests used for the detection
BML-S-606	CO-1	Understanding research methodology and basic statistical concepts
	CO-2	Applying perspectives for training development related to organisational setups
	CO-3	Applying statistical methods for representation of data
	CO-4	Analyzing data on the basis of different statistical methods
	CO-5	Evaluating data on the basis of statistical analysis
	CO-6	Evaluating quality management system in diagnostic laboratory
BML-S-607	CO-1	Understanding the concept of immunoassay and their applications in clinical diagnosis
	CO-2	Describing radioisotopes , instruments for measurement and applications in clinical biochemistry
	CO-3	Applying chromatographic techniques to different biological samples
	CO-4	Analyzing different centrifugation techniques and their significance
	CO-5	Analyzing biomolecules on the basis of electrophoresis and its applications in clinical diagnosis
BML-S-608	CO-1	Describing nucleic acids, and their synthesis
	CO-2	Understanding the process of protein synthesis
	CO-3	Understanding the PCR, RT PCR, reverse transcriptase PCR & Nested

		PCR.
	CO-4	Applying the techniques of Flow cytometry, stem cell banking, Prenatal Diagnosis by Diagnostic Molecular Biology
	CO-5	Analyzing DNA, RNA, Protein and chromosomes by Blotting techniques and Karyotyping
	CO-6	Analyzing blood volume, red cell volume and plasma volume, red cell life span, platelet life span by Radioisotopes.