Faculty of Allied Health Sciences
Bachelor of Science (Semester-II)
In Effect from Academic Year 2024-25

Branch Name:	Bachelor of Science Medical Laboratory Technology (B.Sc MLT)
Program Code:	AS101
Course Title:	Pathology-II
Course Code:	1AS1010201
Pre-requisite Course:	Higher Secondary Certificate (HSC) or +2 Certificate

Course Objectives:

The program builds a strong foundation in medical sciences while training students in clinical laboratory techniques and diagnostic skills. It emphasizes quality control, ethics, and hands-on clinical training through internships. Graduates are prepared for careers in healthcare, research, biotechnology, or higher studies.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
				Theory (Marks)		Practical (Marks)		
Lecture (L)	Tutorial (T)	Practical (P)	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total (Marks)
1.5	-	1	2	25	25	12.5	12.5	75

Course Contents:

Unit No	Topic	Total Hours
I	**Haematology** 1. Malarial Parasite 2. Approach to diagnosis of Anemia 3. Leukemia 4. Hemorrhagic Disorder 5. Coagulation Studies- PT, APTT, D-Dimer	09
II	**Cytopathology** 1. Introduction to Cytopathology 2. Collecting/Receiving of Specimen in the laboratory 3. Various Fixatives, Mode of action, Preparation and Indication. 4. Sample/Smear Preparation 5. Staining- H & E, Papanicolaou, Giemsa	09
III	**Histopathology** 1. Introduction to Histo Pathology 2. Receiving of Specimen in the laboratory 3. Use & care of Microscope 4. Various Fixatives, Mode of action, Preparation and Indication. 5. Tissue processing for routine paraffin sections 6. Section Cutting 7. Staining of tissues - H& E Staining 8. Bio-Medical waste management	18

Practical's

Unit No	Topic	Total Hours
I	Peripheral Smear Study-Malarial Parasite Peripheral Smear Study- Morphological typing of Anemia Peripheral Smear Study-Morphological typing of Leukemia PT- INR, APTT, D-Dimer	**09**
II	Collecting/Receiving of Specimen in the laboratory Exfoliative Cytology Sample/Smear Preparation Staining- H & E, Papanicolaou, Giemsa	**09**
III	Receiving of Specimen in the laboratory Fixation of Tissue/Organ Grossing Techniques & Selection of tissue Tissue processing for routine paraffin sections Section Cutting Staining of tissues - H& E Staining Bio-Medical waste management	**18**

Text Books/Reference Books:

1. Bancroft: Theory and Practical of Histology techniques
2. Textbook of Clinical Blood Banking Science by Zmijewski.
3. Manual for Clinical Pathology by Sabitry Sanyal
4. Practical Pathology by Dr.P.Chakraborty & Gargi Chakraborty
5. Haematology for students and practitioners by Ramnik Sood
6. Histological techniques by K.Laxminarayan
7. Practical Pathology by Dr.K.Uma Chaturvedi & Tejsindersingh
8. Textbook Of Medical Laboratory Technology by Praful B. Godkar and Darshan P. Godkar

Course Learning Outcomes (CLO):

Upon completion of a course, students will understand the scientific principles of laboratory testing, perform a wide range of clinical tests with proficiency, and troubleshoot at all stages of the process. They will also be able to interpret and correlate test results with pathological conditions. Additionally, they will develop effective communication skills and scientific literacy to support patients, healthcare teams, and the profession.

Faculty of Allied Health Sciences
Bachelor of Science (Semester-II)
In Effect from Academic Year 2024-25

Branch Name:	Bachelor of Science Medical Laboratory Technology (B.Sc. MLT)
Program Code:	AS101
Course Title:	Microbiology-II
Course Code:	1AS1010201
Pre-requisite Course:	Higher Secondary Certificate (HSC) or +2 Certificate

Course Objectives:

The program builds a strong foundation in medical sciences while training students in clinical laboratory techniques and diagnostic skills. It emphasizes quality control, ethics, and hands-on clinical training through internships. Graduates are prepared for careers in healthcare, research, biotechnology, or higher studies.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
				Theory (Marks)		Practical (Marks)		
Lecture (L)	Tutorial (T)	Practical (P)	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total (Marks)
1.5	-	1	2	25	25	12.5	12.5	75

Course Contents:

Unit No	Topic	Total Hours
I	**1. Microscopy:** Study of compound microscope-magnifying, numerical aperture, resolution and components of microscope. Dark ground illumination care of microscope and common difficulties. Micrometry Study of phase contrast, interference, fluorescent an electron microscope. Preparation of smear for electron microscope. **2. Study of pH in Microbiology:** Methods for measurements pH meter. Preparation, dilution and chemistry of suspension fluid. Oxidation-reduction redox) potential. **3. Preparation of stains:** Making of films, staining methods, mounting media. Gram's stain-Preparation of stain and staining methods. Special stains for AFB, Diphtheria, spores, capsule, intracytoplasmic lipids, polysaccharides, nuclear material, field's stain, stain for amoeba, fungi and rickettsia.	**18**
II	Study of instruments used in medical microbiology- **1. General Instruments:** Distillation plant, centrifuge Machine, Analytical Balance, Hotplate, Magnetic Stirrer, Water Bath, Automatic Dispensers and diluters, Deionizer etc. **2. Microbiological Instruments:** Autoclave, Incubator, Hot air oven, Laminar Air flow, Colony Counter, Muffle furnace, Refrigerator, Incubator, MacIntosh Field's jar etc. **3. Instruments used in immunology:** Electrophoresis, Immunodiffusion, starplate, chromatography, Elisa reader, automatic washer and RIA equipment etc. **4. Care and management of experimental animals:** General directions for the care of animals, material inoculated, necropsy common diseases and experimental procedures. Various experimental animals-rabbits, guinea pigs, mice, rat, hamsters' fowls and monkeys-their data, cages, feeding and handling. **5. Safety measures in Microbiology Laboratory:** Occurrence of Lab infections, route of infection in laboratory, safety measure precautions in use of Pathogens in teaching lab organization, management, recording of results and quality control in medical microbiology. **6. Culture and drug sensitivity test:** Isolation and identification of pathogens from urine, pus, sputum and recording of their results.	**09**

Practical's

Unit No	Topic	Total Hours
I	Micrometry Handling of Microscope and their parts Special Staining methods Special Staining methods LCB Slide culture for fungi PH meter Preparation of mount Preparation of special culture media Preparation of anaerobic culture media Handling and Care of Instruments - Distillation plant, centrifuge Machine, Analytical Balance Handling and Care of Instruments - Hotplate, Magnetic Stirrer, Water Bath	12
II	Handling and Care of Instruments - Refrigerator, Incubator, MacIntosh Field's jar Handling and Care of Instruments - Electrophoresis, Immunodiffusion Handling and Care of Instruments - Starplate, chromatography, Elisa reader Handling and Care of Instruments - Automatic washer and RIA equipment Handling and Care of animals - rabbits, guinea pigs, mice, rat, hamsters' fowls and monkeys Handling and Care of animals – guinea pigs Handling and Care of animals – mice Handling and Care of animals – rat Handling and Care of animals – hamster's fowls Handling and Care of animals - monkey Recording of results and quality control in medical microbiology. Safety measure precautions and guidelines in use of Pathogens in teaching lab as per international standard	12

Text Books/Reference Books:

1. Text Book of Microbiology by Dr. C P Baveja VIII Edition
2. Text Book of Microbiology by Apurba S Sastry & Sandhya Bhat

Reference Books:

1. Prescott's Microbiology by Joanne Willey, Kathleen Sandman XI Edition
2. Essentials of Microbiology & amp; Immunology by S K Mohanty & K Sai Leela & Dipti Pattanaik

Course Learning Outcomes (CLO):

Upon completion of a course, students will understand the study and varieties of microscopes, different staining techniques and preparations, and the use of instruments in microbiology, including immunological tools. They will also be able to plan the management and care of experimental animals, follow proper laboratory safety precautions, and perform practical procedures such as pathogen isolation, identification, culture, and drug sensitivity testing.