



Gyanmanjari
Innovative University

Course Syllabus
Gyanmanjari Science College
Semester-I (M.Sc.)

Subject: Clinical Pathology - MSCMT11503

Type of course: Major

Prerequisite: Students should have a BSc in Medical Laboratory Technology or a related field. They must know basic anatomy, physiology, microbiology, and lab techniques.

Rationale: Clinical Pathology helps students understand how to test body fluids to diagnose diseases. It teaches how to analyze lab results and connect them to patient conditions. This subject is important for working in labs, doing research, and supporting doctors in patient care.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P	C	Theory Marks		Practical Marks		CA	
				ESE	MSE	V	P	ALA	
4	0	0	4	60	30	10	00	50	150

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.

Continuous Assessment:

Sr. No.	Activity Learning Activity	Marks
1	Report Diagnosis: Diagnose from lab reports and upload reasoning. Upload it into GMIU web portal.	10
2	Microscopy Identification: Identify components in microscopy slides and upload results. Upload it into GMIU web portal.	10
3	Hematology Practice: Perform hematology tests and upload sheets. Upload it into GMIU web portal.	10
4	Doctor-Technician Roleplay: Roleplay doctor-technician dialogue and upload. Upload it into GMIU web portal.	10
5	Stain Identification: Identify stains for cases and upload answers. Upload it into GMIU web portal.	10
Total		50



Course Content:

Unit No	Course content	Hrs	% Weightage
1	Fundamentals of Clinical Pathology and Body Fluid Analysis <ul style="list-style-type: none"> • Introduction to Clinical Pathology: Scope and branches • Blood Collection: Techniques, types of anticoagulants, and preservation • Urine Analysis: Collection, physical, chemical, and microscopic examination • Urine Chemistry: Tests for protein, glucose, ketone bodies • Stool Examination: Routine, parasitological, and occult blood tests • Body Fluids: CSF, synovial, pleural, and peritoneal fluid analysis • Semen Analysis: Parameters, methods, and clinical interpretation 	15	25
2	Hematology – Cell Counts and Blood Indices <ul style="list-style-type: none"> • Hematological Tests: Hemoglobin, RBC, WBC, platelet counts • ESR, PCV, MCV, MCH, MCHC, and RDW • Coagulation Studies: PT, PTT, bleeding time, clotting time • Blood Collection Errors: Preanalytical factors in hematology • Reference Ranges and Normal Variations in Hematology 	15	25
3	Microscopic Evaluation and Hematological Disorders <ul style="list-style-type: none"> • Peripheral Blood Smear: Preparation, staining, and morphological interpretation • Differential Leukocyte Count: Technique and diagnostic value • Bone Marrow Examination: Indications, aspiration, biopsy, and findings • Laboratory Diagnosis of Anemia: Types, morphology, and diagnostic algorithm • Laboratory Investigation of Leukemia: Morphology, markers, and differentiation 	15	25



4	Advanced Techniques and Report Interpretation in Clinical Pathology <ul style="list-style-type: none"> Automation in Clinical Pathology: Hematology analyzers, urine analyzers Quality Control in Pathology Labs: Internal/external QC, standardization Interpretation of Pathological Reports: Clinical relevance and decision-making Case-based Correlation: Clinical-pathological interpretation of common diseases Ethics and Record Management in Pathology 	15	25
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Suggested Specification table with Marks (Theory):60

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage (%)	20%	20%	40%	20%	-	-

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcome:

After learning the course, the students should be able to:	
CO1	Execute and interpret routine examinations of urine, stool, semen, and body fluids for diagnostic purposes.
CO2	Accurately conduct hematological tests and interpret quantitative blood parameters and indices.
CO3	Analyze blood cell morphology and identify hematological disorders through peripheral smear and bone marrow evaluation.
CO4	Utilize automation and quality practices to interpret clinical pathology reports for evidence-based diagnostics.

Instructional Method:

The course delivery method will depend upon the requirement of content and the needs of students. The teacher, in addition to conventional teaching methods by black board, may also use any tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory



The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in the laboratory.

Reference Books:

- [1] Textbook of Clinical Pathology for MLT Students – 2025 Lab Tech Clinical Biochemistry by Sathya Publications Editorial Board, Sathya Publishers.
- [2] Clinical Pathology (A Practical Manual) by Harsh Mohan & Sugandha Mohan, Jaypee Brothers Medical Publishers.
- [3] Textbook of Pathology for MLT by Harsh Mohan (Adapted by Dr. Ramadas Nayak), Jaypee Brothers Medical Publishers.
- [4] Practical Manual of Clinical Pathology and Microbiology by Suvarna Jathar & Ranjana S. Waghmare, Nirali Prakashan.
- [5] Clinical Pathology and Diagnostic Methods by P. Ramadas, CBS Publishers & Distributors.

