B.Sc. Medical Laboratory Technology Syllabus

Duration: 3 Years (6 Semesters) + Internship (6–12 months)

Total Credits (typical): 120–140 credits (excluding internship)

Structure: Core subjects (Anatomy, Physiology, Biochemistry, Pathology, Microbiology, etc.) + Practicals + Skill Enhancement + Generic Electives + Ability Enhancement Courses

Year 1 – Semester 1

- Human Anatomy – I
- Human Physiology – I
- General Biochemistry – I & Nutrition
- Fundamentals of Medical Laboratory Technology / Introduction to MLT
- English / Communication Skills (AECC)
- Environmental Studies / Health Education (AECC)
- Practicals: Anatomy – I, Physiology – I, Biochemistry – I

Year 1 – Semester 2

- Human Anatomy – II
- Human Physiology – II
- General Biochemistry – II
- General Microbiology & Immunology – Basics
- Bio-Medical Waste Management & Laboratory Safety
- PC Software / Computer Applications in Lab (SEC)
- Practicals: Anatomy – II, Physiology – II, Biochemistry – II, Microbiology Basics

Year 2 – Semester 3

- Clinical Pathology & Basic Hematology – I
- Clinical Biochemistry – I
- Microbiology – I (Bacteriology, Parasitology)
- Fundamentals of Histopathology & Cytology – I
- Quality Control & Laboratory Management – Basics
- Generic Elective (e.g., Biostatistics, Health Communication)
- Practicals: Hematology – I, Clinical Biochemistry – I, Microbiology – I

Year 2 – Semester 4

- Clinical Pathology & Hematology – II
- Clinical Biochemistry – II
- Microbiology – II (Virology, Mycology, Immunology & Serology)
- Histopathology & Histotechniques – II
- Blood Banking & Transfusion Medicine – Basics
- Skill Enhancement Course (e.g., Medical Ethics & IPR, Instrumentation)
- Practicals: Hematology – II, Biochemistry – II, Microbiology – II, Blood Banking

Year 3 – Semester 5

Core / Advanced Subjects

- Advanced Hematology & Clinical Pathology
- Advanced Clinical Biochemistry
- Advanced Microbiology & Immunology
- Molecular Biology & Genetics (Basics)
- Immunohematology & Blood Transfusion Techniques

Electives / DSE (choose 1–2)

- Cytology & Histopathology Techniques
- Diagnostic Microbiology & Infection Control
- Research Methodology & Biostatistics

Practicals & Training

- Directed Clinical Education / Lab Posting – I
- Project / Seminar on Lab Techniques

Year 3 – Semester 6

Core / Advanced Subjects

- Laboratory Management, Quality Assurance & Accreditation (NABL/ISO)
- Advanced Blood Banking & Transfusion Science
- Special Investigations (Endocrinology, Tumor Markers, etc.)
- Emerging Trends in MLT (Automation, Molecular Diagnostics)

Electives / DSE (choose 1–2)

- Clinical Enzymology & Hormones
- Virology & Emerging Infections

- Forensic Science & Toxicology (Basics)

Capstone / Training

- Major Project / Dissertation (Lab-based or Research)
- Directed Clinical Education / Hospital Lab Posting – II
- Comprehensive Viva-Voce

Internship (Post-Semester 6 or integrated in Year 4)

- Compulsory rotatory internship in hospital/diagnostic labs (Hematology, Biochemistry, Microbiology, Blood Bank, Histopathology sections) – 6–12 months
- Logbook, reports, and viva required for completion.

Common Structure Notes (2025–2026)

- **Core Focus**: Strong emphasis on practical training (50–60% of curriculum), specimen collection, instrumentation, quality control, and safety.
- **Course Types** (CBCS/NEP):
    - Core Courses (CC) – Anatomy, Physiology, Biochemistry, Pathology, Microbiology, etc.
    - Discipline Specific Electives (DSE) – Advanced/specialized topics in Sem 5–6
    - Generic Electives (GE) – Biostatistics, Ethics, etc.
    - Skill Enhancement Courses (SEC) – Instrumentation, Software, Ethics
    - Ability Enhancement Compulsory Courses (AECC) – English, EVS
- **Pedagogy**: Theory + extensive lab practicals + hospital visits + internships
- **Career Path**: Medical Lab Technologist, Lab Supervisor, Quality Control Officer, Blood Bank Tech, Research Assistant, etc.