Maulana Abul Kalam Azad University of Technology, WB
(Formerly known as West Bengal University of Technology)
Syllabus of B.Sc. (Medical Lab Technology)
Effective from academic session 2023-24

Programme Objective

- To provide students with a comprehensive understanding of the theoretical and practical aspects of medical laboratory technology.
- To develop the necessary skills and knowledge required to perform various laboratory tests and procedures accurately and efficiently.
- To familiarize students with the principles and techniques of laboratory quality control, quality assurance, and safety practices.
- To enable students to effectively utilize laboratory instruments, equipment, and computerized systems used in medical diagnostics.
- To prepare students for careers in medical laboratories, hospitals, research institutions, and other healthcare settings.

Graduate Attributes in B.Sc in Medical Lab Technology

The graduate attributes in B.Sc in Medical Lab Technology are the outline of the expected course learning outcomes mentioned in the beginning of each course. The characteristic attributes that a B.Sc in Medical Lab Technology graduate will be able to demonstrate through learning various courses are listed below:

a. Disciplinary Knowledge

Capability of executing comprehensive knowledge and understanding of one or more disciplines that form part of the Medical Laboratory Technology.

b. Communication skills

i. Ability to communicate long standing unsolved problems in Medical Laboratory Technology;
ii. Ability to show the importance of Medical Laboratory Technology as precursor to various domains.

c. Critical Thinking

i. Ability to engage in reflective and independent thinking by understanding the concepts in every area of Medical Laboratory Technology;
ii. Ability to examine the results and apply them to various problems appearing in different branches of Medical Laboratory.

d. Problem solving

i. Capability to deduce a Medical Laboratory Technology and associate problem and apply the classroom learning into practice to offer a solution for the same.
ii. Capabilities to analyze and synthesize data and derive inferences for valid conclusion;
iii. Able to comprehend solutions to sustain problems originating in the Medical Laboratory Technology etc.

e. Research Related Skills

i. Ability to search for, locate, extract, organize, evaluate, and use or present information that is relevant to a particular topic;
ii. Ability to identify the developments in various branches of Commerce and Business.

f. Information and Communication Technology (ICT) digital literacy

Capability to use various technical ICT tools (like spreadsheet, PowerPoint) for exploring, analysis, and using the information for analytical purposes and demonstration as well as presentation.

g. Self-directed Learning

Capability to work independently in diverse projects and ensure detailed study of various facets of Medical Laboratory Technology.

h. Moral and Ethical Awareness/Reasoning

i. Ability to ascertain unethical behaviour, falsification, and manipulation of information;
ii. Ability to manage self and various social systems.

i. Lifelong learning

Capability of self-paced and self-directed learning aimed at personal development and for improving knowledge/skill development and reskilling in all areas of Sports.

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Programme Learning Outcomes of B.Sc in Medical Lab Technology

PO 1 To acquire a deemed knowledge and a comprehensive understanding of the selected disciplinary or interdisciplinary spheres of study in much border canvas of context, their various domains of learning, their relevant connections with the fields of study and the recent growth and expansion linked with the selected disciplinary/interdisciplinary spheres of study.

PO 2 The necessity for procuring knowledge connected to practice profession and procedure for the sake of executing highly skilled tasks corresponding to the chosen areas of learning, enshrining knowledge needed for creating self-employment steps, and knowledge with a proper mental faculty indispensable for entrepreneurship comprising the chief elements of the creation of enterprise, improved product growth or a novel setup of organization.

PO 3 To develop the skills in the domains pertaining to specialization in the particular disciplinary or interdisciplinary spheres of learning in a comprehensive multidisciplinary canvas including a broad range of practical skills and updates, with unfixed routine and non-routine references corresponding to the particular areas of learning.

PO 4 To harness the capability to extract the best from what has been imbibed, learnt, transfigure the concepts the practical situations and make a relevant application gained competencies in novel contexts rather than simply replicate the curriculum-based knowledge to create remedies to particular problems.

PO 5 Demonstrate a thorough understanding of the fundamental principles, concepts, and techniques used in medical laboratory technology.

PO 6 Perform various laboratory tests and procedures accurately, following standard protocols and safety guidelines.

PO 7 Utilize laboratory instruments, equipment, and computerized systems effectively to analyse and interpret test results.

PO 8 Apply quality control and quality assurance measures in the laboratory to ensure accurate and reliable test outcomes.

PO 9 Demonstrate effective communication skills, professionalism, and ethical behaviour in a healthcare environment while working collaboratively with other healthcare professionals.

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Programme Outcomes for Core Courses

	Programme Outcomes	DSC-1	DSC-2	DSC-3	DSC-4	DSC-5	DSC-6	DSC-7	DSC-8	DSC-9	DSC-10	DSC-11	DSC-12	DSC-13	DSC-14	DSC-15	DSC-16	DSC-17	DSC-18	DSC-19
1	Values for life and character building			✔	✔	✔	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
2	Disciplinary knowledge	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
3	Communication skills	✔	✔	✔			✔		✔	✔	✔			✔	✔	✔	✔	✔	✔	✔
4	Critical thinking	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
5	Problem Solving	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
6	Analytical Reasoning	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
7	Research related skills	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
8	Cooperation/ Teamwork	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
9	Scientific Reasoning	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
10	Reflective Thinking	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
11	Information /Digital Literacy	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
12	Self-directed Learning	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
13	Moral and Ethical Awareness/ Reasoning	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
14	Leadership Readiness/Qualities	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
15	Lifelong learning	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
16	Professional Skills	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

Legend: DSC-1: Fundamentals of Anatomy and Physiology; DSC-2: General Microbiology & Parasitology, Virology and Mycology; DSC-3: Fundamentals of Pathology; DSC-4: General Biochemistry; DSC-5: Clinical Haematology; DSC-6: Clinical Microbiology; DSC-7: Immunology and Serology; DSC-8: Histotechniques; DSC-9: Clinical Biochemistry; DSC-10: Immunohaematology and Blood Banking; DSC-11: Clinical Pathology; DSC-12: Clinical Endocrinology and Toxicology; DSC-13: Diagnostic Molecular Biology; DSC-14: Clinical Nutrition; DSC-15: Clinical Enzymology and Automation; DSC-16: Diagnostic Histopathology; DSC-17: Research Methodology; DSC-18: Cytopathology Techniques and Cytogenetics; DSC-19: Advanced Diagnostic Techniques.

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1L Earns 1 credit | 1P Earns 1 credit | 1T Earns 1 Credit

Semester-I							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**DSC-1**	**BMLC101** **BMLC191**	Fundamentals of Anatomy and Physiology Fundamentals of Anatomy and Physiology Lab	**3**	**0**	**2**	**5**
2	**DSC-2**	**BMLC102** **BMLC192**	General Microbiology & Parasitology, Virology and Mycology General Microbiology & Parasitology, Virology and Mycology Lab	**3**	**0**	**2**	**5**
3	**MINOR-1**	**MIC101**	Computer Fundamentals	**3**	**0**	**0**	**3**
4	**GE-1**		Anyone from GE Basket A or D	**3**	**0**	**0**	**3**
5	**AEC-1**	**AECC101**	English & Professional Communication	**2**	**0**	**0**	**2**
6	**SEC-1**	**SEC181**	Life Skills and Personality Development	**2**	**0**	**0**	**2**
7	**VAC-1**	**VAC181**	Choose any one from following: VAC181A - Yoga VAC181B - Health & Wellness VAC181C - Sports	**0**	**0**	**2**	**2**
						Total Credits	**22**

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Semester-II							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**DSC-3**	**BMLC201** **BMLC291**	Fundamentals of Pathology Fundamentals of Pathology Lab	**3**	**0**	**2**	**5**
2	**DSC-4**	**BMLC202** **BMLC292**	General Biochemistry General Biochemistry Lab	**3**	**0**	**2**	**5**
3	**MINOR-2**	**MIC201**	Management Information System	**3**	**0**	**0**	**3**
4	**GE-2**		Anyone from GE Basket B/E	**3**	**0**	**0**	**3**
5	**AEC-2**	**AECC201**	Modern Indian Languages and Literature	**2**	**0**	**0**	**2**
6	**SEC-2**	**SEC201**	IT Skills	**2**	**0**	**0**	**2**
7	**VAC-2**	**VAC281**	Choose any one from following: VAC281A - Critical Thinking VAC281B – NSS VAC281C - Mental Health VAC281D - Environmental Studies	**0**	**0**	**2**	**2**
						Total Credits	**22**

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Semester-III							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**DSC-5**	**BMLC301** **BMLC391**	Clinical Haematology Clinical Haematology Lab	**3**	**0**	**2**	**5**
2	**DSC-6**	**BMLC302** **BMLC392**	Clinical Microbiology Clinical Microbiology Lab	**3**	**0**	**2**	**5**
3	**MINOR-3**		Any one from Minor Basket (Computer)	**3**	**1**	**0**	**4**
4	**GE-3**		Anyone from GE Basket C/F	**3**	**0**	**0**	**3**
5	**AEC-3**	**AECC301**	The Constitution Human Rights and Law	**2**	**0**	**0**	**2**
6	**SEC-3**	**SEC301**	Understanding basics of cyber security	**2**	**0**	**0**	**2**
						Total Credits	**21**

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Semester-IV							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**DSC-7**	**BMLC401** **BMLC491**	Immunology and Serology Immunology and Serology Lab	**3**	**0**	**2**	**5**
2	**DSC-8**	**BMLC402**	Histotechniques	**3**	**1**	**0**	**4**
3	**DSC-9**	**BMLC403**	Clinical Biochemistry	**3**	**1**	**0**	**4**
4	**MINOR-4**		Any one from Minor Basket (Computer)	**3**	**1**	**0**	**4**
5	**MINOR-5**		Any one from Minor Basket	**3**	**1**	**0**	**4**
6	**AEC-4**	**AECC401**	Society Culture and Human Behaviour	**2**	**0**	**0**	**2**
						Total Credits	**23**

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Semester-V							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
			Theory + Practical				
1	**DSC-10**	**BMLC501** **BMLC591**	Immunohaematology and Blood Banking Immunohaematology and Blood Banking Lab	**3**	**0**	**2**	**5**
2	**DSC-11**	**BMLC502** **BMLC592**	Clinical Pathology Clinical Pathology Lab	**3**	**0**	**2**	**5**
4	**MINOR-6**		Any one from Minor Basket (Computer)	**3**	**1**	**2**	**4**
5	**MINOR-7**		Any one from Minor Basket (Computer)	**3**	**1**	**0**	**4**
6	**SEC-4**	**SEC581**	Internship	**0**	**0**	**4**	**4**
						Total Credits	**22**

Semester-VI							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
			Theory + Practical				
1	**DSC-12**	**BMLC601** **BMLC691**	Clinical Endocrinology and Toxicology Clinical Endocrinology and Toxicology Lab	**3**	**0**	**2**	**5**
2	**DSC-13**	**BMLC602** **BMLC692**	Diagnostic Molecular Biology Diagnostic Molecular Biology Lab	**3**	**0**	**2**	**5**
3	**DSC-14**	**BMLC603**	Clinical Nutrition	**3**	**1**	**0**	**4**
4	**MINOR-8**		Any one from Minor Basket (Computer)	**3**	**1**	**0**	**4**
5	**MINOR-9**		Any one from Minor Basket (Computer)	**3**	**1**	**0**	**4**
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Semester-VII (Honours with research)							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**DSC-15**	**BMLC701** **BMLC791**	Clinical Enzymology and Automation Clinical Enzymology and Automation Lab	**3**	**0**	**2**	**5**
2	**DSC-16**	**BMLC702** **BMLC792**	Diagnostic Histopathology Diagnostic Histopathology Lab	**3**	**0**	**2**	**5**
3	**DSC-17**	**BMLC703**	Research Methodology	**3**	**1**	**0**	**4**
4	**MINOR-10**		Any one from Minor Basket (Computer)	**3**	**1**	**0**	**4**
5	**MINOR-11**		Any one from Minor Basket (Computer)	**3**	**1**	**0**	**4**
						Total Credits	**22**

SEMESTER – VII (Honours)							
SL. No.	**Category**	**Course Code**	**Course Title**	**L**	**T**	**P**	**Credit**
1	**DSC-15**	**BMLC701** **BMLC791**	Clinical Enzymology And Automation Clinical Enzymology And Automation Lab	3	0	2	5
2	**DSC-16**	**BMLC702** **BMLC792**	Diagonostic Histopathology Diagnostic Histopathology Lab	3	0	2	5
3	**DSC-17**	**BMLC703**	Medical Ethics and Professionalism	3	1	0	4
4	**MINOR-10**		Any one from Minor Basket (Computer)	3	1	0	4
5	**MINOR-11**		Any one from Minor Basket (Computer)	3	1	0	4

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Semester-VIII							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**DSC-18**	**BMLC801** **BMLC891**	Cytopathology Techniques and Cytogenetics Cytopathology Techniques and Cytogenetics Lab	**3**	**0**	**2**	**5**
2	**DSC-19**	**BMLC802** **BMLC892**	Advanced Diagnostic Techniques Advanced Diagnostic Techniques Lab	**3**	**0**	**2**	**5**
3	**SEC-5**	**SEC881R** **SEC881H**	Research Project or Dissertation **OR** Capstone Project/Industrial Project (Applicable for students opting for Honors without Research Track)	**4**	**0**	**8**	**12**
						Total Credits	**22**