



# UNIVERSITY POLYTECHNIC BIRLA INSTITUTE OF TECHNOLOGY MESRA, RANCHI



## **B.Sc. MEDICAL LAB TECHNOLOGY (BMLT)** Course Structure as per CBCS -2023

# **UNIVERSITY POLYTECHNIC BIT, MESRA**

## **Course Structure as per CBCS**

### **B. Sc. (Medical Lab Technology)**

#### **Institute Vision (University Polytechnic)**

To emerge as a leading technical training institution in the country and serve the nation and engineering profession with distinction by developing the most skilled human resources with comprehensive and modern training and skillsets in selected engineering disciplines and trades.

#### **Institute Mission (University Polytechnic)**

1. To administer a technical training institute of highest standard of education and training commensurate with modern engineering practices.
2. To offer technical degree, diploma, and certificate courses to cater to contemporary demand and relevance to the engineering industry.
3. To adopt and implement modern curriculum of technical education and training.
4. To continuously upgrade the infrastructure necessary for practical training with new and contemporary machines and methods.
5. To arrange on job training and internships for the students and staff members with proper supervision.
6. To liaise with industry for internship and collaboration, and also, for arranging periodic review of infrastructure and training methods and modernizing teaching and training curriculum.

## **Vision of Medical Lab Technology Department**

To be a leading source of proficient medical laboratory technicians with excellent skills and sound technical knowledge to aid the healthcare personnels in the correct and accurate diagnosis of diseases and to monitor the progress of the treatment.

## **Mission of Medical Lab Technology Department**

1. To act a resource of skilled medical laboratory technicians with a true spirit of service to the community and society.
2. To create pool of opportunities for medical laboratory technicians from economically backward backgrounds in field of the healthcare industry.
3. To develop partnerships with hospitals of repute and pathological labs and aid them in developing error free diagnostic procedures.

## **PROGRAM OUTCOMES (POs)**

PO1	Medical Lab Technology professionals may work as technologists or technicians at clinics/hospitals/medical laboratories etc.
PO2	A productive, environment sustainable and challenging field that can extend and prepare the data that helps the doctors for diagnosing the various types of disease or ailments.
PO3	The Professional shall be capable of working in a variety of laboratory settings, handling various types of instruments and understand the various laboratory skills and procedures.
PO4	As a health professional the students shall gain medical laboratory knowledge and have a value-added responsibility towards the community health issues.
PO5	To understand and manage the prevailing health problems, focus on socio-economical process and apply suitable remedial measures.
PO6	After successful completion the students shall be capable for new startup as per knowledge, skills and having lots of future prospects in higher and research based studies.

## **PROGRAM EDUCATIONAL OUTCOMES OF MEDICAL LAB TECHNOLOGY**

**PEO 1.** To provide thorough knowledge in various subjects of medical laboratory including theoretical and practical training for appropriate continuing education opportunities to medical laboratory professionals.

**PEO 2.** To Provide educational experiences to provide academic depth to support professional advancement. To prepare graduates to excel as entry-level technologists

**PEO 3.** To prepare medical laboratory graduates for employment in hospitals and related research settings. To provide an equal opportunity for all the graduates to become an entrepreneur through visit of various labs and clinical internship.

## **PROGRAM SPECIFIC OUTCOMES (PSO)**

**PSO1.** Successful blood specimen collection techniques and morphological identification of blood cell variations with clinical significance. Understanding of blood banking, including ABO-Rh and other blood group systems, and transfusion therapy.

**PSO2.** Identification of the various organisms such as gram positive and gram-negative bacteria, viruses, Protozoa and fungi. Understand pathogenesis and lab diagnosis of various disease-causing microbes.

**PSO3.** Understand the rationale uses and interpretation of routine biochemical tests for organism identification. Demonstrate proficient use of routine biochemical tests.

**PSO4.** Understand routine tissue processing (micro techniques) and freeze-drying technique in histopathology and their significance for identification of premalignant or malignant condition.

# UNIVERSITY POLYTECHNIC BIT, MESRA

**Course Structure**  
**BMLT**  
**Syllabus as per CBCS System**

**THREE WEEKS INDUCTION PROGRAM**

**Including UNIVERSAL HUMAN VALUE (UHV-I)**

<b>First Semester</b>						
<b>Course No</b>	<b>Subject</b>	<b>Segment</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
BMT 101	Human Anatomy & Physiology –I	CC	3	1	0	4
BMT 103	Chemistry for MLT	BS	3	0	0	3
BMT 105	Basics of Electrical & Electronics	ES	3	0	0	3
BMT 107	Laboratory Mathematics	BS	3	0	0	3
BMT 109	Communication and Professional Skill	HS	3	0	0	3
BMT 102	Human Anatomy & Physiology Lab.-I	CC	0	0	3	1.5
BMT 104	Chemistry for MLT Lab.	BS	0	0	2	1
BMT 106	Basics of Electrical & Electronics Lab	ES	0	0	2	1
BHS 108/110/112/114	Sports & Yoga/NSS/NCC/CA	HS	0	0	2	1
BMT 116	Basic Workshop I (Health care)	CC	0	0	3	1.5
<b>Periods per week</b>			15	1	12	-
<b>Total Credit</b>			-	-	-	<b>22</b>
<b>Total periods per week</b>			-	-	-	<b>28</b>

Where; L= Lecture, T= Tutorial and P= Practical

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BMLT**

<b>Second Semester</b>						
<b>Course No</b>	<b>Subject</b>	<b>Segment</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
BMT 201	Human Anatomy & Physiology – II	CC	3	0	0	3
BMT 203	Hematology – I	CC	3	0	0	3
BMT 205	Clinical Chemistry- I	CC	3	0	0	3
BMT 207	IT SKILLS	ES	3	0	0	3
BMT 209	Histology	CC	3	0	0	3
BMT 202	Human Anatomy & Physiology Lab.-II	CC	0	0	2	1
BMT 204	Hematology Lab.-I	CC	0	0	2	1
BMT 206	Clinical Chemistry Lab-I	CC	0	0	2	1
BMT 208	IT Lab.	ES	0	0	2	1
BMT 211	Essentials of Environmental Science	AUDIT	2	0	0	Non-Credit
BHS 210/212/214/216	Sports & Yoga /NSS/NCC/CA	HS	0	0	2	1
BMT 218	Basic Workshop II (Health care)	CC	0	0	2	1
<b>Periods per week</b>			17	00	12	-
<b>Total Credit</b>			-	-	-	<b>21</b>
<b>Total periods per week</b>			-	-	-	<b>29</b>

**Course Structure  
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<b>Third Semester</b>						
<b>Course No.</b>	<b>Subject</b>	<b>Segment</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
BMT 301	Clinical Chemistry- II	CC	3	0	0	3
BMT 303	Biomedical Instrumentations	ES	2	1	0	3
BMT 305	Digital Electronics system	ES	2	1	0	3
BMT 307	Microbiology –I	CC	3	0	0	3
BMT 309	Instrumentation & Measurement System	ES	2	1	0	3
BMT 311	UHV- II	AUDIT	2	-	-	Non-credit
BMT 302	Clinical Chemistry Lab.-II	CC	0	0	3	1.5
BMT 310	Instrumentation & Measurement System Lab.	ES	0	0	2	1
BMT 306	Digital Electronics Lab.	ES	0	0	2	1
BMT 308	Microbiology Lab.-I	CC	0	0	3	1.5
<b>Periods per week</b>			14	03	10	-
<b>Total Credit</b>			-	-	-	<b>20</b>
<b>Total periods per week</b>			-	-	-	<b>27</b>

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<b>Fourth Semester</b>						
<b>Course No</b>	<b>Subject</b>	<b>Segment</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
BMT 401	Microbiology- II	CC	3	1	0	4
BMT 403	Hematology – II	CC	3	1	0	4
BMT 405	Histopathology &Histotechniques	CC	3	1	0	4
BMT 402	Microbiology Lab.-II	CC	0	0	3	1.5
BMT 404	Hematology Lab.-II	CC	0	0	3	1.5
BMT 406	Histopathology &Histotechniques Lab.- I	CC	0	0	3	1.5
<b>List of Elective(Two groups)</b>						
BMT 407	Parasitology & Cytology (Group-I)	CC	3	1	0	4
BMT 409	Immunopathology (Group-I)	CC	3	1	0	4
BMT 408	Parasitology & Cytology Lab. (Group- I)	CC	0	0	3	1.5
BMT 411	Bio-signal Acquisition System (Group-II)	ES	3	1	0	4
BMT 413	Introduction to Microprocessor(Group- II)	ES	3	1	0	4
BMT 414	Microprocessor Lab. (Group-II)	ES	0	0	3	1.5
BMT 415	Essence of Indian Knowledge and tradition	AUDIT	2	0	0	Non- credit
Open Elective- I		BS	3	0	0	3
BMT 417	Indian constitutions	AUDIT	2	0	-	Non- credit
	<b>Periods per week</b>		22	5	12	-
	<b>Credit</b>		-	-	-	<b>29</b>
	Total period per week		-	-	-	<b>39</b>



**Course Structure  
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<b>Fifth Semester</b>						
<b>Course No.</b>	<b>Subject</b>	<b>Segment</b>	<b>Theory</b>	<b>Tutorial</b>	<b>Lab.</b>	<b>Credit</b>
BMT 501	Clinical Chemistry- III	CC	3	1	0	4
BMT 503	Forensic & Medical Ethics	CC	3	1	0	4
BMT 505	Laboratory Management	HS	2	1	0	3
BMT 502	Clinical Chemistry Lab.-III	CC	0	0	3	1.5
BMT 504	Histopathology & Histotechniques Lab.- II	CC	0	0	3	1.5
BMT 506	Bacteriology Lab.	CC	0	0	3	1.5
BMT 507	Summer Internship Project	AUDIT	0	0	0	Non-credit
<b>List of Electives (Two Groups)</b>						
BMT 509	Serology & Virology	CC	3	0	0	3
BMT 511	Hematology & Blood Banking (Group-I)	CC	3	0	0	3
BMT 512	Hematology and Blood Banking Lab. (Group-I)	CC	0	0	3	1.5
BMT 513	Clinical Instrumentation (Group-II)	ES	3	0	0	3
BMT 515	Biomedical imaging Devices and Concept (Group-II)	ES	3	0	0	3
BMT 514	Clinical Instrumentation Lab. (Group-II)	ES	0	0	3	1.5
Open Elective-II		BS	3	0	0	3
<b>Periods per week</b>			17	03	12	-
<b>Total Credit</b>			-	-	-	<b>26</b>
<b>Total periods per week</b>			-	-	-	<b>32</b>

**Course Structure  
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<b>Sixth Semester</b>						
<b>Course No</b>	<b>Subject</b>	<b>Segment</b>	<b>Theory</b>	<b>Tutorial</b>	<b>Lab.</b>	<b>Credit</b>
BMT 601	Clinical Internship Project	SE	-	-	-	5
BMT 602	Seminar	SE	-	-	-	2
<b>Total Credit</b>			-	-	-	<b>7</b>
<b>Total periods per week</b>						

**Total Credit: 125**

**List of Open Electives**

Open Elective I	BOE 401	Preventive & Social Medicine	BS	3	0	0	3
	BOE 403	Life Support Skills and Emergency					
	BOE 405	Instrumental Method of Analysis					
Open Elective-II	BOE 501	Healthcare System	BS	3	0	0	3
	BOE 503	Quality Assurance					
	BOE 505	Research Methodology					