

## **B.Voc Degree Programme in Medical Laboratory Technology**

Medical Laboratory Technician (MLT): also referred to as Clinical Laboratory Science professional, Medical Technologist and Medical Laboratory Scientist. The Medical laboratory technicians perform complex tests for diagnosis, treatment, and prevention of disease. These professionals are responsible for supporting and assisting doctors/ scientists in their day to day working in a variety of roles. They function as the main support to biomedical scientists in pathology laboratories. The objective of the course is to develop a pool of trained workforce which can be employed by diagnostic service providers to assist pathologists & microbiologists. This course is geared to prepare 10+2 children with science background and who desire to be employed as a technician in a diagnostic care facility on completion of the course. This program focuses on the acquisition of skills necessary to assume an auxiliary role in the diagnosis of medical conditions under the direct supervision.

Upon completion of the course, trainees will be able to :

- \* Demonstrate knowledge about the healthcare sector and diagnostic services
- \* Demonstrate the ability to perform clinical skills essential in providing basic diagnostic services such as Correctly collect, transport, receive, accept or reject and store blood /urine/stool and tissue samples, etc.;
- \* Conduct analysis of body fluids/ samples; Maintain, operate and clean laboratory equipment; Provide technical information about test results; Prepare and document medical tests and clinical results; etc.
- \* Demonstrate quality assurance in Laboratory works
- \* Practice infection control measures
- \* Demonstrate readily availability of medical and diagnostic supplies
- \* Demonstrate techniques to maintain the personal hygiene needs
- \* Demonstrate actions in the event of medical and facility emergencies
- \* Demonstrate professional behavior, personal qualities and characteristics of a Medical laboratory Technician
- \* Demonstrate good communication, communicate accurately and appropriately in the role of Medical laboratory Technician

### **Structure and Components:**

- Bachelor Degree in Medical Laboratory Technology has been framed following the guidelines of National Skill Qualification Framework (NSQF) and the B. Sc. programme of Vidyasagar University (VU).
- The B. Voc. Programme comprises of both vocational and academic components.
- Vocational or skill component of the curriculum shall be examined at the end of each semester by the Health Care Sector Skill Council (National Skill Development Corporation, Govt of India).
- Mahishadal Raj College is the only Govt sponsored college in West Bengal to become the NSDC Training Partner.
- The assessment for the General education component shall be done as per the schedule and guidelines of Vidyasagar University.

# Year wise Curriculum of B.Voc in Medical Laboratory Technology

## First Year : NSQF Level - 5 (Diploma Standard)

### Semester I

Course Code	Component	Unit	Topic	Credits	L / Week
<b>BMLT101</b> (General & Human Anatomy , Physiology -I)	Skill	I	Basics of Human Anatomy-I	04	01
	Skill	II	Basics of Physiology-I		01
	Skill	III	Basic English		01
	Skill	IV	Human Values and Professional Ethics		01
<b>BMLT102</b> (Routine Laboratory Techniques-I)	Skill	I	Human Healthcare and Safety Regulations	04	01
	Skill	II	Introduction to Haematology and Routine tests		01
	Skill	III	Specimen Collection		01
	Skill	IV	Laboratory Preparation in Hematology		01
<b>BMLT103</b> (Special Laboratory Techniques-I)	Skill	I	Biochemical Test Profile -I	04	01
	Skill	II	Biochemical Test Profile - II		01
	Skill	III	Elementary Knowledge of Chemistry- I		01
	Skill	IV	Elementary Knowledge of Chemistry- II		01
<b>BMLT104</b> (Cell Biology and Biodiversity-I)	General	I	Microscopy and Organization of Cell -I	03	01
	General	II	Microscopy and Organization of Cell -II		01
	General	III	Systematic study of Animals - I		01
	General	IV	Systematic study of Animals - II		01
<b>BMLT105</b> (Biomolecules)	General	I	Structure, Functions and Classification of Amino Acids and Proteins	03	01
	General	II	Structure, Functions and Classification of Carbohydrates		01
	General	III	Structure, Functions and Classification of Lipids		01
	General	IV	Physical and Chemical Properties of Nucleic Acids		01
<b>BMLT106</b> (Fundamentals of Microbiology)	General	I	Introductory Microbiology-1	03	01
	General	II	Morphology and Structure of Microorganisms		01
	General	III	Recombinant DNA Technology		01
	General	IV	Microbial Ecology and Biotic Interactions		01
<b>BMLTP101</b>			Practicals of Course BMLT101	02	06
<b>BMLTP102</b>			Practicals of Course BMLT102	02	06
<b>BMLTP103</b>			Practicals of Course BMLT103	02	06
<b>BMLTP104</b>			Practicals of Course BMLT104	01	06
<b>BMLTP105</b>			Practicals of Course BMLT105	01	06
<b>BMLTP106</b>			Practicals of Course BMLT106	01	06
<b>Total Credits</b>				<b>30</b>	



**Semester II**

Course Code	Component	Unit	Topic	Credits	L / Week
BMLT107 (General & Human Anatomy , Physiology - II)	Skill	I	Basics of Human Anatomy-II	04	01
	Skill	II	Basics of Physiology-II		01
	Skill	III	Basics of Computer Skills		01
	Skill	IV	Communication Skills		01
BMLT108 (Routine Laboratory Techniques-II)	Skill	I	Routine Haematological Tests	04	01
	Skill	II	Urine Examination		01
	Skill	III	Stool Examination		01
	Skill	IV	Sputum and Semen Examination		01
BMLT109 (Special Laboratory Techniques-II)	Skill	I	Basic Microbiology	04	01
	Skill	II	Introduction to serology		01
	Skill	III	Serological Tests		01
	Skill	IV	Staining Techniques		01
BMLT110 (Ecology and Biodiversity-II)	General	I	Systematic study of Animals - III	03	01
	General	II	Systematic study of Animals - IV		01
	General	III	Ecosystem-I		01
	General	IV	Ecosystem-II		01
BMLT111 (Enzymology and Bioenergetics)	General	I	Enzymes	03	01
	General	II	Enzyme Purification and Chromatography Techniques		01
	General	III	Enzyme Kinetics		01
	General	IV	Bioenergetics		01
BMLT112 Microbial Physiology - Metabolism	General	I	Microbial Nutrition, Cultivation, Isolation and Preservation	03	01
	General	II	Enzyme Regulation		01
	General	III	Microbial Metabolism -I		01
	General	IV	Microbial Metabolism -II		01
BMLTP107			Practicals of Course BMLT107	02	06
BMLTP108			Practicals of Course BMLT108	02	06
BMLTP109			Practicals of Course BMLT109	02	06
BMLTP110			Practicals of Course BMLT110	01	06
BMLTP111			Practicals of Course BMLT111	01	06
BMLTP112			Practicals of Course BMLT112	01	06
<b>Total Credits</b>				<b>30</b>	
<b>On Job Training</b>					

**Second Year : NSQF Level - 6 ( Advance Diploma Standard)**

**Semester III**

Course Code	Component	Unit	Topic	Credits	L / Week
BMLT201 (Hematology and Blood Banking-I)	Skill	I	Special Haematological Tests	04	01
	Skill	II	Haemostasis & Bleeding Disorders		01
	Skill	III	Immunohaematology & Blood Transfusion		01
	Skill	IV	Routine Lab Procedures in Blood Bank		01
BMLT202 (Microbiology and Serology)	Skill	I	Laboratory Diagnosis of Mycotic and Emerging Infections	04	01
	Skill	II	Diagnostic Microbiology		01
	Skill	III	Serology		01
	Skill	IV	Bacteriology		01

<b>BMLT203</b> (Clinical Pathology and Biochemistry)	Skill	I	Miscellaneous Body Fluids	04	01
	Skill	II	Biochemical Test Profile		01
	Skill	III	Analytical Techniques		01
	Skill	IV	Biochemical Processes		01
<b>BMLT204</b> (Metabolism)	General	I	Carbohydrate Metabolism	04	01
	General	II	Lipid Metabolism		01
	General	III	Protein Metabolism		01
	General	IV	Nucleic Acids		01
<b>BMLT205</b> (Pathogenic Microbiology)	General	I	Infectious Diseases	04	01
	General	II	Microbes of Medical Importance		01
	General	III	Mode of Microbial Infections		01
	General	IV	Antimicrobial Drugs		01
<b>BMLTP201</b>			Practicals of Course BMLT201	02	06
<b>BMLTP202</b>			Practicals of Course BMLT202	02	06
<b>BMLTP203</b>			Practicals of Course BMLT203	02	06
<b>BMLTP204</b>			Practicals of Course BMLT204	02	06
<b>BMLTP205</b>			Practicals of Course BMLT205	02	06
<b>Total Credits</b>				<b>30</b>	



#### Semester IV

Course Code	Component	Unit	Topic	Credits	L / Week
<b>BMLT206</b> (Clinical Biochemistry and Microbiology-I)	Skill	I	Metabolic Disorders & Deficiency	04	01
	Skill	II	Clinical Endocrinology		01
	Skill	III	Body Fluid Specimen Processing		01
	Skill	IV	Blood Banking		01
<b>BMLT207</b> (Histology-Cytology -I)	Skill	I	Introduction to Histology	04	01
	Skill	II	Tissue Processing		01
	Skill	III	Staining Procedures		01
	Skill	IV	Instrumentation in Histocytotechnology		01
<b>BMLT208</b> (Parasitology and Blood Cell Disorders-I)	Skill	I	Medical Parasitology	04	01
	Skill	II	Common Intestinal worms		01
	Skill	III	Malarial parasites, Filarial parasites		01
	Skill	IV	Lab. diagnosis of Parasitic infections		01

<b>BMLT209</b> <b>(Biochemical Techniques)</b>	<b>General</b>	<b>I</b>	<b>Spectroscopic Techniques</b>	<b>04</b>	<b>01</b>
	<b>General</b>	<b>II</b>	<b>Electrophoretic Techniques</b>		<b>01</b>
	<b>General</b>	<b>III</b>	<b>Chromatographic Techniques</b>		<b>01</b>
	<b>General</b>	<b>IV</b>	<b>Radio Isotopic Techniques</b>		<b>01</b>
<b>BMLT210</b> <b>(Immunology)</b>	<b>General</b>	<b>I</b>	<b>Introduction to Immunology</b>	<b>04</b>	<b>01</b>
	<b>General</b>	<b>II</b>	<b>Humoral Immunity</b>		<b>01</b>
	<b>General</b>	<b>III</b>	<b>Cell Mediated Immunity</b>		<b>01</b>
	<b>General</b>	<b>IV</b>	<b>Antigen-Antibody Interactions</b>		<b>01</b>
<b>BMLTP206</b>			<b>Practicals of Course BMLT206</b>	<b>02</b>	<b>06</b>
<b>BMLTP207</b>			<b>Practicals of Course BMLT207</b>	<b>02</b>	<b>06</b>
<b>BMLTP208</b>			<b>Practicals of Course BMLT208</b>	<b>02</b>	<b>06</b>
<b>BMLTP209</b>			<b>Practicals of Course BMLT209</b>	<b>02</b>	<b>06</b>
<b>BMLTP210</b>			<b>Practicals of Course BMLT210</b>	<b>02</b>	<b>06</b>
<b>Total Credits</b>				<b>30</b>	

### On Job Training



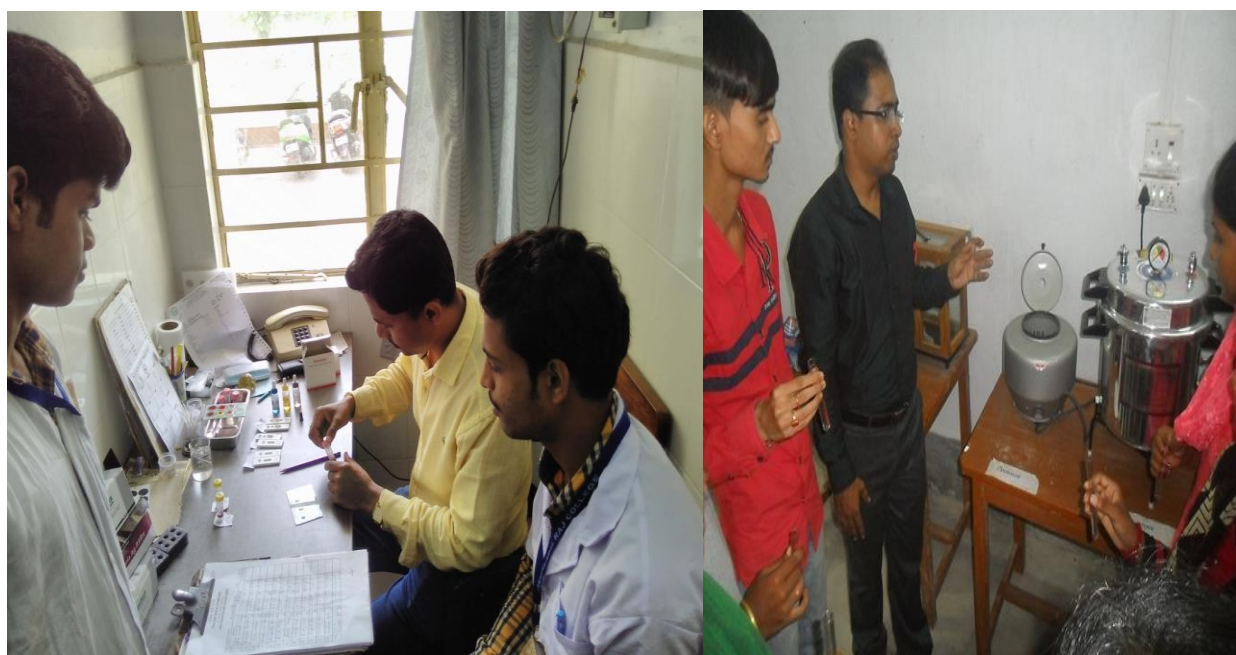
**Third Year : NSQF Level - 7 ( B.Voc Standard)**  
**Semester V**

Course Code	Component	Unit	Topic	Credits	L / Week
<b>BMLT301</b> <b>(Medical Genetics and Microbiology-II)</b>	Skill	I	Genetics	04	01
	Skill	II	CLIA techniques		01
	Skill	III	Immunology and Virology		01
	Skill	IV	Toxicology		01
<b>BMLT302</b> <b>(Histology-Cytology -II)</b>	Skill	I	Exfoliative Cytology-Specimen Preparation	04	01
	Skill	II	Exfoliative Cytology- Staining Techniques		01
	Skill	III	Exfoliative Cytology- Benign and Malignant Cells		01
	Skill	IV	Advanced Instrumentation		01
<b>BMLT303</b> <b>(Parasitology and Blood Cell Disorders-II)</b>	Skill	I	Descriptive study of RBC abnormalities	04	01
	Skill	II	Disorders related to RBC		01
	Skill	III	Normal White Cell Count & Physiological variation		01
	Skill	IV	Disorders related to WBC		01
<b>BMLT304</b> <b>(Pathogenic Microbiology)</b>	General	I	Pathogenic Microbes, Diagnosis, Prevention and Control	10	01
	General	II	Prevention and Control of Viral Diseases		01
	General	III	Human Mycotic Infections		01
	General	IV	Mechanisms and Control of Parasitic Infections		01
<b>BMLTP301</b>			Practicals of Course BMLT301	02	06
<b>BMLTP302</b>			Practicals of Course BMLT302	02	06
<b>BMLTP303</b>			Practicals of Course BMLT303	02	06
<b>BMLTP304</b>			Practicals of Course BMLT304	02	06
<b>Total Credits</b>				<b>30</b>	



**Semester VI**

Course Code	Component	Unit	Topic	Credits	L / Week
<b>BMLT305 (Clinical Laboratory Operations and Management)</b>	<b>Skill</b>	<b>I</b>	<b>Clinical Laboratory Operations and Management</b>	<b>04</b>	<b>04</b>
<b>BMLT306 (Professional Training)</b>	<b>Skill</b>	<b>I</b>	<b>Professional Training for three (3) months at reputed hospital, diagnostic centre, pathology laboratory, research institute, pharmaceutical industry, etc.</b>	<b>04</b>	<b>---</b>
<b>BMLT307 (Project Work)</b>	<b>Skill</b>	<b>I</b>	<b>Student shall carry out the project work in consultation with faculty and industrial partner organizations.</b>	<b>04</b>	<b>---</b>
<b>BMLT308 (Food and Industrial Microbiology)</b>	<b>General</b>	<b>I</b>	<b>Food Microbiology</b>	<b>10</b>	<b>01</b>
	<b>General</b>	<b>II</b>	<b>Contamination, Preservation and Spoilage of Food</b>		<b>01</b>
	<b>General</b>	<b>III</b>	<b>Production Strains Isolation and Screening Techniques</b>		<b>01</b>
	<b>General</b>	<b>IV</b>	<b>Fermentation Products</b>		<b>01</b>
<b>BMLTP305</b>			<b>Practicals of Course BMLT305</b>	<b>02</b>	<b>06</b>
<b>BMLTP306</b>			<b>Practicals of Course BMLT306</b>	<b>02</b>	<b>06</b>
<b>BMLTP307</b>			<b>Practicals of Course BMLT307</b>	<b>02</b>	<b>06</b>
<b>BMLTP308</b>			<b>Practicals of Course BMLT308</b>	<b>02</b>	<b>06</b>
<b>Total Credits</b>				<b>30</b>	



## General Rules

### Continuous Assessment

The course is based on Choice Based Credit system as per UGC Guidelines. The 60% skill component (18 credits in each semesters) of the course will be assessed and certified by the respective Sector Skill Councils and 40% general education component will be assessed by the university on choice based credit system (12 credits in each semester). One credit will be awarded in terms of NSQF level certification which will have 60% weightage of total credits in the course in the following manner.

Name of the course	NSQF Level Certificate	Cumulative Credits
Diploma	Level - 5	36 Credits
Advance Diploma	Level - 6	72 Credits
B.Voc Degree	Level - 7	108 Credits

### Eligibility Criteria :

The minimum Educational Qualification for admission to B.Voc Courses in any of the above five stream is Higher Secondary or Equivalent (10 + 2) pass from any recognized board. Those who have successfully cleared NSQF Level – 4 (Vocational) are eligible for Direct Admission to Level 5 of B.Voc Courses.

Maximum age limit for admission to any course is 35

### Reservation Policy:

The reservation procedure is followed as per norms of Vidyasagar University.

### Fees Structure:

Above B.Voc Courses are partially sponsored by the University Grants Commission. However, **Annual Course Fee is Rs. 10,000 (Rupees Ten Thousand)**, ie cumulative **Course Fee of Rs. 30,000 ( Rupees Thirty Thousand )** for the entire Three Years ( in Six Instalments) is payable to “ **Deen Dayal Upadhyay KAUSHAL Kendra, Mahishadal Raj College** ” through any online mode (PayTm/ Google Pay/ NEFT etc) to **SBI A/c No: 39519103556, IFSC Code: SBIN0001298**. The above Course Fee includes University Registration Fees, Assessment and Certification Fees, Consumable Cost for practical's, re-imbursement of cost to industry partner during internship etc.)

### Application Procedure:

1. Application Forms for Admission to B.Voc Courses can be downloaded from College website on & from 08.05.2024 (Students of Vocational Stream and candidates have secured more than 60% in HS or Equivalent can directly fill up respective Admission Registration Form)
2. Fill up the forms with blue / black pen in capital letters. Keep no points blank
3. As per Notification from Higher Education Dept, Govt of West Bengal, “**No Application Processing Fee**” is required to pay along with the Application Form
4. Please scan duly filled up Application Form ( Registration Form in case of Vocational Students and candidates have secured more than 60% in HS or Equivalent) in either pdf or jpg format and send to our Email: [mrcbvocadmission2024@gmail.com](mailto:mrcbvocadmission2024@gmail.com) or whatsapp the same to : 9733038150
5. After submission of Application form applicant will receive a ‘Submission and verification’ SMS to his/her registered Mobile Number.
6. Selected Candidates will be intimated about their selection and procedure of admission by SMS to their registered mobile number and Email.

Please contact Shri Susim Payra ( Mob: 7908558567 / 9733038150) or Prof. Arnab Patra (9733216242) for any further query.

7. Merit List of the Selected Candidates will also be published in the College Website.