

PURBANCHAL UNIVERSITY



CURRICULUM FOR
BACHELOR OF SCIENCE IN MEDICAL LABORATORY
TECHNOLOGY
(BSc. MLT)
SEMESTER SYSTEM
2021



Purbanchal University
Faculty of Medical and Allied Sciences
Gothgaun, Morang, Nepal

1. Title of course:

The official title of the program is Bachelor of Science in medical laboratory technology (BSc. MLT).

2. Objective:

The objective of the BSc. MLT program is to produce a competent and responsible Medical Laboratory Technologist.

Course Objective:

To contribute in development of internationally competent manpower in medical laboratory science health workforce for the development of as a profession for fulfilling the health need of the people.

To provide sound academic knowledge and skills to the students, that assists in the strengthening of the profession.

To produce quality health professionals in order to provide quality health service to the general public.

To develop leadership quality in the students for better health

To manage medical lab in community and hospitals

To provide medical lab information and education

To develop as a team member of health care workers in clinical & community setting

The curriculum emphasizes following major areas of instruction:

Fundamentals of Medical Laboratory Science

Anatomy and Physiology

Biochemistry

Microbiology

Pathology

Hematopathology

Immunology

Molecular Cell Biology (Molecular Techniques)

Biotechnology

Clinical Pharmacology

Health and Disease

Molecular Epidemiology

Histopathology and cytopathology
 Forensic Medicine and Medical Ethics
 Bioinformatics
 Laboratory Management & Quality Control
 Research Methodology and Biostatistics
 Project Work
 Seminar
 Internship

3. Course Duration:

The course duration is 4 years in 8 Semesters.

Theory:	91 Credit
Practical:	27 Credit
Seminar:	6 Credit
Hospital Posting:	8 Credits
Project Work:	8 Credits
Professional internship:	20 Credits
One semester	16 Weeks
One credit for theory class	16 Hours
One credit for practical class	48 Hours
One day project work	6 Hours
One day professional internship	8 Hours
One seminar	48 Hours
Total credits of BSc. MLT Course	160 Credits

One practical class should be carried out in 3 Theory hours.

One practical group = 10 students.

Total Theory Credits	Total Practical Credits	Project Works Credits	Seminar Credits	Hospital Posting	Professional Internship Credits	Grand Total Credits
91	27	8	6	8	20	160

4. Course Coding:

Each course is given three capital letters (BLT) followed by three-digit numbers. BLT letter indicates BSc. MLT program and three-digit numbers indicates year, semester and sequence of subject respectively. Term 'Lab' indicates practical of respective subject and "Sem" indicates semester.

5. Eligibility for admission:

The entry requirement for a student in B.Sc. MLT / BSc. MLT will be Intermediate in Science (I.Sc) or Higher Secondary Level (10+2 Science streams) in biology stream or Proficiency Certificate Level in Medical Lab Technology (CMLT) as recognized by accredited University with at least 50% marks and in Grade system 2.4 GPA/CGPA. (As per Nepal Medical Education Commission)

6. Duration of the course and course of study:

The period of the BSc. MLT degree course shall be of eight semesters (4 academic years). The course can be completed within seven years from the time of admission. The academic session consists of two semesters per year. (As per Nepal Medical Education Commission)

7. Minimum working days in an academic year:

Each academic year shall consist of not less than 180 days with 90 days working days per semester.

8. Medium of instruction:

English Language shall be the medium of instruction for all the subjects of study and for examinations of the BSc. MLT course.

9. Instructions:

- i. Each Semester consists of a minimum of 16 weeks working days
- ii. Internal assessment of Theoretical (20%) will be based on two class tests of 10 marks in each of the theory subject during each semester and 10 marks for class performance and attendance of student in each subject.
- iii. Internal assessment of Practical: 60% will be based on day-to-day attendance, viva, laboratory record.

- iv. A minimum of 80% attendance in theory and practical classes are compulsory.
- v. A student has to obtain minimum 50% marks in theory paper and 60% marks in practical subjects separately to pass each subject.

10. Teaching/ Learning Methodology:

- i. **Lectures:**
Theory classes will be conducted 7 hours per working days according to the routine set by the program coordinator.
- ii. **Practical/Demonstration:**
The students have to carry out the practical/laboratory work to learn the prescribed skills under the supervision of the respective teachers/laboratory in charges. Some practical may be demonstrated either manually or by video demonstration. The practical/demonstration would be subjected to change according to the need of the subject matter as decided by the department.
- iii. **Problem oriented learning/Self-directed learning:**
"Problem oriented learning" and self-directed learning shall be applied whenever appropriate, that will be helpful to set problem-based questions in the examination.

11. Project work:

In fourth year (**eighth semester**), the project assignment will be given to students (in the group of 4 students) which should be completed and submitted to the department before the final examination. Students shall review and search the literature, conduct research and prepare project work report under the supervision of assigned teacher. The students will have to defend their project work.

Visits and Observations:

Visits and Observations in different hospitals, research laboratories, and community lab will be conducted as instructed by the curriculum.

Hospital Posting:

A candidate will have to undergo hospital posting for one month in a medical college/hospital (at least 100 bedded hospital) equipped with modern clinical or diagnostic laboratory facility or in a fully equipped pathology laboratory, which fulfills the norms decided by the University.

Seminar Works:

In seventh semester, individual students shall be given topics related on scientific publication, review article, case study. Students shall present their topic and the evaluation for the same will be done by internal examiner.

12. Internship:

A candidate will have to undergo internship for a period of six calendar months in a medical college/hospital (at least 100 bedded hospital) equipped with modern clinical or diagnostic laboratory facility or in a fully equipped pathology laboratory, which fulfills the norms decided by the University.

13. Evaluation System:

Evaluation system is divided into internal evaluation and end semester final examination (external evaluation).

13.1. Internal Evaluation:

Marks Allocation for Internal Evaluation

Theory		Practical		Seminar		Hospital Posting		Project Work		Professional Internship	
FM	PM	FM	PM	FM	PM	FM	PM	FM	PM	FM	PM
20	10	30	18	100	60	100	60	60	36	80	48

13.2 Internal Evaluation Criteria:

A. Theory

S.n	Particular	Percentage (%)	Full Marks
1	Minimum two assessments	50	10
2	Attendance	25	5
3	Class Performance & Discipline	25	5
Total			20

B. Practical

S.n	Particular	Percentage (%)	Full Marks
1	Lab Performance	40	12
2	Record File	15	4.5
3	Attendance	15	4.5
4	Internal Test VIVA	30	9
Total			30

C. Seminar

S.n	Particular	Percentage (%)	Full Marks
1	Content	50	50
2	Presentation & Performance	35	35
3	Interaction Skills	15	15
Total			100

D. Hospital Posting

S.n	Particular	Percentage (%)	Full Marks
1	Log Book Record	50	50
2	Attendance	15	15
3	Presentation/VIVA	35	35
Total			100

E. Project Work

S.n	Particular	Percentage (%)	Full Marks
1	Dissertation writing & Literature Review & References	20	12
2	Research work in hospital/ LAB	40	24
3	Scientific contents: Contribution & Existing Subject knowledge in his/her work.	10	6
4	Result & Discussion	15	9
5	Presentation Skill & Communication	15	9
Total			60

F. Professional Internship

S.n	Particular	Percentage (%)	Full Marks
1	Log Book Record	40	32
2	Report Submission	30	24
3	Presentation/VIVA	30	24
Total			80

13.3 End Semester Examination (External Evaluation):

Marks Allocation for End Semester Assessment

Theory	Practical	Project Work	Professional Internship
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FM	PM	FM	PM	FM	PM	FM	PM
80	40	20	12	40	24	20	12

End semester examination will be conducted by Examination Management Office of Purbanchal University at the end of every semester. The procedure for examination will be as per the examination rules of University.

13.4. End Semester Evaluation Criteria:

A. Theory

End Semester examination of theoretical subject will be conducted for three hours for the total of 80 marks in written paper test. The examination question pattern is divided into four parts as shown in Annex I.

B. Practical

S.n	Particular	Percentage (%)	Full Marks
1	Synopsis / Theory (Written)	25	5
2	Experiment	50	10
3	Viva Voce	25	5
Total			20

C. Project Work

S.n	Particular	Percentage (%)	Full Marks
1	Content	30	12
2	Presentation Skill & Communication	30	12

3	Question & Answer (VIVA)	30	12
4	Result & Discussion	10	4
Total			40

D. Professional Internship

S.n	Particular	Percentage (%)	Full Marks
1	Log Book Record	20	4
2	Report Submission	50	10
3	Presentation/VIVA	30	6
Total			20

End semester (final) examination of practical, seminar work, Research Methodology and Proposal Design and Project Work/ Professional internship evaluation will be done by internal and external examiner appointed by Purbanchal University, Examination Management Office.

13. Grading System:

The grades (marks) awarded to student in a course is based on his/her consolidated performance in internal and final examinations. The letter grade in any particular subject is an indication of a student's relative performance in that course. The pattern of grading will be as per the rule of Purbanchal University.

14. Dismissal from the Program:

A student will be dismissed from the program if he/she fails to maintain CGPA of 2.50 and could not complete B.SC. MLT course within 7 years from date of admission.

15. Professional Internship:

Six weeks and two days professional internship on Laboratory or Hospital. Internship is compulsory for all students for the partial fulfillment of degree of B.Sc. MLT in Purbanchal University.

16. Degree:

The degree of Bachelor of Science in Medical Laboratory Technology (B.SC. MLT) course of the University shall be conferred on the candidates who have pursued the prescribed course of study for not less than four academic years and have passed examinations as prescribed under the relevant scheme and completed project work and 6 months of compulsory rotator internship.

**Detail Syllabus Outline of BSc. MLT
First Year: First Semester**

Sn	Course Code	Subject	Credit Hour		Wk		Hrs		Evaluation												Total
			Th	Pr	Th	Pr	Th	Pr	Internal				External								
									Th		Pr		Th		Pr						
									FM	PM	FM	PM	FM	PM	FM	PM					
1	BLT111	Fundamental of medical laboratory science	3	1	3	3	48	48			10	18	30	18	80	40	20	12	150		
2	BLT112	Anatomy, Physiology and Pathophysiology, I	3	1	3	3	48	48			10	18	30	18	80	40	20	12	150		
3	BLT113	Biochemistry I (biomolecules and Enzymology)	3	1	3	3	48	48			10	18	30	18	80	40	20	12	150		
4	BLT114	Microbiology I(Basic)	3	1	3	3	48	48			10	18	30	18	80	40	20	12	150		
5	BLT115	Pathology (Basic)	3	1	3	3	48	48			10	18	30	18	80	40	20	12	150		
Total Credit Hours & Full Marks			20		480														750		

First Year: Second Semester

Sn	Course Code	Subject	Credit Hour		Wk		Hrs		Evaluation												Total
			Th	Pr	Th	Pr	Internal				External										
							Th		Pr		Th		Pr								
							FM	PM	FM	PM	FM	PM	FM	PM							
1	MLT121	3	1	3	3	48	48	20	10	30	18	80	40	20	12	150					
2	BLT122	3	1	3	3	48	48	20	10	30	18	80	40	20	12	150					
3	BLT123	3	1	3	3	48	48	20	10	30	18	80	40	20	12	150					
4	BLT124	3	1	3	3	48	48	20	10	30	18	80	40	20	12	150					
5	BLT125	3	1	3	3	48	48	20	10	30	18	80	40	20	12	150					
Total Credit Hours & Full Marks			20		480														750		

Second Year: Third Semester

Sn	Course Code	Subject	Credit Hour		Wk			Hrs			Evaluation						Total				
			Th	Pr	Th	Pr	Th	Pr	Internal		External										
									Th		Pr		Th		Pr						
									FM	PM	FM	PM	FM	PM	FM	PM					
1	BLT211	Molecular Cell Biology	3	1	3	3	48	48	3	3	48	48	20	10	30	18	80	40	20	12	150
2	BLT212	Bio Technology	3	1	3	3	48	48	3	3	48	48	20	10	30	18	80	40	20	12	150
3	BLT213	Pharmacy, Pharmacology and Toxicology	3	1	3	3	48	48	3	3	48	48	20	10	30	18	80	40	20	12	150
4	BLT214	Molecular Epidemiology	3		3		48				48		20	10			80	40			100
5	BLT215	Health & Disease	3		3		48				48		20	10			80	40			100
6	BLT216	Basic Computer Applications	1	1	3	3	16	48	3	3	18	48	10	5	30	18	40	20	20	12	100
Total Credit Hours & Full Marks			20		448									750							

Second Year: Fourth Semester

Sn	Course Code	Subject	Credit Hour		Wk		Hrs		Evaluation								Total		
			Th	Pr	Th	Pr	Internal				External								
							Th		Pr		Th		Pr						
							FM	PM	FM	PM	FM	PM	FM	PM					
1	BLT221	Biochemistry III (Endocrinology & Micronutrient)	3	1	3	3	48	48			20	10	30	18	80	40	20	12	150
2	BLT222	Microbiology III (Diagnostic Parasitology)	3	1	3	3	48	48			20	10	30	18	80	40	20	12	150
3	BLT223	Hematology II (Clinical)	3	1	3	3	48	48			20	10	30	18	80	40	20	12	150
4	BLT224	Histopathology I (Fundamental of Histology)	3	1	3	3	48	48			20	10	30	18	80	40	20	12	150
5	BLT225	Forensic Medicine & Medical Ethics	3	1	3	3	48	48			20	10	30	18	80	40	20	12	150
Total Credit Hours & Full Marks			20		480													750	

Third Year: Fifth Semester

Sn	Course Code	Subject	Credit Hour		Wk		Hrs		Evaluation												Total
			Th	Pr	Th	Pr	Internal				External				Th	Pr	Total				
							Th		Pr		Th		Pr								
							FM	PM	FM	PM	FM	PM	FM	PM							
1	BLT311	Biochemistry IV (Clinical)	3	1	3	3	48	48	10	30	18	80	40	20	12	150					
2	BLT312	Microbiology IV (Systemic Bacteriology)	3	1	3	3	48	48	10	30	18	80	40	20	12	150					
3	BLT313	Histopathology II (Applied Technique)	3	1	3	3	48	48	10	30	18	80	40	20	12	150					
4	BLT314	Bioinformatic	3	1	3	3	48	48	10	30	18	80	40	20	12	150					
5	BLT315	Hospital Posting		4		6	180			100	40					100					
Total Credit Hours & Full Marks			20		564														700		

Third Year: Six Semester

Sn	Course Code	Subject	Credit Hour		Wk		Hrs		Evaluation												Total
			Th	Pr	Th	Pr	Internal				External				Th	Pr					
							Th		Pr		Th		Pr								
							FM	PM	FM	PM	FM	PM	FM	PM							
1	BLT321	Biochemistry V (Cancer Biology)	3	1	3	3	48	48	10	30	18	80	40	20	20	12	150				
2	BLT322	Microbiology V (Virology & Mycology)	3	1	3	3	48	48	10	30	18	80	40	20	12	150					
3	BLT323	Hematology III (Blood Banking)	3	1	3	3	48	48	10	30	18	80	40	20	12	150					
4	BLT324	Histopathology (Applied Histology & Histochemical Method)	3	1	3	3	48	48	10	30	18	80	40	20	12	150					
5	BLT315	Hospital Posting		4		6	180	180		100	40					100					
Total Credit Hours & Full Marks			20		564												700				

Fourth Year: Seven Semester

Sn	Course Code	Subject	Credit Hour		Wk			Hrs			Evaluation								Total
			Th	Pr	Th	Pr	Th	Pr	Internal		External								
									Th		Pr		Th		Pr				
									FM	PM	FM	PM	FM	PM	FM	PM			
1	BLT411	Laboratory Management and Quality control	3	1	3	3	3	48	48	48	20	10	30	18	80	40	20	12	150
2	BLT412	Research Methodology and Biostatistics	3		3		48			20	10			80	40			100	
3	BLT413	Seminar		6		6		96					100	60				100	
4	BLT414	Project Work		8		6		540					60	36		40	24	100	
Total Credit Hours & Full Marks			20				780											450	

Fourth Year: Eight Semester

Sn	Course Code	Subject	Credit Hour		Wk		Hrs		Evaluation												Total							
			Th	Pr	Th	Pr	Th	Pr	Internal				External															
									Th		Pr		Th		Pr													
									FM	PM	FM	PM	FM	PM	FM	PM												
1	BLT421	Internship		20					6 hrs/day											60						40	24	100
Total Credit Hours & Full Marks			20					540																				100

Summary of Curriculum in credits and hours

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	20	20	20	20	20	20	20	20	160
Full Marks	750	750	770	750	700	700	450	100	4970
Total Hrs	480	480	448	480	564	564	768	540	4324