

**REGULATIONS & COURSES OF STUDIES OF 3 YEARS
BACHELOR OF SCIENCE IN MEDICAL LABORATORY TECHNOLOGY: 2023**



**THE ODISHA UNIVERSITY OF HEALTH SCIENCES,
BHUBANESWAR- 751009**

REGULATIONS & COURSES OF STUDIES FOR THE 3 YEARS BACHELOR OF SCIENCE IN MEDICAL LABORATORY TECHNOLOGY DEGREE COURSE - 2023

1. Title and commencement of the Program:

- (a) These regulations may be called " B. Sc. in Medical Laboratory Technology (In short BMLT) Regulations 2023".
- (b) They shall come into force from the current academic year 2023-24.
- (c) The Regulations and courses of studies prescribed are subject to modification by the Academic Council and Executive Board of the Odisha University of Health Sciences, Bhubaneswar from time to time.

2. Introduction: The course will promulgate the students into Medical Lab technologist, academic researchers, microscopic machinist, which could fabricate the Medical Lab specialists. Medical Laboratory Technology is a basic and important tool in the diagnosis/study of the various diseases for appropriate monitoring and treatment. The knowledge in the field of Haematology, Microbiology, Bio-chemistry, General Pathology, etc. is of utmost important for any skilled technician. Therefore, in the rapidly growing area of scientific knowledge and skills, laboratory science is an important area of study for Medical Laboratory Technicians.

3. Goal: The goal shall be to produce competent specialists and / or Medical Lab technology teachers.

4. Objective: The objective is to develop manpower for health sector by providing them the necessary knowledge and skill to ensure the quality services in the remote areas of our country with a special focus on the following:

- i. Proficiently perform a full range of clinical laboratory tests
- ii. Develop and evaluate test systems and interpretive algorithms
- iii. Manage information to enable effective, timely, accurate, and cost-effective reporting of laboratory-generated information.



5. Eligibility for admission to the Course:

(i) +2 Science with Physics, Chemistry & Biology or equivalent degree.

(ii) **Physical fitness Certificate:** Every candidate before admission to the course shall be required to submit College Leaving Certificate, Migration Certificate (if applicable) in original, Physical Fitness Certificate and a declaration before the Principal / Director of the Institution that

(a) I am not continuing in any Degree Course under any State, Deemed, Central University and Autonomous Body.

(b) I have not been involved in any kind of criminal and unlawful activities in the past.

(iii) **Provision of Lateral Entry:** Lateral entry to second year for allied health science courses for candidates who have passed diploma program from the Government Board / Councils and recognized by State / Central University, fulfilling the conditions specified and these students are eligible to take admission on lateral entry system only if the same subject have been studied at diploma level.

Provided further, after fulfilment of all condition (s), the University on receipt of student detail with prescribed fees, shall issue University Registration Number as per OUHS First Statute- 2023, which shall be used as Roll Number for all Semester Examination (s).

6. **Duration:** The duration of the course is 3 Years consisting of 6 (Six) Semesters. Internship which shall be undertaken in the final semester.
7. **Medium of instruction:** English shall be the medium of instruction for all the subjects of study and for examination of the course.
8. **Commencement of the Course:** The course will commence from August / September 1st of every year.
9. **Academic Year:** The academic year shall be twelve months commencing on the first day of enrolment into the course.
10. **Attendance:** The component wise attendance percentile shall be as under;

Subjects	Eligibility criteria
Subjects taught in one phase	75% theory, 80% Practical
Internship & Project	80%

11. **Course Cycle, Codes and Structure:** The three-year full-time programme consists of six semesters. There shall be 25 (Twenty-Five) numbers of (University and Non-University) theory subjects, one Internship and Project in the final Semester. The total marks for the Course is 2350 including internship, and project Report.

The total number of digits used in the course is 08 (Eight).

- i. The 1st two digits (Numerical) indicates the Year of Courses of Studies.
- ii. The 3rd digit (Letter) indicates the "Faculty" Allied Health Sciences.
- iii. The 4th & 5th digits (Letters) indicate the Course Code "BMLT".
- iv. The 6th digit (Numerical) indicates the Semester.
- v. The 7th & 8th digits (Numerical) indicate sequence of the Theory Subject (s) of the Semester.

Table No 01 Course Structure:

Code	Title	Contact Hours			Internal Assessment		Uni- Examination		Total Marks
		Th	Prac	Lab Posting	CIA+SE	ESE	Theory	Practical / Project	
First Semester									
23ABL101	Human Anatomy	60	70	--	30 (10+20)	--	70	--	100
23ABL102	Human Physiology	60	70	--	30 (10+20)	--	70	--	100
23ABL103	Biochemistry	60	60	--	30 (10+20)	--	70	--	100
Non-University Examination									
23ABL104	Introduction to Health Care Delivery System in India*	30	20	--	25	--	--	25	50
23ABL105	Basic Computers and Information Science*	30	20	--	25	25			50
Total		240	240		140	25	210	25	400
Second Semester									
23ABL201	Clinical Pathology	40	20	--	30 (10+20)	--	70	--	100
23ABL202	Hematology	40	20	--	30 (10+20)	--	70	--	100

Code	Title	Contact Hours			Internal Assessment		Uni- Examination		Total Marks
		Th	Prac	Lab Posting	CIA+SE	ESE	Theory	Practical / Project	
23ABL203	Basic Medical Instrumentation and Techniques	40	20	--	30 (10+20)	--	70	--	100
Non-University Examination									
23ABL204	Communication and Soft Skills*	30	20	--	25	--	--	25	50
23ABL205	Medical Terminology Record keeping and orientation to Medical Laboratory Science*	30	20	--	25	--	--	25	50
Total		180	100	--	140	--	210	50	400
Third Semester									
23ABL301	Microbiology	60	60	--	30 (10+20)	--	70	--	100
23ABL302	Parasitology	40	20	--	30 (10+20)	--	70	--	100
23ABL303	Analytical Biochemistry	60	40	--	30 (10+20)	--	70	--	100
23ABL304	Histology	60	60	--	30 (10+20)	--	70	--	100
Non-University Examination									
23ABL305	Medical Law & Ethics*	30	--	--	25	--	--	25	50
Total		250	180	--	145	--	280	25	450
 Fourth Semester									
23ABL401	Advanced Hematology	60	40	--	30 (10+20)	--	70	--	100
23ABL402	Applied Hematology	60	40	--	30 (10+20)	--	70	--	100
23ABL403	Blood Banking	30	30	--	30 (10+20)	--	70	--	100
23ABL404	Immunopathology	60	60	--	30 (10+20)	--	70	--	100
Non-University Examination									
23ABL405	IQPS (Introduction to Quality and Patient Safety *	30	--	--	25	--	--	25	50
Total		240	170	--	145	--	280	25	450
Fifth Semester									
23ABL501	Medical Laboratory Management	20	20	--	30 (10+20)	--	70	--	100
23ABL502	Mycology and Virology	60	60	--	30 (10+20)	--	70	--	100
23ABL503	Immunology	60	40	--	30 (10+20)	--	70	--	100
23ABL504	Molecular Biology	60	40	--	30 (10+20)	--	70	--	100
Non-University Examination									
23ABL505	Research Methodology*	30	--	--	25	--	--	25	50
Total		230	160	--	145	--	280	25	450

Code	Title	Contact Hours			Internal Assessment		Uni- Examination		Total Marks
		Th	Prac	Lab Posting	CIA+SE	ESE	Theory	Practical / Project	
Sixth Semester									
23ABL601	Internship	--	50	350	--	--	--	100	100
23ABL602	Project Writing- Dissertation & Viva Voce	--	--	100	--	--	--	100	100
Total		--	50	450	--	--	--	200	200
Grand Total		1140	900	450	715	25	1260	350	2350

* Non-University Examinations.

12. Plan of Studies (Teaching, Training & Practice): A student admitted into 1st year of B.Sc in Medical laboratory Technology Course shall be required to complete the teaching and training including Internship for three years consisting of 6 semesters. In case of lateral entry, s/he has to study for two years i.e. 3rd to 6th Semesters.

12.1. Semester (Odd / Even): Each semester shall consist of not less than 100 working days. The Odd Semesters shall commence from the month of June / July to November / December and Even Semesters shall be conducted from December / January to May / June in every calendar year.

12.2. Every eligible student, during 6th Semester shall undergo an Internship Programme in a recognized Hospital for a period of 500 hours throughout the semester. At the end of the Internship, s/he shall submit a printed report (in triplicate) on the practice s/he attended (not more than 100 pages), which shall be evaluated by the External Examiners and preserved in the college for all purposes. The Guidelines for the Internship Training Programme are as under;

- i. The schedule of Internship in the functional departments such as Clinical Pathology, Microbiology, and Biochemistry etc shall be notified by the Principal / Head of the Department.
- ii. Internship is a phase of training wherein a graduate is expected to conduct actual practice of Medical Lab Technology Procedures and acquire skills under supervision so that he/she may become capable of functioning independently.
- iii. During Internship a candidate is expected to conduct actual Medical Lab Technology practice, with fair independence in clinical decision making in low-risk cases where as to work under supervision at high-risk areas; so that at the end of Internship he/ she is capable to practice Medical Lab independently.
- iv. The Internship programme shall mainly focus on acquisition of specific skills listed in the major areas of training by –hands on experience & also on ability to conduct a scientific project. The internship will be for a span of 6 months / 1 semester. This will include 5 hours of practice a day, totaling to 500 hours during internship semester. As a part of this, the students will maintain a work logbook which will be duly endorsed by the supervisor or trainer. At the end of internship, the candidate shall submit the work log book along with certificate from the training institute. Finally, the training of candidate shall be evaluated by the internal and external examiners deputed by University in the form of practical / viva examination. The internship time period provides the students the opportunity to continue to develop confidence and increased skill in clinical delivery of services. Students will demonstrate competence in beginning and intermediate procedures. Students will observe the advanced and specialized procedures. The student will complete the clinical training by practicing all the skills learned in classroom and clinical instruction. The students are expected to work for minimum 5 hours per day and this may be more depending on the need and the healthcare setting.

13. Scheme of Internal Assessments, Practical / Clinical, Assignment / Project (wherever applicable) including Non – University Examinations and passing criteria:

13.1. Internal assessment: It will be for theory and practical both. It will be done through the whole year. Candidate must obtain at least 50% marks in theory and practical separately in internal assessment to be eligible for the annual university examination. The Internal Assessment (Theory), Practical and Assignment or Project excluding Dissertation Report will be done as prescribed hereunder:

Table No- 02 Internal Assessment (Theory)

	Internal Assessment	Weightage
Component-1	Continuous assessment	10
	Attendance – (95-100%: 2 marks, 90-94: 1.5 marks, 85-89: 1 mark, 80-84: 0.5 mark,	2
	Written assignments 2	10
	Seminar / Microteaching / individual presentation (two)	12
	Group project / work / report	6
	Total	30/3=10
Component-2	Sessional Examination	20
	ST -Two STs per course	20
	Total	20

(Those subjects in which University practical examination is not held, internal assessment will be done on the basis of theory examination and projects and assignments.)

Table No -03 Internal Assessment (Practical / Clinical).

	Internal Assessment	Weightage
Component-1	Continuous Assessment	10
	Attendance – 2 marks (90-100%: 2 marks, and 80-89: 1 mark.	2
	Clinical assignments 10 marks (Clinical presentation – 3, Instrument presentation & report – 2, Case study report – 5)	10
	Continuous evaluation of clinical performance – 10 marks	10
	End of posting OSCE – 5 marks	5
	Completion of procedures and clinical requirements – 3 marks	3
Component-2	Sessional Exam	20
	OSCE (Objective Structured Clinical Examination)	15
	DOP (Directly Observed Practical in Clinical Setting)	25
	Total	40/2

13.2. (i) College Exam (End of Semester) – 25 marks ($50/2 = 25$ marks)
 MCQ – $10 \times 1 = 10$
 Essay/situation type – $1 \times 10 = 10$
 Short – $4 \times 5 = 20$
 Very Short – $5 \times 2 = 10$

(ii) University Practical Examinations – 25 marks ($50/2 = 25$ marks)
 OSCE – 15 marks
 DOP – 35 marks

(iii) Competency Assessment (6th Semester)
 Integrated OSCE (Stations based on every specialty) = 100 marks
 Total of 3 Examiners: external – 2 and internal – 1 Internal examiners may be chosen from college faculty with required qualification or from hospital with required qualification.

Candidate must obtain at least 50% marks in the theory and practical examination separately in the internal assessment to be eligible for appearing in the End Semester University Examination. If a candidate is absent in theory and practical internal assessment examinations, he/she shall be given chance to re-test in the internal assessment evaluation before the scheduled last date of Registration of End Semester Examination.

13.3. A student shall be required to secure minimum 50% marks combined both in theory and practical / clinical which would be form as part of requirement to treat the student eligible for appearing End Semester Examinations. These marks shall be submitted before the commencement of University End Semester Examinations as per University cut-off date of submission. If a College / Institution fail to submit on or before the cut-off date, it shall be assumed that the Institution has not conducted any examination, and student shall be declared as "Failed".

14. Eligibility criterions for appearing University Examinations:

A candidate shall be eligible to carry forward all the courses if a s/he fulfills the following criterions and hereafter prescribed under Regulation 18.1.

In addition,

- (i) Attended 75 % theory and 80% practical classes,
- (ii) Passed in Internal Assessment (s) and
- (iii) Not been debarred for any objectionable mis-conduct or malpractice by the Institution, and University.

15. Examinations (University and Non-University End Semester Examinations):

15.1. The University shall conduct examinations of the theory subjects. However, the College / Institution shall conduct examinations of the Non-University Theory and Practical subjects. Candidate failing in practical examination will be considered as failed, and shall be required to re-appear both theory and practical.

15.2. The University shall appoint External examiner for evaluation of Project Report and conduct Oral Viva Voce / Practical.

15.3. A candidate failed in a theory subject, if eligible, can appear for the failed subjects of previous semester (s) as per Odd and Even Semester examinations conducted by the University as per Academic Calendar.

16. Registration: A candidate shall be eligible to register for a Semester Examination only when s/he has fulfilled college and corresponding university criterions.

(i) The College / Institution shall register the subjects of eligible students with the University on payment of a fee as to be notified by the University towards conduct of Regular / Back Theory examinations. The College / Institution shall retain 15% of the University Examinations fees to meet the expenditure of Examination Centre. However, such retention of fees shall not be applicable in case of Back Paper or Supplementary Examinations.

(ii) The College / Institution shall follow uniform Question pattern / template / Answer Booklets and Records for conducting Internal Assessment and Tests.

17. Passing Heads: The candidate is declared to have passed University examinations in subjects, if he/she secure 50% of the marks in the theory and 50% marks in the practical separately.

Further, in the event, a candidate failed in either theory, it shall be treated as "Fail" in the core theory, and s/he shall be required to re-appear either theory and practical as back paper (s).

18. Promotion to Higher Semester, Re-admission after discontinuation or Break of Study into the Course:

i) Promotion & Carry over benefit: A candidate shall be eligible to be promoted to 3rd & 5th Semester (5th Semester in case of Lateral entry) if s/he has completed prescribed studies, fulfilled college level attendance, and has appeared Continuous Internal Assessments, registered, appeared and passed in minimum 50% or three (03) numbers of theory subjects of preceding Academic Years University's Odd and Even (or combine) Semester University Examinations.

Provided, if a candidate registered for Odd and Even Semester Examination of the year, but did / could not appear both, then s/he shall continue in the same year. Further, if the candidate, registered, but did / could not appear in one of the Semester on medical ground, in such case, s/he shall be promoted to upper semester. However, the Candidate has to submit a medical certificate from a Government Hospital clearly specifying that the candidate is not in a condition to sit for University Examinations during the whole scheduled period of University Examinations. The decision of the Medical Board in such case (s) shall be final and binding.

Provided further, if a student has been promoted on medical ground, s/he shall be required to appear and clear minimum three theory subjects of the said semester in the immediate upper semester odd / even semester back examinations, and failing which s/he shall not be promoted.

ii) A candidate will be allowed for re-admission;

- a) If s/he did / could not register for two consecutive semesters examinations.
- b) if the candidate is eligible, and has permissible tenure to complete the remaining semesters.

Provided further, s/he shall be required to apply in the prescribed form with fees as prescribed for the purpose, and shall be admitted in the course in force (Dual Syllabus).

19. Supplementary Examination: There ^{will be a} ~~will be a~~ supplementary examination for final year 5th Semester theory subjects within three months from the date of publication of final semester examination to extend a chance to clear the failed theory subjects of 5th Semester if any only. However, a candidate shall not be eligible; if s/he has not registered for the 5th and 6th Semesters, and accordingly has not appeared the 5th & 6th Semester University Examinations.

A student having more backlog after availing the chance, shall not be allowed to re-appear in the subsequent years Supplementary Examination meant for the regular final year students only. Such student (s) will be allowed re-appear back theory subjects only with the student in Regular Odd or Even Semester Examinations.

20. Classification of successful candidates and award of Degree: The University shall adopt Marking and division practice.

20.1. Candidate will be awarded division at the end of third (final) academic year as follows: Percentage of marks will be calculated from aggregate of total marks obtained in all the six semester examinations.

(i) First Division - 60% and above in the aggregate marks of all subjects.

(iv) Second Division – 50% or more but less than 60% in the aggregate of marks of all subjects.

20.2. A candidate will be awarded Degree in Bachelor of Science in Medical Laboratory Technology to a candidate who complete the prescribed period, and courses of Studies, and has passed in all subjects (Theory & Practical) including Internship.

21. Record and Evaluation Guidelines: The Practical Answer Booklet, Project Assignment / Record shall be as per the guidelines to be issued in this regard shall be strictly followed by the Examiners while assessing a practical component.

22. Withdrawal from Course, Struck off from the rolls of the College / Institution Admitted and withdrawal of Degree:

22.1. The University upon application, shall cancel the registration number issued to the candidate, and issue migration certificate on payment of fee as to be prescribed by the University.

22.2. Any student who does not clear the B.Sc in Medical Laboratory Technology Course in all the subjects within a period of 6 years (5 Years for Lateral entry), from the date of admission shall be discharged from the course.

22.3. Any student found to have obtained admission in fraudulent manner, if the documents furnished for gaining admission by any student are found to be forged/ false/ doctored at any stage of study.

22.4. If any student is found to be involved in serious breach of discipline.

22.5. A degree awarded by the University may be withdrawn if it is found at the later stage that the candidate has submitted any forged document or ineligible at the time of admission to the course.

23. Medal (s), Award (s) & Prize (s): The University shall notify as and when decided by the Academic Council and Executive Body from time to time.

24. Discretionary Power: Notwithstanding anything contained in the above, in case of any doubt or difficulty as to the interpretation of these Regulation (s), the matter shall be referred to the Vice Chancellor and his / her decision in this behalf, subject to the provisions of the OUHS Act - 2021, and OUHS 1st Statute - 2023 shall be final.



Registration no:

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Total Number of Pages: (XX)		Course: BMLT	
		SUB_CODE:	
(--- th) Year Regular / Back / Supplementary Examination: 20			
SUBJECT NAME:			
BRANCH:			
Max Time: 3 Hours		Sitting: 1st 10.00 AM to 1.00 PM	
Max Marks: 70			
Q. CODE: (To be allotted by the University)			
All Questions are compulsory. Illustrate answer with diagrams wherever relevant / required (Applicable for Theory Subjects where there is one Paper)			
The figures in the right-hand margin indicate marks.			
Q 1	Long Answer Question (Answer any one out of two)		(1 X 10 marks)
a)			
b)			
Q 2	Long Answer Question (Answer any one out of two)		(1 X 10 marks)
a)			
b)			
Q 3	Short Answer Questions (Focused) (Answer any two out of three)		(2 x 5 marks)
a)			
b)			
c)			
Q 4	Short Answer Questions (Applied) (Answer any two out of three)		(2 x 5 marks)
a)			
b)			
c)			
Q 5	Short Answer Case based question (Answer any two out of three)		(2 x 5 marks)
a)			
b)			
c)			
Q 6	Short Answer problem-based question (Answer any two out of three)		(2 x 5 marks)
a)			
b)			
c)			
Q 7	Objective Type (Selection / Supplied)		(10 x 1 mark)
a)			
b)			
c)			
d)			
e)			
f)			
g)			
h)			
i)			
j)			