



**Minimum standards for courses
affiliated to
Kerala University of Health Sciences
Thrissur 680596**



**Post Graduate Degree in Medical
Laboratory Technology (Microbiology)
MSc MLT (Microbiology)
Course code: 291**

**MINIMUM STANDARD REQUIREMENT FOR POST GRADUATE DEGREE IN
MEDICAL LABORATORY TECHNOLOGY- MICROBIOLOGY –**

MSc MLT-MICROBIOLOGY

1. GENERAL DESCRIPTION OF THE COURSE

No.	Item	Description
1.1	Title of the Course	MSc MLT-MICROBIOLOGY
1.2	Aim of the course	<p>MSc MLT Degree course</p> <p>Post Graduate programme in Medical Laboratory Technology - Microbiology gives opportunity for specialized study in the field of Medical Laboratory Technology for B.Sc. (MLT) graduates. Candidates who successfully complete M.Sc. (MLT) course shall be able to.</p> <ol style="list-style-type: none"> 1. Practice as Specialized Technologists in the concerned subject 2. Setup and manage specialized clinical laboratories and to deliver better health care system to the public. 3. Function as effective educators in the field of Medical Laboratory Technology 4. Conduct independent research works and utilize the research findings in Laboratory practice and education. 5. Participate various educational programmes in Medical Laboratory Technology. 6. Demonstrate interest in continued learning and research for personal and professional advancement. 7 Establish collaborative relationship with Clinicians and members of other disciplines and communicate well with health care team. 8.Keep high ethical standard in the profession
1.3	Objectives of the Course	<p>Objectives of Post Graduate programme in Medical Laboratory Technology -Microbiology for the successful completion of the course shall be to</p> <ol style="list-style-type: none"> 1. Learn theories and principles of Medical Laboratory Science and Technology 2. Demonstrate the ability to plan and effect the changes in laboratory practice and health care delivery system. 3. Develop skill to set up and manage specialized clinical laboratories and to deliver better health care system to the public. 4.Acquire new knowledge and skill to practice as a specialized technologist. 5.To train BSc MLT graduates effectively and efficiently backened

		<p>by scientific knowledge and skill.</p> <p>6. Show keen interest in continue professional education in the speciality and all other specialities irrespective of whether in teaching or practice.</p> <p>7. Willing to share knowledge and skill with any learning junior or a colleague to be highly competent in general and special areas of Laboratory Technology practice..</p>
1.4	Admission Capacity	<p>As approved by KUHS/Central Apex Councils</p> <p>Minimum – 5 seats & Maximum - 10 seats</p> <p>As approved by KUHS/Central Apex Councils</p> <p>(5 students per one professor/ associate professor.</p> <p>Full time Professor / Associate professor in MLT (MD in concerned subject or MSc MLT in the concerned subject s mandatory and exclusively for MLT course to conduct MSc MLT Microbiology courses</p> <p>)</p>
1.5	Duration	Duration of course shall be 2 years. The maximum period to complete the course successfully shall not exceed 4 years (double the duration of course)
1.6	Academic Eligibility	Candidate who have passed the B.Sc. (MLT) degree from Kerala University of Health Sciences or from any other University recognized equivalent thereto by KUHS with 50% marks for all the years of B.Sc. MLT examination taken together are eligible for admission to MSc MLT course
1.7	Mode of Selection	The selection of students for the MSc MLT-Microbiology course shall be made on merit as decided by the competent authority approved by the Government of India/Government of Kerala/Kerala University of Health Sciences and as per guidelines of Apex Council from time to time.
1.8	Allotting Authority	Agency approved by Govt. of India/Govt. of Kerala/KUHS from time to time.
1.9	Seat Reservation	As stipulated by Govt of India/Govt of Kerala from time to time
1.10	Subjects of Study	
	<u>MSc MLT-MICROBIOLOGY</u>	
1.10.1	1st Year	As per the syllabus
1.10.2	2nd Year	As per the syllabus
1.10.4	Medium of instruction and examination	English
1.11	Controlling Authorities	Govt. of India/Govt. of Kerala/Apex Council/KUHS

1.12	Registration	After successful completion of the course the candidate should register at present , in the Kerala State Paramedical Council and in future Central /State Council if any, to be eligible for practice as Laboratory Technologist/Faculty
1.13	Availability of the Course	visit -www. kuhs.ac.in
1.14	Scope for Higher Studies	M Phil, PhD .

2 MINIMUM REQUIREMENT TO APPLY FOR MSc MLT-MICROBIOLOGY COURSE

No	Item	Requirement
2.1	Eligibility to Apply for the course	
2.1.1		<p>The applicant seeking affiliation shall meet the following eligibility criteria.</p> <ol style="list-style-type: none"> PG courses shall be started in an affiliated institution having the same UG course and the first batch of the same shall be passed out. The pass percentage of the final year regular examination of the BSc MLT in the last passed out batch shall be at least minimum 50% of the students admitted at the beginning of that particular batch of the course. Need to satisfy the requirements of the apex council before or after applying to KUHS as the case may be. Institution having an existing affiliation for any Health Science course from another University shall not be eligible to apply for affiliation to the KUHS.
2.1.2		<p>The applicant for affiliation shall be an institution owned and managed by:</p> <ol style="list-style-type: none"> Government of India or the State Government, An autonomous body promoted by Central and/or State Government, by or under an enactment for the purpose of Health Science Education, A society registered under the Societies Registration Act, 1860 or corresponding Act in the State A public, religious or charitable Trust registered under the Trusts Act or the Wakfs Act, 1954
2.1.3	Qualifying criteria.	<p>An eligible applicant shall stand qualified to apply for affiliation if the following conditions are fulfilled:</p> <ol style="list-style-type: none"> That Health Science education is one of the objectives of the applicant in case the applicant is an autonomous body/registered society/charitable trust. That in the case of non-government institutions, suitable land is owned or obtained on lease for a sufficiently long period and possessed by the applicant-institution in its own name as prescribed under the regulations, bye laws, and orders of the University. That the required essentiality certificate/ permissions from the respective government, is obtained and produced along with the application.

- iv. The applicant owns and manages a hospital under the same trust (parent hospital) as required under the regulations of the norms fixed by the University from time to time.(At present hospital shall have 300 beds in the parent hospital)
- v. The applicant possesses sufficient clinical facilities, financial resources, infrastructure and equipment as also sufficient faculty/man power as prescribed under the respective Statutes, Regulations, Byelaws, Instructions and Norms of the University.
- vi. That the application for opening a M.Sc. MLT course is justified and permissible under the perspective plan prepared by the University in accordance with the provisions in Section 51 of the Act.
- vii. That expression of willingness is furnished agreeing to extend the services of all teaching and non-teaching employees for conducting inspections and for allied purposes as might be directed by the University from time to time;
- viii. That expression of willingness is furnished through affidavit in prescribed form agreeing to extend the services of all teaching and non-teaching employees as also facilities of the college for conducting theory and practical examinations/evaluation procedures in conventional or online method and other additional facilities for the conduct and valuation as may be directed by the Controller of Examinations as per directions issued from time to time, and to promote the other activities of the University.
- ix. That willingness has been furnished through Affidavit referred to in previous Para to send examiners to invigilate in theory or practical examinations conducted by the University; to make available faculty members to value answer books or practicals and to make available laboratory facilities for conduct of examinations, if such facility is sought for by the University.
- x. That willingness is expressed through an affidavit referred to in the previous para agreeing to comply with the qualification requirements in terms of the regulations of the KUHS , if any as also with the provisions of the KUHS Act, the requirements prescribed by the University Statutes, Ordinances, Regulations, Standing Orders, directions etc. issued by the University, the Chancellor, the Vice Chancellor and other officers of the University from time to time as well as under any other Act passed by the State Legislature, or orders and directions issued by the respective Governments relating to medical education or higher education in the field.
- xi. That willingness is expressed through Affidavit aforementioned to comply with the norms fixed by the University in the matter of the strength and qualifications of the teaching and non-teaching staff, their emoluments and the terms and conditions of their service;

General conditions to be satisfied by colleges –

Every college shall satisfy the Governing Council on the following points.

- (a) That there is justification for starting the course as per the perspective plan in force and that the course, if started, will supply the needs of the locality, having regard to the type of education intended to be provided by the college and the facilities existing for the same type of education in the neighborhood and the suitability of the locality.
- (b) The norms to start MSc MLT programme will be considered as the minimum requirement as approved by the Governing Council.
- (c) The character, qualifications and adequacy of the teaching staff and the conditions of their service as stipulated by the State Government.
- (d) Subject to the provisions of the Act, and the statutes framed there under and the directions issued by the university from time to time, the code of professional ethics for university and college teachers prescribed by the concerned central councils and approved by the Governing Council as amended from time to time shall be applicable to the teachers in colleges affiliated to the university.

(e) That the land ear marked by the Management for the College as stated in the application and in the sketch produced along with it are exclusively available for the purposes of the College; and that suitable and adequate buildings, libraries, laboratories and other equipment are available for running the college,

(f) The buildings in which the college is to be located are suitable for the conduct of the M.Sc MLT-Microbiology course.

(g) That the institution shall satisfy the University that it has financial stability to set up and maintain the College and that the affidavit filed agreeing to extend facilities to the University is proper and sufficient and that it is duly attested,

(h)Such other matters as demanded by the University and are essential for the maintenance of the tone and standard of university education.

2.2	Land Requirement - 1 Acre in Corporation /Municipality area and 2 Acres in Panchayath area. inclusive of BSc MLT and other branches of MSc MLT)	
2.2.1	Owner ship	<p>The hospital, clinical, and academic facilities should be owned by the same management. Other forms of hospital facility like those governed by other management or by any forms of memorandum of understanding etc. may not be permitted usually for the conduct of MSc MLT course.</p> <p>Hospital facility:The hospital shall be suitably spacious to accommodate all facilities required for the course and the trainees as specified in the Regulation of the course.</p> <p>1. Clinical Microbiology laboratory-Bacteriology, Serology, Anaerobic culture, Mycology, Virology and Parasitology sections.</p> <p>2. Molecular Biology Laboratory.</p> <p>If virology section is not available in the institute provide two weeks training in a reputed hospital / institute where the facility is available.</p>
2.2.2	Area:	1 Acre in Corporation /Municipality area and 2 Acres in Panchayath area inclusive of BSc MLT and other branches of MSc MLT)
2.2.3	Single/Multiple:	Single
2.2.4	Distance between plots:	NA
2.2.5	Availability of water:	Adequate and safe continuous drinking water facilities must be provided for staffs and students. Also should provide continuous water supply to the Academic block, Hospital, Laboratories, Hostels etc.
2.2.6	Availability of electricity:	There shall be continuous power supply round the clock with generator facility, provided to the Hospital, College, Hostels and all other infrastructure areas
2.3	Hospital Requirement	

		An established Hospital with well-established Clinical Laboratories to do all kinds of routine and special Microbiological investigations including Molecular Biology Laboratory
2.3.1	Owner ship	<p>The hospital, clinical, and academic facilities should be owned by the same management. Other forms of hospital facility like those governed by other management or by any forms of memorandum of understanding etc. may not be permitted for the conduct of MSc MLT Microbiology course</p> <p><u>Hospital Facility-</u> The hospital shall be suitably spacious to accommodate all facilities specified by the MSR for the conduct of MSc MLT course.</p>
2.3.2	Bed Strength with % of occupancy	300 beds ,75 % bed occupancy
2.3.3	In Patient status (specify speciality wise requirement if any)	75 % bed occupancy (from all the specialty and super specialty departments)
2.3.4	Basic Departments	<ol style="list-style-type: none"> 1. Bacteriology 2. Mycology 3. Virology 4. Parasitology 5. Serology 6. Molecular Biology (common for all the courses)
2.3.5	Exclusive requirement for the course (all specialties)	<p>Average number of specimens for Microbiology investigation /month: 3000 (All sections)</p> <ol style="list-style-type: none"> 1. Clinical Microbiology laboratory <ul style="list-style-type: none"> Bacteriology Culture including Anaerobic culture – Mycology Virology- 100 Samples/Month Parasitology Serology – 2. Molecular Biology.
2.3.6	Exclusive equipment/ labs needed for the course (MSc MLT- Microbiology + the requirements of BSc MLT Course)	<p>Hospital Laboratory should be equipped with all routine and special investigations including Molecular biology techniques.</p> <p>Average number of specimens for Microbiology investigation /month: 3000 (All sections)</p>

		The clinical Lab should have sufficient space /work benches to accommodate MSc MLT students + The requirements of BSc MLT programme
2.3.7	Hospital Staff needed .the requirements of BSc MLT Course)	Laboratory Technicians/ Technologists/ Laboratory scientist with Govt and KUHS approved (BScMLT / DMLT) qualification with paramedical council registration. -5Nos . Shared with BSc MLT course.
2.3.8	Distance from Teaching Institution	Less than 15 km by motorable road
2.4	Infra-Structure Requirement	
2.4.1	College Building- MSc MLT-Microbiology + BSc MLT Course	<p>2.Seminar cum Lecture Hall with Teaching aids..- 35M² – 1 No, LCD projector, screen and computer facilities, White board etc.</p> <p>3. PG-Microbiology Laboratory</p> <p>70M² for 5 to 10 students</p> <p>(a) 45M² for exclusive Laboratory living space with adequate work benches of either one sided or double sided (12m length, 75cm height and 150 cm breadth) It shall be provided with cupboard with lock and key, gas and water connections, ceramic wash basins with water taps (swan neck) with Chrome Plated Lever Action Surgical Jumper Valve control, tube lights. Adequate drainage facilities and electrical plug points to connect the three pin plugs of microscopes in each seat. One wash basins shall be fitted between two seats in case of one sided work benches or between four seats in case of double sided seats. Also the lab should have a side PCC slab of total length 5 metre (Breadth 75CM,Height-75CM) with a minimum of 5 Nos. of 15Amp socket and 6Nosof 5 Amp sockets with adequate distance so as to connect the Hot air oven ,incubator and other equipments. The Laboratory shall be fitted with ground glass writing board or white board so that all the students can have a direct view or with out turning not more than 90 ° from their seat.</p> <p>(b) Lab store 7 M² with sufficient slab/Almarah to place the glasswares, miscellaneous materials and chemicals.</p> <p>(c) Media room with a minimum area of 7M² (a glass sided cabin) with 2 meter PCC slab with granite or ceramic top and with sink, water and gas connection. There should have two 15 Amp socket and two 5Amp socket.</p> <p>(d)Washing room - 8M² with sufficient PCC slab with granite or ceramic top and washing sink.</p> <p>(e) Sterilization section of 8M² with sufficient PCC slab with granite or ceramic top. It shall be fitted with 4 Numbers of 15 Amp and 3 No. of 5 Amp sockets.</p>

		<p>(f) Height adjustable revolving Swivel Bar chair/Stool or Height adjustable revolving stool (1 for each students.)</p> <p>4.Molecular Biology Laboratory ← common for all MSc.MLT courses)</p> <p>5.Common room for PG's PG students' common room (common for all the MSc.MLT students). 30 M² with sufficient seating arrangements, cupboards, lockers, shelves and racks. Should provide at least one cot with bed for sick students.</p> <p>6.Instrument Laboratory(for common instruments of all the MSC.MLT courses.)</p> <p>50 M²with one side pcc slab with sufficient plug points</p> <p>7.Animal house(common for all the MSc.MLT students) 50 M² equipped to house rat, guinea pig, rabbit, sheep.</p> <p>8. Faculty Room Separate rooms/ cabins for professors and associate professors. Common staff room for assistant professors as per the MSR of BSc(MLT) course</p>
2.4.2	Hostels	Shall fulfill criteria specified for approval of Hostels by Apex Council and KUHS
2.5	Clinical Requirement	
2.5.1	Out Patients (Additional requirements as per speciality +BSc MLT Course)	500 Out patients
2.5.2	Inpatients (Additional requirements as per speciality +BSc MLT Course)	300 Inpatients
2.6	Man Power requirement Man Power requirement as per BSc MLT Programme.	
2.7	Statutory Permissions	

2.7.1	State/Central Govt	<ul style="list-style-type: none"> The institution shall fulfill all the statutory requirements of the State or local authority to establish and run the institution and shall submit the updated certified copies of such permission(s) to the University. Required Essentiality Certificate/ permissions from the respective Government (As per first Statute Chapter XXI: 10(8)), or wherever insisted by the Statutory Council/KUHS, is obtained and produced along with the application. The institution name along with Trust Deed / Society address shall be mentioned in the Essentiality Certificate/ permissions from the respective Government. Period or term of validity of the certificate also should be mentioned in the certificate
2.7.2	Statutory Councils	The applicant should obtain necessary Consent from the Government.
2.8	Other Requirements	The documents mentioned under item 2.8 should be submitted along with the application form
2.8.1	Resolution of the Trust	Attach attested copy of the specific Resolution of the Trust/Management mentioning the name of the institution and name of the course being requested
2.8.2	Detailed Project Proposal	The applicant shall submit a detailed project report for starting and continuing the academic programme fulfilling the norms of the KUHS along with the application
2.8.3	Legal Documents	To prove ownership of the college, hospital and other infrastructure facilities.
2.8.4	Financial Statement	Attach attested copy of Audited Balance sheet of the applicant entity for the previous 3 (three) years for non-governmental organizations and budget allocation for parent institution in case of Government.
2.8.5	Essentiality/NOC from Government	The certificate regarding feasibility and desirability for admission capacity at the college has to be obtained by the applicant from the Government.
2.8.6	Approved Plan	Attach copy of attested Site Plan and Building plan including Academic block, Administrative block, hostels, and play ground as approved by Local Self Government.
2.8.7	Clearance from Pollution Control Board	All the academic institutions and parent hospitals shall take adequate pollution control measures, waste disposal measures including bio medical waste, sewage water treatment plant, and other requirements specified by the Pollution Control Board and Local Self Government and submit the copy of valid Clearance certificates from Pollution Control Board.

2.8.8	Under taking	<ul style="list-style-type: none"> • Stating that they will run the college, make admissions to the courses, make appointments of teaching and non-teaching staff in terms of Act, Statutes, Rules Regulations, Orders ,Circulars, and instructions issued from time to time by the KUHS and State Governments. And also to maintain stipulated Teacher Student ratio as well as Student Patient ratio in the institution. • Make available and maintain the infrastructural facilities as required by KUHS respective statutory councils, central and state Governments • Abide by the decision no.15.22 dated 11/10/2013 of the Governing Council to provide sufficient number of evaluators /examiners <p>Accept the liability for penalty as stipulated in clause56(ii) of the KUHS Act 2010and also to any other penalty or punishment as provided under the Act ,Statutes, Rules or Regulations if we fail to comply with any provision governing the administration and running of the college as fixed by the University.</p>
2.9	Time & Mode of Application	As per Notification of KUHS for a particular Academic Year
2.9.1	Application Fee	As fixed by KUHS from time to time
2.10	Perspective Plan: Background Information to be Provided with the application	

3. MINIMUM STANDARD REQUIREMENTS (MSR) TO START

MSc MLT- MICROBIOLOGY COURSE

3.1	LAND FOR THE INSTITUTION	
3.1.1	Owner ship of land	The Hospital, Clinical, Academic and hostel facilities should be owned by the same management. Other forms of hospital/College facility like those governed by any other management or charitable society or by any forms of memorandum of understanding may not be permitted usually for the conduct of MSc MLT- Microbiology course
3.1.2	Area required	1 Acre in Corporation/Municipality Limit 2 Acres in Panchayath Limit)
3.1.3	Single/Multiple	Single
3.1.4	Distance between Plots	NA
3.1.5	Certificates from local authorities	It is mandatory to attach copy of attested Site Plan and Building plan including Academic block, Administrative block , hostels, playground as approved by Local Self Government

3.1.6	Distance from Hospital	Parent Hospital should be preferably within the same campus or within 15 kms from the institution by road.
3.1.7	Availability of Water	Adequate and safe continuous drinking water facilities must be provided for staffs and students. Also should provide continuous water supply to the Academic block, Hospital, Laboratories, Hostels etc.
3.1.8	Availability of Electricity	There shall be continuous power supply round the clock with generator facility, provided to the Hospital, College, Hostels and all other infrastructure areas.
3.1.9	Availability of Public conveyance	Good public transport system should be available at the campus or at a maximum of 500 metre distance from the Institute by road.
3.1.10	Waste disposal	Adequate waste disposal measures should be taken as per the Govt .norms.
3.1.11	Permission of Pollution control board	All the academic institutions shall take adequate pollution control measures by providing waste disposal measures including bio medical waste, sewage water treatment plant, and other requirements specified by the Pollution Control Board and Local Self Govt. and submit copy of the Clearance certificate as necessary.
3.1.12	Play ground	Can be shared with other courses in the Institute/College
3.1.13	Parking area	Adequate parking space shall be made available for parking of institutional vehicles, vehicles of staff, students and patients.
3.2	INFRASTRUCTURE FOR THE COLLEGE	
3.2.1	Total plinth area Required	Building area–250M ² additional to the area of BSc(MLT)course. Infrastructure that can be shared with other MSc MLT courses- See Appendix-3.2.1(a) Infrastructure that can be shared with BSc MT course-See Appendix-3.2.1(b)
3.2.2	Approved Plan for the Building	Attested Site Plan and Building plan including Hospital, Academic block, Administrative block, hostels, and other facilities approved by Local Self Government shall be submitted along with the application.
3.2.3	Lecture Halls with teaching aids (MSc MLT- Microbiology + BSc MLT Course)	Seminar cum. Lecture Hall with Teaching aids.- 35M ² –LCD projector, screen and computer facilities, White board etc.-1 No. + Lecture Halls for BSc MLT course as per the MSR for BSc MLT.
3.2.4	Examination Hall with confidential room (MSc MLT- Microbiology + BSc MLT course)	The criteria/minimum requirements for allotment of University theory examination centre status to a college/institution are: a) Availability of hall / halls of the required size to accommodate all the Regular and supplementary

		<p>candidates attending the examination at a time. The hall/halls shall have sufficient facilities like availability of light, drinking water, fan/air conditioner, attached toilet etc.</p> <p>b) Availability of a confidential room attached to the examination hall with two numbers each of desktop computers, printer/digital copier, UPS and Internet connectivity, all in working condition. In addition to this, the</p> <p>room shall also be equipped with generator, fax, and land line</p> <p>phone facilities, all in working condition.</p> <p>c) Surveillance Camera system of the required specifications in working condition.</p> <p>Communication Signal jammer of the required specification in working condition.</p>
3.2.5	Auditorium/Multipurpose hall (Requirements for MSc MLT- Microbiology + BSc MLT Course)	2000 Sq. Spacious enough to accommodate full strength of students, so that it can be utilized for hosting functions of the college, educational conferences/workshops and examinations.
3.2.6	Common Room (Requirements for MSc MLT- Microbiology + BSc MLT Course)	<p>PG students' common room (common for all the MSc.MLT students). 30 M²</p> <p>+ Common Room for BSc MLT course as per the MSR for BSc MLT</p>
3.2.7	Staff Rooms MSc MLT- Microbiology + BSc MLT Course)	As per MSR of BSc(MLT) course
3.2.8	Administrative Block (Requirements for MSc MLT - Microbiology + BSc MLT)	<p>Minimum 75 M².</p> <p>Administrative block of the college shall include Principal's Room, Personal Assistant's Room, Reception, Visitor's lounge, Staff Committee room, administrative section, Cash and Accounts section, Record room with telephone, photocopier, computer, internet facility and adequate toilets.</p>
3.2.9	Central Store (Requirements for MSc MLT programme + BSc MLT)	Minimum 25 M ² with adequate side slabs to keep the chemicals, glass wares, equipment, miscellaneous items and other inventory articles which are required in the laboratories of the college, properly lighted and well-ventilated.
3.2.10	Laboratories (Requirements for MSc MLT- Microbiology + BSc MLT Course)	<p>PG-Microbiology Laboratory</p> <p>70M² for 5 to 10 students</p> <p>(a) 45M² for exclusive Laboratory living space with adequate work benches of either one sided or</p>

		<p>double sided (12m length, 75cm height and 150 cm breadth) It shall be provided with cupboard with lock and key, gas and water connections, ceramic wash basins with water taps (swan neck) with Chrome Plated Lever Action Surgical Jumper Valve control, tube lights. Adequate drainage facilities and electrical plug points to connect the three pin plugs of microscopes in each seat. One wash basins shall be fitted between two seats in case of one sided work benches or between four seats in case of double sided seats. Also the lab should have a side PCC slab of total length 5 metre (Breadth 75CM, Height-75CM) with a minimum of 5 Nos. of 15Amp socket and 6Nos of 5 Amp sockets with adequate distance so as to connect the Hot air oven ,incubator and other equipments. The Laboratory shall be fitted with ground glass writing board or white board so that all the students can have a direct view or with out turning not more than 90 ° from their seat.</p> <p>(b) Lab store 7 M² with sufficient slab/Almarah to place the glasswares, miscellaneous materials and chemicals.</p> <p>(c) Media room with a minimum area of 7M² (a glass sided cabin) with 2 meter PCC slab with granite or ceramic top and with sink, water and gas connection. There should have two 15 Amp socket and two 5Amp socket.</p> <p>(d)Washing room - 8M² with sufficient PCC slab with granite or ceramic top and washing sink.</p> <p>(e) Sterilization section of 8M² with sufficient PCC slab with granite or ceramic top. It shall be fitted with 4 Numbers of 15 Amp and 3 No. of 5 Amp sockets.</p> <p>(f) Height adjustable revolving Swivel Bar chair/Stool or Height adjustable revolving stool (1 for each students.)</p> <p>4.Molecular Biology Laboratory (common for all MSc.MLT courses)</p> <p>5.Common room for PG's PG students' common room (common for all the MSc.MLT students). 30 M² with sufficient seating arrangements, cupboards, lockers, shelves and racks. Should provide at least one cot with bed for sick students.</p>
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		6.Instrument Laboratory(for common instruments of all the MSC.MLT courses.) 50 M ² with one side pcc slab with sufficient plug points 7.Animal house(common for all the MSc.MLT students) 50 M ² equipped to house rat, guinea pig, rabbit, sheep. 8. Faculty Room Separate rooms/ cabins for professors and associate professors. Common staff room for assistant professors as per the MSR of BSc(MLT) course
3.2.11	Library (Requirements for MSc MLT- Microbiology + BSc MLT Course)	100 reference Microbiology text books and 4 Journals of which 2 of them should be International Journals. E-Journals can be included + The library facility of BSc MLT course.
	Details of year wise books and journals	100 Reference Microbiology text books and 4 Journals of which 2 of them should be International Journals. The journals should not be E-Journals
3.2.12	Toilet	As per MSR of BScMLT
3.2.13	Garage	Garage to accommodate vehicles of the Institute should be maintained within the campus.
3.2.14	Canteen	There should be provision for a common canteen for the students, their guests, and staff members .
3.2.15	Transportation facilities	College should have separate transportation facility under the control of the Principal for use of staff and students.
3.2.16	Room for audio-visual aids	Room should be provided for the proper and safe storage of all the Audio- Visual Aids.
3.2.17	Fire &Safety measures	Adequate provision for extinguishing fire should be available with valid certification of fire & safety authority.

3.3 MAN POWER REQUIREMENT(To be filled after approval from Govt.)

3.3.1	Teaching Staff (Number , Qualification & Experience required) Faculties that can be shared with BSc MLT-See Appendix 3.3.1		
	Designation	No.	Qualification
3.3.1.1	Principal	1	As per MSR of BSc.MLT course. The two Assistant Professor have P G degree in the concerned subject
3.3.1.2	Vice Principal		
3.3.1.3	Professor	1	
3.3.1.4	Associate Professor	1	
3.3.1.5	Assistant Professor with PG	2	
3.3.1.6	Lecturer		

3.3.1.7	Asst. Lecturer/Tutor/ clinical Instructors		
3.3.1.8	Year wise split up		
3.3.2	Administrative staff Administrative Officer, Office Supdt, PA to Principal, Accountant/ Cashier, DEO/Comp Asst, Clerk, Store Keeper, Office/Class room Attender etc	Can be shared with BSc MLT programme Non teaching staff that can be shared with BSc MLT-See Appendix-3.3.2	
3.3.3	Laboratory Staff Lab Instructor, Lab Technician etc	Can be shared with BSc MLT programme	
3.3.4	Library staff Librarian, Attender etc	Librarian and Attender Can be shared with BSc MLT programme	
3.3.5	Technical staff Electrician, Plumber &Mechanic etc.	Can be shared with the staff available in the Institute.	
3.3.6	Supporting staff Cleaning Staff, Security staff ,Driver etc.	Cleaning staff - 1No Animal Handler cum Attender – 1No. Security staff & Driver can be shared with BSc MLT programme.	
3.3.7	Additional Teaching and Non teaching staff required for MSc MLT-Microbiology	Animal Handler-1, Cleaner-1	
3.4	EQUIPMENT & INSTRUMENTS MSc MLT-Microbiology	Equipment in MSc MLT-Microbiology Laboratory- Appendix-3.4(a) Equipment that can be shared with BSc MLT-Appendix-3.4(b) Equipment that can be shared with other MSc MLT Courses -Appendix-3.4(c)	
3.5	LABORATORY MSc MLT-Microbiology.	PG-Microbiology Laboratory 70M² for 5 to 10 students (a) 45M² for exclusive Laboratory living space with adequate work benches of either one sided or double sided (12m length, 75cm height and 150 cm breadth) It shall be provided with cupboard with lock and key, gas and water connections, ceramic wash basins with water taps (swan neck) with Chrome Plated Lever Action Surgical Jumper Valve control, tube lights. Adequate drainage facilities and electrical plug points to connect the three pin plugs of microscopes in each seat. One wash basins shall be fitted between two seats in case of one sided work benches or between four seats in case of double sided seats. Also the lab should have a side PCC slab of total length 5 metre (Breadth 75CM,Height- 75CM) with a minimum of 5 Nos. of 15Amp socket and 6Nosof 5 Amp sockets with	

		<p>adequate distance so as to connect the Hot air oven ,incubator and other equipments. The Laboratory shall be fitted with ground glass writing board or white board so that all the students can have a direct view or with out turning not more than 90 ° from their seat.</p> <p>(b) Lab store 7 M² with sufficient slab/Almarah to place the glasswares, miscellaneous materials and chemicals.</p> <p>(c) Media room with a minimum area of 7M² (a glass sided cabin) with 2 meter PCC slab with granite or ceramic top and with sink, water and gas connection. There should have two 15 Amp socket and two 5Amp socket.</p> <p>(d)Washing room - 8M² with sufficient PCC slab with granite or ceramic top and washing sink.</p> <p>(e) Sterilization section of 8M² with sufficient PCC slab with granite or ceramic top. It shall be fitted with 4 Numbers of 15 Amp and 3 No. of 5 Amp sockets.</p> <p>(f) Height adjustable revolving Swivel Bar chair/Stool or Height adjustable revolving stool (1 for each students.)</p> <p>4.Molecular Biology Laboratory (common for all MSc.MLT courses)</p> <p>5.Common room for PG's PG students' common room (common for all the MSc.MLT students). 30 M² with sufficient seating arrangements, cupboards, lockers, shelves and racks. Should provide at least one cot with bed for sick students.</p> <p>6.Instrument Laboratory(for common instruments of all the MSC.MLT courses.)</p> <p>50 M²with one side pcc slab with sufficient plug points</p> <p>7.Animal house(common for all the MSc.MLT students) 50 M² equipped to house rat, guinea pig, rabbit, sheep.</p>
3.6	LIBRARY	

	100 reference Microbiology text books and 4 Journals of which 2 of them should be International Journals; E-Journals can be included + The library facility of BSc MLT course.	
3.7	HOSTEL	Shall fulfill criteria specified for approval of Hostels by Apex Council and KUHS
3.8	PARENT HOSPITAL	The same trust which has established medical laboratory medicine institution and has also established the Hospital, and then only it will be considered as Parent hospital of that Institution. Parent hospital should not be changed without the prior consent of the university

Appendix 3.4 (a)

List of equipment for the practical laboratory for a batch of 10 MSc MLT –MICROBIOLOGY students

Sl. No.	Name of the equipment	No
1	Electronic Balance	1
2	Analytical Balance	1
3	Vortex mixer	1
4	Tissue Homogeniser	1
5	Magnetic stirrer	1
6	Centrifuge	1
7	Hot air oven 18x18x18"	1
8	Lab incubator 24x24x24"	1
9	Water bath	1
10	Water bath with shaker	1
11	Refrigerator	2
12	Deep freezer (-60°C)	1
13	Laminar air flow class III	1
14	Electric Heater	1
15	Steam Jacket Autoclave	1

16	Reagent Dispenser	3
17	Micro pipette Fixed volume	5
18	Micro pipette variable volume	5
19	VDRL Shaker	1
20	Laminar air flow (Class – II)	1
21	Deionizer (Four column)	1
22	Distillation apparatus (Single and Double)	1
23	Millipore water purification unit	1
24	Millipore filtration unit	1
25	Seitz filter	1
26	Vacuum pump	1
27	<p>Microscope, rechargeable, LED monocular microscope, stain resistant enamel finished body, Fully anti fungal coated optical system with high resolution ,monocular head with 360 degree rotation ,wide field eye-piece-5x&10x/18mm.</p> <p>Double layer mechanical stage 120x120x/60x30 mm.</p> <p>Plan Achromatic/apochromatic objective– (DIN) 4x,10x/15X, 40X &100X Oil immersion objective NA=\geq1.25,wide field compensating eye-piece-5X&10X, and Abbes condenser with NA=\geq 1.25,with iris diaphragm, blue filter , with battery back up for a minimum of 6 hours(preferably carton's student microscope/ equalent model)</p> <p>Quadruple nose-piece,</p> <p>S-LED illumination cool with adjustable illumination</p>	1 for each student
28	Binocular Microscope	10
29	Inspissator *	1
30	Anaerobic jar	1
31	High speed Refrigerated centrifuge *	1
32	PCR Machine *	1
33	Blotting Apparatus *	1
34	HPLC Apparatus *	1
35	ELISA Plate washer *	1
36	ELISA Reader *	1
37	Cell Sonicator *	1

38	Binocular Microscope with high resolution and NA	1
39	Bacterial colony counter	1
40	Lovibond Comparator	1
41	Reuter Air Sampler	1
42	Autoclave- vertical 18" diameter	1
43	Egg candler 25 watt LED	1

Glass wares, chemicals, reagents and miscellaneous items should be provided by the Institution.

Appendix 3.4 (b)

EQUIPMENT THAT CAN BE SHARED WITH BSc MLT COURSE

1	Seitz filter unit	1
2	Inspissator	1
3	Bacterial colony counter	1
5	Reuter Air Sampler	1

Appendix 3.4 (c)

EQUIPMENT THAT CAN BE SHARED WITH OTHER MSc MLT COURSE

1	Tissue Homogenizer	1
2	Water bath with shaker	1
3	Deep freezer (-60°C)	1
4	Laminar air flow class III	1
5	Steam Jacket Autoclave	1
6	Computer with Printer	1
7	Computer Scanner	1
8	Photostat Machine	1
9	Deionizer (Four column)	1
10	Distillation apparatus (Single and Double)	1

11	Millipore water purification unit	1
12	Millipore filtration unit	1
13	High speed Refrigerated centrifuge	1
14	PCR Machine	1
15	Blotting Apparatus	1
16	HPLC Apparatus	1
17	ELISA Plate washer	1
18	ELISA Reader	1
19	Cell Sonicator	1
20	Ultra Violet light port	1

Appendix 3.2.1(a)

INFRASTRUCTURE THAT CAN BE SHARED WITH OTHER MSc MLT COURSES

S.I No.	ITEM	AREA
1.	Instrument Room	50 M²
2.	Molecular Biology Laboratory	50 M²
3	Animal house	50 M²
4	Common rooms for boys and girls	30 M²

Appendix 3.2.1(b)

INFRASTRUCTURE THAT CAN BE SHARED WITH BSc MLT COURSE

SI-No.	ITEM
1	Administrative Block
2	Faculty Rooms
3	Examination Hall
4	Auditorium
5	Library
6	Central Store
7	Audio visual Room
8	Toilets
9.	Garage
10	Transportation
11	Fire and safety measures
12	Staff Rooms
13,	Canteen
14.	Hostel for Boys and Girls

Appendix 3.3.1

FACULTIES THAT CAN BE SHARED WITH BSc MLT COURSE

S.I No.	Name of Post	No.
1.	Principal	1
2.	Professor	1
3.	Associate Professor	1
4.	Assistant Professor with PG	2

Appendix 3.3.2

NON TEACHING STAFF THAT CAN BE SHARED WITH BSc MLT COURSE

Sl.No.	Name of Post	No.
1.	Administrative Officer	1
2.	Clerk	1
3.	Laboratory Technician	3
4.	Store Keeper	1
5.	Librarian	1

**Approved by the meeting of the BOS –MLT held on
08.05.2024.**