



Spring 2024

STUDENT POLICY HANDBOOK
&
SAFETY MANUAL



Program accredited by the
National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)

5600 N. River Rd. Suite 720

Rosemont, IL 60018-5119

Phone # 773-714-8880

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MLS PROGRAM INFORMATION

Program Information

Program Location: UNM Health Sciences Center
Health Sciences & Services Building (#266) - 2nd Floor

Mailing Address: Medical Laboratory Sciences
MSC09 5250
1 University of New Mexico
Albuquerque, NM 87131-0001

Program Phone #: (505) 272-5434

Lab (Room 230) Phone #: (505) 272-6875

Web Page: <http://pathology.unm.edu/medical-laboratory-sciences/program/index.html>

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MLS Clinical Rotation Coordinator

This handbook is designed to serve as a guide for you during your Medical Laboratory Sciences (MLS) Program. UNM Equal Opportunity Education Policies and other policies not included in this manual can be found in UNM Pathfinder: <https://pathfinder.unm.edu/>

Program Mission Statement

The Medical Laboratory Sciences (MLS) program vision is to be the go-to resource for providing exceptional MLS education and leadership in New Mexico and the Southwest.

Our mission is to (a) Provide learners with an excellent education in Medical Laboratory Sciences, and (b) Advance collaborations with health care professionals and all educators/learners in the health care professions.

Our mission is guided by our values of (a) Excellence in education, (b) Commitment to service and quality, (c) Integrity and accountability, (d) Teamwork and collaboration, and (e) Commitment to diversity.

The Medical Laboratory Sciences Program offers a Bachelor of Science degree in Medical Laboratory Sciences.

General Information on MLS Program and Accreditation

The Program is in the division of Medical Laboratory Sciences which is academically located in the Department of Pathology in the School of Medicine at the Health Sciences Center of UNM. The MLS program is also associated with other Health Professions Programs in the School of Medicine.

The Higher Learning Commission of the North Central Association accredits the University of New Mexico. The MLS program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). NAACLS can be contacted at: 5600 N. River Rd. Suite 720

Rosemont, IL 60018-5119

Phone #773-714-8880

E-mail address: info@naaccls.org

Students are admitted to the program at the beginning of the spring and fall semesters. The program consists of intensive didactic and student laboratory sessions at Med Lab Sciences facilities on campus for the first year. Clinical rotation courses at an affiliated clinical laboratory occur one year after the entrance date: spring or fall semesters. **Review week must be attended, and a final Mock Board Exit Exam (via Media Lab) must be taken and passed with a minimum score of 60% and minimum of 6 on the level of difficulty of questions for successful completion of the program.**

The schedule for courses and breaks does not always follow the university semester schedule. A schedule for each semester with the course and holidays for each day will be provided to you prior to the semester. A daily schedule will also be given to you for each course by the instructor. If changes are made, students will be notified in advance of the changes.

Part-Time Students

Students may attend the program as part-time students. Students are allowed up to 3 years from the time they begin the program to complete the entire program.

UNM MLS Program Learning Objectives

CRIM 1105 Program Learning Objectives		
	Measures of Assessment, Direct	Learning Outcomes- Criteria for Success
Learning Goal A: Knowledge		
A-1. Identify, define, and apply the scientific principles and knowledge necessary for the competent practice of laboratory medicine	<ul style="list-style-type: none">• Written (MCQ, supply answer) and performance exams• Faculty assessments• Course grades	Mastery Goal: 90% student success, first attempt
A-2. Differentiate physiologic from pathophysiologic states of various patient analyzed samples	<ul style="list-style-type: none">• Written (MCQ, supply answer) and performance exams• Faculty assessments• Course grades	Mastery Goal: 80% student success, first attempt
Learning Goal B: Laboratory Skills		
B1. Analyze all patient samples with accuracy and precision in a timely manner	<p>All the 5 major clinical areas will test students with practical unknowns. The students will:</p> <ul style="list-style-type: none">• Assess unknowns with accuracy and precision +/- 2SD from known values• Accurately analyze lab data for discrepancies and solve them using critical pathways given in laboratory• Perform all required skills on the clinical skills list at the clinical site.	Mastery Goal: 90% student success, first attempt
B-2. Gather additional laboratory data and apply problem-solving skills to solve problem results/discrepancies		
Learning Goal C: Diagnostic ability		
C-1. Interpret patient laboratory findings in health and disease	<ul style="list-style-type: none">• Written (MCQ) and performance exams• Laboratory interpretations of given lab results• After interpretation, predict follow-up/reflex testing for patient	All students must meet minimum performance standards before graduating from program
Learning Goal D: Communication skills		
D-1. Demonstrate effective communication behaviors and skills with colleagues in program and clinical rotation sites	<ul style="list-style-type: none">• Digital literacy assessment• Faculty and Preceptor narratives• Professional Development assessment by clinical preceptors• Professional Development assessment by faculty	All students must meet minimum performance standards
D-2. Work effectively with others as a member/leader of a hospital team	<ul style="list-style-type: none">• Clinical preceptor narratives• Professional Development assessment by clinical preceptors	All students must meet minimum performance standards
Learning Goal E: Professionalism and Ethics		
E-1. Define and apply ethical principles in the diverse and complex context of laboratory medicine	<ul style="list-style-type: none">• HIPPA testing on-line through UNM• Professional Development Evaluation (faculty/preceptor)• Ethics: A Framework for Ethical Decision Making (online UNM)	All students must meet minimum performance standards

Goals of the MLS Program

Knowledge

- Provide a basic learning process in Medical Laboratory Sciences for the performance of analytical procedures used in testing for normal and abnormal constituents in blood, urine, spinal fluid, other body fluids and microbiological specimens.
- Provide a general understanding of physiologic and pathophysiologic states of various body fluids and an understanding of laboratory findings in health and disease.

Laboratory Skills and Diagnostic Ability

- Furnish a practical setting in which the student will develop:
 - a. accuracy in performing laboratory tests
 - b. precision in performing laboratory tests
 - c. ability to follow direction and organize work
 - d. manual dexterity and speed of performance
 - e. knowledge of laboratory instrumentation
 - f. initiative
 - g. knowledge and practical application of principles
 - h. knowledge of quality assurance utilized in the performance of laboratory tests
- Help the student develop an appreciation for the importance of all laboratory work and sufficient discrimination to distinguish acceptable from unacceptable results.

Communication Skills

- To provide the opportunity for students to develop self-confidence in his/her ability as a member of the medical profession.
- To provide the student with the fundamentals for communication as a member of the medical profession in tech, managerial and educational roles in the clinical laboratory.

Professionalism and Ethics

- Imbue the student with a deep concern for continuing intellectual growth, resulting in a lifelong commitment to self-education.
- Provide the State of New Mexico, the region, and the nation with graduate medical laboratory scientists who can function at career entry levels and who can assume leadership roles as health professionals.

Career Entry KSA (knowledge, skills, ability) of an MLS Program Graduate

Graduates upon successful completion of the UNM Medical Laboratory Sciences Program should be able to:

1. Collect and prepare human samples for analysis. Store or transport samples using appropriate methods and preservatives.
2. Establish procedures for collecting and storing specimens for analysis.
3. Follow prescribed procedures, and with adequate orientation, perform any of the tests in chemistry, microbiology, immunology, immunohematology, and hematology. Calculate results for the tests performed if necessary.
4. Operate and calibrate any clinical laboratory instrument or equipment after orientation.
5. Recognize and correct basic instrument malfunctions. May have to refer serious instrument problems to a senior laboratorian or a supervisor.
6. Prepare reagents or media from a prescribed procedure, including making any necessary computations, using an analytical balance, and adjusting the pH if necessary.
7. Judge the acceptability of media, reagents, and standards according to established criteria.
8. Conduct established quality control procedures on analytical tests, equipment, reagents, media, and products; evaluate results of quality control and implement corrective action when indicated.
9. Establish basic quality control procedures, confidence limits and normal ranges for new procedures or methods.
10. Perform comparison studies on new or existing procedures, and report results according to conventional scientific formats.
11. Assess the plausibility of laboratory results through correlation of data with common physiological conditions.
12. Indicate the need for additional laboratory tests for definitive diagnostic information.
13. Provide clinical orientation and supervision for students and new or less skilled laboratory personnel. May lecture or provide class demonstrations.
14. Observe and practice established safety measures.
15. Keep supervisor informed of activities including unusual patient data or results.
16. Recognize and act upon the need for continuing education to maintain and grow in professional competencies.
17. Present effective in-service continuing education sessions when asked.
18. Apply managerial/supervisory skills for completion of projects or tasks as assigned.

Essential Functions of UNM Medical Laboratory Sciences Students

Students accepted in and graduating from the MLS program must meet the essential function requirements to successfully complete the MLS program

Communication

The successful student must be able to:

- Read and comprehend technical and professional materials
- Follow oral and written instructions to correctly perform lab procedures
- Communicate with faculty, fellow students, staff, and other health care professionals orally and in written format

Movement

The successful student must be able to:

- Move freely and safely about a laboratory
- Reach lab bench tops and shelves
- Travel to numerous clinical lab sites for practical experience
- Perform moderately taxing continuous physical work, often requiring prolonged sitting over several hours
- Operate lab equipment (including using pipettes, inoculating loops and test tubes)
- Operate a computer keyboard to operate lab instruments and calculate, record, evaluate and transmit lab information.

Observation

The successful student must be able to:

- Observe laboratory demonstrations in which biologicals (i.e., body fluids, culture materials, tissue sections, and cellular specimens) are tested for their biochemical hematological, immunological, and microbiological components.
- Characterize the color, consistency, and clarity of biologicals or reagents.
- Employ a clinical grade binocular microscope to discriminate among fine structural and color (hue, shading, and intensity) differences of microscopic specimens.
- Read and comprehend text, numbers; and graphs displayed in print and on a video monitor.

Intellect

The successful student must be able to:

- Possess or perform these skills: comprehension, measurement, mathematical calculation, reasoning, integration, analysis, and comparison.
- Be able to exercise sufficient judgement to recognize and correct performance deviations.

Behavior

The successful student must be able to:

- Manage the use of time and be able to systematize actions to complete professional and technical tasks within realistic constraints.
- Possess the maturity necessary to effectively use their intellect and to exercise appropriate judgment.
- Provide professional and technical services while experiencing the stresses of task-related uncertainty (i.e., ambiguous test ordering, ambivalent test interpretation), emergent demands (i.e., "stat" test orders) and a distracting environment (i.e., moderate noise levels, complex visual stimuli).
- Be flexible and creative and must be able to adapt to professional and technical change.
- Recognize potentially hazardous materials, equipment, and situations and proceed safely to minimize risk of injury to self and nearby personnel.
- Adapt to working with unpleasant biologicals.
- Demonstrate appropriate control of behavior and emotions.
- Complete all tasks with absolute honesty; perform tasks and record results without bias.

Social Skills

The successful student must be able to:

- Acknowledge and respect individual values and opinions to foster harmonious working relationships with colleagues, peers, and patients
- Be honest, compassionate, ethical, and responsible.
- Be forthright about errors or uncertainty.
- Critically evaluate their own performance, accept constructive criticism, and look for ways to improve (i.e., participate in continuing education activities).
- Evaluate the performance of fellow students and tactfully give and receive constructive comments.
- Be capable of supporting and promoting the activities of fellow students and health care professionals.

Personal Appearance and Dress Code

Dress codes, good grooming and personal appearance codes are established to ensure the safety of the student, to present a professional appearance, and to express confidence to patients and other health care professionals.

You will be provided with clean long sleeved, disposable long lab coats which you will wear over appropriate dress and closed toe, low heel, fluid resistant shoes. Hair should be well groomed and worn in a way that will not constitute a hazard to yourself, obstruct sight or interfere with your functions in the lab. Long hair **must** be tied back or worn up when in the lab. No excessive jewelry is allowed in the lab. Appropriate dress for the student laboratory is clean, neat appearing, conservative clothing. Scrubs are acceptable. Cutoffs, extremely short skirts or shorts, frayed clothing, and scanty tops are not considered appropriate dress, even with a lab coat over it.

The dress code of the clinical laboratory where assigned for clinical rotations may differ from the above and students will be required to conform to the lab's dress code instead of what is listed here. Generally, **no** blue jeans, shorts or short dresses are allowed. Colored jeans that are not blue are allowed.

Employment as a Student

Due to the intensity of the MLS Program, this program recommends that students do not work during the program. Typically, a full time MLS student should expect to spend 40-45 hours per week completing assignments in the program. If you need to or elect to work, your employment hours **cannot** interfere with attendance requirements of this program. Likewise, employment during clinical rotations **must** also be outside of rotation time. Typical class time on campus is between 8:30 AM and 4:30 PM, Monday through Friday. Typical daytime clinical rotation times are between 7:00 to 4:30 PM, Monday through Friday. An evening rotation may be required if a site is unable to accommodate a daytime rotation.

Student Records/Information

Records for students in the MLS Program are maintained in the MLS office for 3-5 years and then moved to a UNM approved storage facility. Under the "Family Educational Rights and Privacy Act" eligible students "have the right to inspect and review the student's education records maintained by the school." Request should be made to the Education Support Coordinator. The MLS Program follows the "Policy Guidelines for Confidentiality of Student Records" found in the *UNM Pathfinder* <http://policy.unm.edu/regents-policies/section-4/4-4.html>

MLS will not give out information on students unless permission is given by the student (refer to Student Packet Form: Medical Laboratory Sciences Release Statement). This includes all information contained in student's records and general information on a student's progress in the program.

Multi-Factor Authentication (MFA)

Multi-factor authentication (MFA), is required by UNM and HSC IT to provide security when logging in to UNM accounts like UNM and Salud email and CANVAS. MFA improves the security of your UNM accounts and help prevent fraudulent log ins. Follow the directions provided on this link to set up multi-factor authentication. <https://hsc.unm.edu/about/cio/technology-support/mfa.html>

Email

The UNM MLS student will have three emails that should be checked regularly (**daily**).

- UNM Net ID (**unm.edu**) email (**Helpful link:** <http://my.unm.edu/home/student>)
- **UNM CANVAS** (course messages)
- **Salud.unm.edu** (email for all health sciences students while they are in HSC programs)

The program and course faculty will use these emails to forward information to you regarding the program or course work deadlines. We will not use your personal email address.

UNM NetID	HSC Net ID
Created automatically (when you become UNM student)	Created automatically (once student is in MLS program)
LoboMail (@unm.edu)	HSCLink Email (@salud.unm.edu)
Used to access: UNM CANVAS My.unm.edu Main campus computers Parking services Remote access to UNM's eLibrary UNM web applications More...	Used to access: Learning Central HSC campus computers Remote access to HSC library resources (HSLIC) HSC secure Wi-Fi HSC Identity Management (used for password settings)

UNM CANVAS

MLS courses are available in UNM CANVAS on the first day of the semester they are offered. The course instructor may use **CANVAS course messaging** to share course information. **Please check course messages daily.** Access to semester material is removed two weeks after the official class end date. Refer to MLS program semester schedule provided or UNM Schedule of classes link <https://schedule.unm.edu/> . Visit this link to learn more about **CANVAS** <https://canvasinfo.unm.edu/support/how-to-log-in-to-canvas.html>

ZOOM

MLS instructors may use ZOOM video/web conferencing in their online synchronous courses. A link is available in the online courses in UNM CANVAS. The first time you use ZOOM, you will be required to download and install ZOOM (free) on your computer. For more information about ZOOM:
<https://at.unm.edu/media-collaborative-apps/zoom-web-conferencing.html>

Microsoft Teams

Students have access to this real-time collaboration tool as part of LoboMail and Office 365. Instructors may use this tool in their courses. Features include real-time chat, video conferencing, integration of email with One Drive, Share Point, and others. For more information: https://unm.custhelp.com/app/answers/detail/a_id/7822

Software

UNM students can download the latest versions of various software like Adobe Creative Cloud, Office 365 ProPlus and Windows 10. For more information: <https://it.unm.edu/software/>

Salud.unm.edu Email for all HSC Students

All Health Sciences Center (HSC) students are issued a **Salud.unm.edu** email. This email will allow you to utilize some of the services at the Health Sciences Center library. You will also receive emails regarding HSC news pertaining to all students on this campus. This includes notices about the HSC Student Council meetings and events. Please check this email frequently along with your **unm.edu** email and **CANVAS course email**.

Forwarding Email from Lobo Mail (UNM email) to HSCLink (Salud email)

1. Go to lobomail.unm.edu
2. Logon with your main campus email address, which is your UNM NetID @unm.edu (e.g., username@unm.edu) and UNM NetID password
 - You may first get a screen that asks for just your LoboMail email address followed by a second screen that asks again for your LoboMail email address and password
3. Select the “Mail” icon on the left-hand side beneath the phrase “Collaborate with Office Online.”
 - You may not need to do this step if you are directed to your email inbox initially.
4. In the upper right-hand corner click on the symbol that looks like a gear or cog and then select “Options” from the pull-down menu
5. In the next window select “Forwarding” from the list on the left side
6. In the next windows under the forwarding section enter the account you wish to forward your LoboMail to (e.g., username@salud.unm.edu)
7. Then click on the Start forwarding button
8. Last, click the Save button above the Forwarding header in the main screen.

UNM ID Cards

The UNM ID cards are called the Lobo card and should be worn when students are at the Health Sciences Center. When new students start the program, these ID cards will be issued to them through the Security Office at University Hospital. **NOTE:** We will schedule a time to do this when you first start the program. When in a clinical affiliate laboratory, UNM's ID badge, or one issued by the lab, **MUST BE WORN AT ALL TIMES**.

UNM LOBO TRAX

It is the student's responsibility to check their Lobo Trax while in the MLS program to make sure all courses and grades are listed correctly. If there is a discrepancy in Lobo Trax, it could delay your graduation. Visit this website to get more information <http://registrar.unm.edu/Registration/lobo-trax-degree-audit.html>

Required Textbooks for Program

A listing of the current textbooks for a course will be provided at the beginning of the course. Books will be available at UNM's Medical/Legal Bookstore <https://bookstore.unm.edu/>. Look under Course Materials Tab. (See campus info section for bookstore location)

In addition to textbooks, lab manuals printed by MLS program faculty are required. These manuals are provided to students at the beginning of each course.

Computers

Students are encouraged to bring/purchase a laptop for individual use in lecture and lab. Current recommendations for laptops can be found here: <https://computing.unm.edu/unm-computing-standards.html>. Computers are also available to check out from the medical school library (<https://libanswers.health.unm.edu/faq/277815>). Visit this link to learn more about main campus computers <https://library.unm.edu/services/computing.php>. There are computers in the MLS laboratory for use in entering lab results and recording QC results as required for some courses.

Wi-Fi Hotspots

Wireless access is available in major buildings around North and Main campus.

North Campus Health Science Center:

HSC Secure (Log in using the HSC NetID and password)

HSC Guest (Intended for HSC visitors)

UNM Hotspot information: <http://computing.unm.edu/get-online.html>

Student Lockers

There are a limited number of lockers (teal) available for student use outside the student lab (HSSB 230).

Send a request to Margaret Alba (malba@salud.unm.edu). Lockers must be vacated prior to starting clinical rotations.

Holidays

Holidays while on campus and in clinical rotations are the same as at the University. These are:

❖ Martin Luther King Day	❖ Labor Day
❖ Memorial Day	❖ Thanksgiving and the day after Thanksgiving
❖ Juneteenth	❖ Christmas, New Year's, and the days between these two holidays
❖ Fourth of July	

Rotation Students: Spring and Fall break are only observed by students attending courses during the first year of the program. Clinical rotation students do not get these days off.

Holiday Calendar Link: <https://hr.unm.edu/calendars>

Per UNM Policy 2720: Prohibited Discrimination and Equal Opportunity

A reasonable student request to observe a holiday not listed above will be accommodated unless it imposes an undue hardship on fulfilling the course requirements. The student must notify instructor of their request as early as possible.

CAMPUS INFO

Parking and Shuttle Service

Students can purchase permits from the Parking & Transportation Services at 2401 Redondo Dr. NE. **Permits for Lots Q and ELKS are for students on HSC campus. Tell parking services you are an HSC student with all classes on the HSC campus.** There are no free parking lots on campus. Shuttle service is available from each lot to the “Medical Stop” (which is near our building) between 6:30 am -6 pm Monday thru Friday. Refer to the UNM Parking and Transportation website: <https://pats.unm.edu/parking/types-of-permits.html>

FREE ABQ Ride Bus Pass

Students taking > 3 credit hours are eligible for a bus pass sticker. This allows free use of ABQ Ride/ART. For more information: <https://www.cabq.gov/transit/tickets-passes>

Housing

Students are expected to make their own housing arrangements. The University operates resident halls for students. For further information refer to <http://housing.unm.edu/>.

UNM Medical/Legal Bookstore

This bookstore is located on the first floor of the Domenici Center for Health Sciences Education building. Other reference books and examination review books, and Sharpie pens as well as notebooks, paper, pens, etc. are available. Refer to <https://bookstore.unm.edu/> for more information.

UNM Health Sciences Center Library Facilities/Copy Machines

HSLIC Library Service offered	Link
\$10 print credit every semester for each student	https://libguides.health.unm.edu/services#s-lg-box-26923497
Copy machines	https://printing.unm.edu/locations/hsc.html
Study spaces on the third and fourth floor (requires 24 hour advanced reservation)	https://libcal.health.unm.edu/reserve/rooms/study
Mobile app downloads for student use	https://libguides.health.unm.edu/mobileapps
Calendar of workshops offered	https://libcal.health.unm.edu/calendar/events/?cid=12021&t=d&d=0000-00-00&cal=12021&inc=0

Food Services

The following locations provide meals at moderate prices on the medical campus:

- University Hospital cafeteria - LOBO ID must be worn to get a discount.

<https://unmhealth.org/patients-visitors/dining-options.html>

- Happy Heart Bistro- Domenici West Basement level (same building as the Medical Book Store)

Order online: https://secure.touchnet.com/C21597_ustores/web/store_main.jsp?STOREID=383&SINGLESTORE=true

A microwave and refrigerator are available in the student lab storeroom. No food can be stored in any other student lab area.

MLS COURSE REGISTRATION

Registration Information

Students are to register and pay tuition for courses during their MLS Program as listed below. Tuition, fees and refund policies can be found at <http://bursar.unm.edu/tuition-and-fees/tuition-fee-information.html> . Courses are listed under MEDL (Medical Laboratory) in the schedule of classes.

When does program start: Enter either in spring or fall semester. Courses offered once per year.

Timeline: Must complete all courses listed for spring, summer and fall semesters before starting Clinical Rotation Courses.

Acceptable passing grade for MLS courses is ≥ 72 .

Fall Semester Courses	Credits and Delivery Option	Other info
MEDL 310 Introduction to Clinical Chemistry (Lecture)	3 credits Campus or Online	*Ask instructor for course section number if planning to register for an online course
MEDL 311L Introduction to Clinical Chemistry Lab	2 credits On Campus or Online	
MEDL 410L Adv. Clinical Chemistry	3 credits Online or On Campus	Starts after 300 level chemistry courses completed with ≥ 72
MEDL 330 Intro to Clinical Microbiology (Lecture)	3 credits Online	
MEDL 331L Intro to Clinical Microbiology Lab	2 credits On Campus	
MEDL 430 Adv. Clin. Microbiology (Lecture)	3 credits Online	Starts after 300 level micro courses completed with ≥ 72
MEDL 431 Adv. Clin. Microbiology Lab	2 credits On Campus	
Spring Semester Courses		
MEDL 320 Introduction to Clinical Hematology/Hemostasis (Lecture)	4 credits Campus or Online	
MEDL 321L Clinical Hematology & Hemostasis Lab	2 credits On Campus	
MEDL 420L Adv. Clinical Hematology/Hemostasis (Lecture)	3 credits Hybrid	Starts after 300 level Hematology courses completed with ≥ 72
MEDL 340L Introduction to Clinical Immunohematology	2 credits On Campus or Online	
MEDL 440L Advanced Clinical Immunohematology	2 credits On Campus or Online	Starts after 300 level Immunohematology courses completed with ≥ 72
MEDL 432 Clinical Parasitology	2 credits Hybrid	
MEDL 445 Clinical Management and Education	2 credits On campus or Online	

Summer Semester Courses	Credits and Delivery Option	Other info
MEDL 234 Introduction to Clinical Immunology	3 credits On Campus or Online	*Ask instructor for course section number if planning to register for an online course
MEDL 300L Molecular Diagnostics & Applied Clinical Math	2 credits On Campus	
MEDL 315L Clinical Serology	2 credits On Campus or Online	
MEDL 350L Clinical Urinalysis	2 credits On Campus or Online	
Clinical Rotation Courses (Final Semester)		
MEDL 351 Basic Clinical Chemistry Rotation	3 credits	
MEDL 352 Basic Hematology/Hemostasis Rotation	3 credits	
MEDL 355 Clinical Urinalysis Rotation	1 Credit	
MEDL 451 Advanced Clinical Chemistry Rotation	1 credit	
MEDL 452 Advanced Hematology and Hemostasis Rotation	2 credits	
MEDL 453 Clinical Microbiology Rotation	5 Credits	
MEDL 454 Clinical Immunohematology Rotation	4 credits	

Number of total credits for MLS Program: 63

Program Cost as of 2024

- Tuition: please visit link below for current UNM cost (<https://bursar.unm.edu/tuition-and-fees/tuition-and-fee-rates.html>)
- Books: estimated \$ 700 for MLS program
- Lab Fees: \$550 for MLS program
- Online Course fee: \$ 100 per 3-hour course
- Needle stick insurance: estimated \$80 (UNM bursar deducts)
- Background check and Drug test: estimated at \$80

Courses to Register for if Attending Full Time (and not an MLT)

SPRING: All students attending full time must register for the following **17** credit hours.

Course Number	Course Name	Credits
MEDL 432L	Parasitology	2
MEDL 320	Hematology & Hemostasis	4
MEDL 321L	Hematology Lab	2
MEDL 420L	Advanced Clinical Hematology	3
MEDL 340L	Immunohematology	2
MEDL 440L	Advanced Immunohematology	2
MEDL 445	Clinical Lab Management	2

SUMMER: All students attending full time must register for the following **9** credit hours.

Course Number	Course Name	Credits
MEDL 234	Immunology	3
MEDL 300L	Molecular Diagnostics & Applied Clinical Math	2
MEDL 315L	Clinical Serology	2
MEDL 350L	Clinical Urinalysis	2

FALL: All students attending full time must register for the following **18** credit hours.

Course Number	Course Name	Credits
MEDL 310	Clinical Chemistry	3
MEDL 311L	Clinical Chemistry Lab	2
MEDL 410	Advanced Clinical Chemistry	3
MEDL 330	Intro to Microbiology	3
MEDL 331L	Intro to Microbiology Lab	2
MEDL 430	Advanced Clinical Microbiology	3
MEDL 431L	Advanced Clinical Microbiology Lab	2

ROTATIONS (FINAL SEMESTER): All students attending full time must register for the following **19** credit hours.

NOTE: Rotations will be completed once the year of MLS instruction has been completed. Rotations will occur in spring or fall depending on when the student was admitted to the program.

Course Number	Course Name	Credits
MEDL 351	Basic Clinical Chemistry Rotation	3
MEDL 352	Basic Clinical Hematology/Hemostasis Rotation	3
MEDL 355	Urinalysis Rotation	1
MEDL 451	Advanced Clinical Chemistry Rotation	1
MEDL 452	Advanced Clinical Hematology/ Hemostasis Rotation	2
MEDL 453	Clinical Microbiology Rotation	5
MEDL 454	Clinical Immunohematology Rotation	4

Registration for Students That Are MLTs

Registering if you are an MLT and required prep: MLT students with a B or better in Intro courses completed in an MLT program must **either** complete Pre-Advanced course prep for Blood Bank, Chemistry, Hematology, Microbiology, Serology and Urinalysis through Media Lab or register for the courses listed below in the semester the course is offered. (either audit or for a grade). Pre-Advanced course prep work will provide a review and help the MLT be more successful in the fast paced advanced courses.

MEDL 310 Clinical Chemistry	MEDL 320 Hematology
MEDL 311 Clinical Chemistry lab	MEDL 321L Hematology Lab
MEDL 350 Clinical Urinalysis	MEDL 330 Intro to Micro
MEDL 315L Clinical Serology	MEDL 340L Immunohematology

All MLT students must register for the following courses:

Semester: Spring	Semester: Summer	Semester: Fall	Rotation Semester (in fall or spring after first year)
MEDL 432L (2 credits)	MEDL 234 (3 credits)	MEDL 331L (2 credits)	MEDL 451 (1 credits)
MEDL 420L (3 credits)	MEDL 300L (2 credits)	MEDL 410L (3 credits)	MEDL 452 (2 credits)
MEDL 440L (3 credits)		MEDL 430 (3 credits)	MEDL 453 (5 credits)
MEDL 445 (2 credits)		MEDL 431L (2 credits)	MEDL 454 (4 credits)
Total: 10 credits*	Total: 5 credits*	Total: 10 credits*	Total: 12 credits

Full and Part-Time Status during Fall and Spring Semesters

Students registered for **1 to 11 hours** are considered part-time.
Students registered for **12 or more hours** are considered full-time.

Full and Part-Time Status during Summer Semester

Students registered for **1 to 5 hours** are considered part-time.
Students registered for **6 or more hours** are considered full-time.

Refer to link for more info: <https://bursar.unm.edu/tuition-and-fees/tuition-fee-information.html>

***MLT to MLS students may need to take additional courses to meet UNM Full-Time student criteria**

Course Information/Class Schedule

Many courses are taught within a semester. Courses are taught in blocks during a semester. One block will have the beginning courses. Once that block ends, the next block will have the advanced portion of those courses. Classes can be from Monday-Friday 9 to 5, but the schedule will vary based on the semester. A general semester schedule will be provided prior to registration for new semester. Each semester the instructors will provide a detailed class schedule to the student.

General Process for MLS Registration

For each semester: register for 300 level courses. Education Coordinator (Rosalia) will provide permission for student to register for 400 level courses*.

For rotation semester: register for at least one 300 level rotation course, email Education Coordinator (Rosalia) so that load limit approval can be done. **

***Registering for 400 level (Advanced) courses every semester**

Every semester, all students will need special permission to register for the advanced (400) level courses. Contact Rosalia (RLoyaVejar@salud.unm.edu) and provide her with the information of the courses and sections you are planning to take so that she can perform the registration approval.

****Taking More Than 18 Credit hours in the Spring or Fall Semester**

Students taking more than 18 credit hours will need a load limit approval. First register for one of your required program courses and then contact Rosalia (RLoyaVejar@salud.unm.edu) with your request.

Part –Time vs Full Time: Discuss with MLS advisor (malba@salud.unm.edu) to determine best course plan for your needs.

Registering for Online Courses

Some courses are offered as either an online course or a campus course. **Make sure you choose the ONLINE course registration number (CRN) if you plan to take a course online.** Discuss with specific instructor of course and MLS advisor (malba@salud.unm.edu) to determine best course choice for your needs.

Medical Laboratory Sciences Course Descriptions (MEDL)

243. Introduction to Clinical Immunology. (3)

An introduction to the principles of human immune system function with emphasis on developing a general, basic background for those who have no previous experience in immunology or clinical medicine.

Prerequisites: BIOL 1140/BIOL 1140L (General Biology)

300L. Molecular Diagnostics & Applied Clinical Math (2)

Explains the purpose, principle, and interpretation of molecular-based diagnostics tests found in the clinical laboratory with hands-on application. The course also presents basic math calculations used in the clinical laboratory. Prerequisite: acceptance into MLS Program. (Summer) Offered **on a CR/NC basis only**.

310. Introduction to Clinical Chemistry. (3)

A study of metabolic reactions which involve the most common chemical analytes of blood and other body fluids. The principles and methods used in measuring the analytes including spectrophotometric, potentiometric, and immunologic assays will be emphasized. Theory of basic instrumentation is also included.

Prerequisite: acceptance into MLS Program; Co-requisite: 311L.

311L. Introduction to Clinical Chemistry Laboratory. (2)

Laboratory experiences for performing and/or evaluating the basic testing procedures used in a clinical chemistry laboratory. Co-requisite: 310

315L. Clinical Serology. (2)

A study of principles and lab methods used in evaluation and diagnosis of the immune system and related disease, augmented by the use of case studies. Development of critical thinking and problem-solving techniques is emphasized. Prerequisite: acceptance into MLS Program.

320. Introduction to Clinical Hematology/Hemostasis. (4)

A thorough study of the development, identification and abnormalities associated with blood cells, and hemostasis. The principles of routine laboratory procedures and basic instrumentation will be included.

Prerequisite: acceptance into MLS; Co-requisite: 321L.

321L. Clinical Hematology/Hemostasis Laboratory. (2)

Laboratory experiences in the performance and/or study of routine procedures and basic instrumentation of the clinical hematology and coagulation laboratory. Co-requisite: 320.

330. Introduction to Clinical Microbiology. (3)

A basic study of some of the most common medically important bacteria, fungi, and parasites with an emphasis on techniques, methods and differential media used to isolate and identify pathogens.

Prerequisites: Acceptance into MLS Program; Co-requisite: 331L

331L. Introduction to Clinical Microbiology Laboratory. (2)

Laboratory experiences in the performance of and/or study of procedures used in a clinical microbiology laboratory. Co-requisite: 330

340L. Introduction to Clinical Immunohematology. (2)

Study of the basic theory of blood group systems, antibody detection and identification, compatibility testing, and blood collection and component preparation. Laboratory practice of basic procedures performed in a clinical immunohematology lab will be included. Prerequisite: acceptance into MLS Program

350L. Clinical Urinalysis. (2)

A study of kidney functions and the physiochemical and microscopic urine tests. Case studies, demonstrations and laboratory practice will enhance the development of critical thinking and problem-solving skills needed in clinical urinalysis laboratory. Prerequisite: acceptance into MLS Program.

410L. Advanced Clinical Chemistry. (2)

Lecture and laboratory experiences on specialized and complex chemical analytes in blood and body fluids; disease patterns, interpretation, and correlation of laboratory test results. Development of problem-solving critical thinking and evaluation techniques is emphasized. Prerequisites: C or better in 310, 311L.

420L. Advanced Clinical Hematology/Hemostasis. (3)

A study of the principles and practice of non-routine Hematology/Hemostasis procedures, with the development of problem solving and interpretive skills through the use of case studies and laboratory tests.

Prerequisite: C or better in 320, 321L.

430. Advanced Clinical Microbiology. (3)

A continuation of the study of medically important bacteria, and fungi with an emphasis on a thorough study of body systems and their related infections. A comprehensive study of normal flora of the body versus pathogenic flora and interpretation of representative cultures. Critical thinking and problem solving will be emphasized.

Prerequisite: C or better in 330 & 331L; Co-requisite: 431L

431L. Advanced Clinical Microbiology Laboratory. (2)

Laboratory experiences in the interpretation of cultures of the different areas of the body. An emphasis will be placed on interpretation of direct exams and cultures, differentiating normal flora from pathogens. Critical thinking and problem solving will be emphasized. Co-requisite: 430

432L. Clinical Parasitology. (2)

A study of the medically important parasites including staining and wet prep procedures, life cycles, morphologic identification, and diseases. The major emphasis is on the appropriate methods of collection and handling of specimens, laboratory techniques, and the microscopic appearance of the diagnostic stages of human parasites.

Prerequisite: C or better in 330.

440L. Advanced Clinical Immunohematology. (2)

Advanced study and development of problem-solving abilities applied to blood group antigens and antibodies, compatibility testing and hemolytic anemias. Includes use of discussion groups and practice of advanced laboratory procedures. Prerequisite: C or better in 340L.

445. Clinical Management and Education. (2)

The theory and principles for supervising a clinical laboratory with emphasis on problem solving techniques and current lab managerial methods. Education methods for instruction in the lab or for presentations will also be covered. Prerequisite: Acceptance into MLS Program, or permission of instructor.

Clinical Rotation Courses at Affiliate Laboratories:

351. Basic Clinical Chemistry Rotation. (3)

Supervised instruction in the performance of analytical procedures for the various chemical analytes of blood and other body fluids in an affiliated laboratory. Testing will include automated chemistry panels, common spectrophotometric, potentiometric, and immunologic procedures of routine chemical analytes.

Prerequisite: C or better in 310 & 311L. **Offered on a CR/NC basis only.**

352. Basic Hematology/Hemostasis Rotation. (3)

Supervised instruction in the performance of hematological and coagulation procedures in an affiliated laboratory. Prerequisite: C or better in 320/321L. **Offered on a CR/NC basis only.**

355. Clinical Urinalysis Rotation. (1)

Supervised instruction in the performance of routine and special procedures in a urinalysis in an affiliated laboratory. 40 hrs. over 5 days.

Prerequisite: C or better in 350L.

451. Advanced Clinical Chemistry Rotation. (1)

Supervised instruction in the performance of analytical procedures for various chemical analytes and panels including special chemistries, blood gas collection and immunochemistry, either in an affiliated laboratory or in the student lab on campus. This course will include a quality assurance/control project.

Prerequisite: CR in 351, and a C in 410L.

452. Advanced Hematology/Hemostasis Rotation. (2)

Supervised instruction in the performance of routine and non-routine, complex hematological and coagulation studies, including evaluation of quality assurance practices and introduction to management of a hematology lab, either in an affiliated laboratory or in the student lab on campus.

Prerequisite: CR in 352 and a C or better in 420L.

453. Clinical Microbiology Rotation. (5)

Supervised instruction in the performance of microbiological procedures in an affiliated laboratory.

Prerequisite: C or better in 430 and 431L.

454. Clinical Immunohematology Rotation. (4)

Supervised instruction in the performance of blood banking procedures in an affiliated laboratory.

Prerequisite: C or better in 340L and 440L.

499. Alternative Experience. (1-2) (Optional)

Supervised experience in a variety of laboratory settings with increased responsibility, OR an independent study with tutorials as outlined by the program director. Prerequisite: permission of instructor. **Offered on a CR/NC basis only.**

GRADES and GRADING

Course Objectives

Individual course objectives are provided at the beginning of each on-campus course. Objectives for the students in clinical rotation courses are also provided by MLS. However, the clinical lab department may provide additional objectives for the rotation in their department. Course objectives should be used in preparation for exams.

Grading Scale

The grading scale used for MEDL courses is listed below. **A grade lower than a "C" is unacceptable.**

Grading scale and letter grade	Grading scale and letter grade	Grading scale and letter grade	Grading scale and letter grade	Grading scale and letter grade
98 - 100 = A+	88 - 89 = B+	78 - 79 = C+	70 - 71 = C-	60 - 61 = D-
92 - 97 = A	82 - 87 = B	72 - 77 = C	68 - 69 = D+	<60 = F
90 - 91 = A-	80 - 81 = B-		62 - 67 = D	

Grades & Evaluation Methods for On Campus and Online Courses

A grade of 72% is the minimum passing grade for any course. Each course section average (course assignments and exams should be 72% or higher).

Grading for each course will be fully explained in the course syllabus when the course begins. Examples of possible grading policies used in MLS courses are listed below.

In courses that include both lectures and laboratory sessions combined (315L, 340L, 350L, 410L, 420L, 432L & 440L), the grade may be derived as follows:

2/3 of the grade from lecture exams, papers, presentations, etc.

1/3 of the grade from daily lab work, practical exams, etc.

A grade of 72% or better in each area must be obtained before the grades can be combined for the final course grade. In the event one of the areas is below 72%, the grades will **NOT** be combined, and the lower grade will become the final course grade.

Credit for credit/no credit (CR/NC) courses may be based on the completion of assignments, checklists, passing practicals with a grade of 72% or better, if required.

Students must pass graded clinical rotation courses with a 72% or higher.

An example of how a composite course grade may be determined is shown below:

*% of grade - Exams over theoretical knowledge in Media Lab

*% of grade –Assignments like QC/QA project or completion of assigned case simulators or journal entries as required

*% of grade – Professional Development Evaluation and/or Completion of skills checklist (to be completed by trainer).

For Clinical Rotation Courses: A grade of 72% or better must be earned in each of the above areas (*) before the grades will be combined for a course grade. **In the event one of the grades is below 72%, the grades will not be combined, and the lowest grade will be the course grade.**

Following completion of any course, instructor will post grades in CANVAS. Once entered by the instructor grades will post to the student account the following business day. Per UNM: Semester GPA, Dean's list, and probation/suspension status are determined one week after the last official day of the semester.
<https://registrar.unm.edu/transcripts/index.html>

Early Concern Note/Confidential Report of Inappropriate Behavior

If a program instructor or clinical preceptor has concerns about a student's academic or professional behavior, an early concern note and/or an Inappropriate Student Behavior report will be completed and then discussed with the student to determine further action.

Course Failure & Academic Dismissals

Students are required to earn a grade of "C" (72%) or better to pass all MLS courses. A student failing 6 credit hours or more of MLS courses* or failing an MLS course the second time, will not be allowed to continue in the program. *This includes students taking MEDL 234 (Immunology) prior to being accepted into the MLS program.

Any student who fails a course(s) but does NOT exceed failing more than five (5) credit hours of courses will be allowed to remain in the program. If a failed course is a prerequisite for other MLS courses, it must be passed prior to advancing to the higher numbered course or the clinical rotation courses.

For some courses: If a final exam is offered in a course, to be eligible to take the final, a grade of 72% or better must be earned in at least one of the closed book proctored theory exams.

Based on the individual circumstances, the student who fails a course, but does not fail out of the program, will be offered one or more of the following options for making up the failed course. The option to be offered is determined by the course instructor in consultation with the other faculty and the program director. Examples of options that may be offered are:

1. For Courses and Rotations: Additional exam for an area of sub-standard performance may be offered.

Examples of possible scenarios:

- If all theory exams were less than 72% and the additional exam was > or equal to 72%, the final course grade may be a 72%. (Depends on course/rotation)
- If all theory exams were less than 72% and the additional exam is > or equal to 72%, the additional exam score may be averaged in with the other theory exam scores (depends on course/rotation)
- If all theory exams were < 72% and the additional exam is less than 72% then the course may need to be repeated.

2. For Rotations: Students who fail to meet the rotation criteria listed in course syllabus will be required to meet with the course instructor and the program director to determine remedial action.

3. Repeat of the entire course (with scheduled course instructor meetings as appropriate), the next time the course is offered. Only one full repeat of a failed course is allowed.

The student may be required to re-register for the failed course when: 1) taking additional examination(s) for the course; 2) taking additional training in an area of sub-standard psychomotor performance; or 3) retaking the entire course. If the student is not required to re-register for the failed course, then a grade of C is issued on successful completion of one of the above options.

If additional exam(s) or additional training is allowed: it must be taken prior to the next time the course is offered, and prior to taking advance courses or clinical rotation courses in that subject area. An "Incomplete" will be entered in the final grades until course requirements have been met. If unsuccessful on the additional exam(s) or if the additional training is not sufficient for passing the course, the course must be repeated the next time it is offered. If the course to be repeated is a clinical rotation course, the repeat will be after all other rotation courses have been successfully completed.

In all cases, any student failing the repeat course will therefore fail to successfully complete the MLS program and will not be allowed to complete the program and is not eligible to take national certification examinations.

Non-Academic Dismissals

Dishonesty on non-academic issues, cheating on examinations and practicals, falsifying records or lab results, failure to maintain patient confidentiality, failure to follow clinical laboratory policies during clinical practical training, misconduct as defined in the Code of Conduct in The UNM Pathfinder and failure to follow University Policies and Regulations in The UNM Pathfinder will be grounds for dismissal from the program.

<https://pathfinder.unm.edu/code-of-conduct.html>

Attitude Development as an MLS Student

An important part of your learning this year involves developing a mature, professional attitude. You will learn in direct proportion to your willingness to participate in a constant exchange of thoughts and ideas with your instructors and other students. The instructors will try to make this year a happy and fruitful one for you. Be sure you ask for help if needed. Do not be afraid to admit mistakes. Honesty is essential to being a professional laboratorian.

Adjusting to the people with whom you work is also a part of your preparation for the profession. Be considerate and respectful to everyone. If you have complaints or problems, do not discuss them with each other, but take them to the proper authorities. Discontent is contagious and is fostered by constant non-constructive criticism. You are now part of a laboratory team. Remember that it will be better or worse for you being a part of it.

Be proud to be a medical laboratory scientist! Recognize your importance and live up to it. Your work is vital in patient care. You are an educated scientist with a practical goal - to assure patients and their physicians the highest quality laboratory service that modern science affords.

Professional Behavior and Attitudes for Medical Laboratory Sciences Students

Listed below are the acceptable behaviors, attitudes, and responsibilities for Med Lab Sciences students while in the program. These acceptable behaviors may be expanded upon in certain courses or during the clinical rotation courses. Repeated failures to comply with these professional behaviors will result in written comments on grade forms or professional development forms that become part of a student's record. **This will also be part of your grade.**

The professional behaviors and responsibilities of students are:

1. Adapt easily to various situations.
2. Interact cooperatively with other students and instructors.
3. Demonstrate an interest in learning by:
 - attending all lectures, discussions and lab sessions scheduled
 - arriving on time at the beginning and after breaks
 - coming prepared for all lectures and daily labs
 - listening attentively to lectures and lab instructions
 - showing enthusiasm in all activities
4. Ask questions to clarify and aid in understanding.
5. Be self-reliant yet recognize limitations and ask for guidance when necessary.
6. Accept responsibility for own behavior.
7. Admit mistakes and take necessary steps to correct them.
8. Accept instruction and constructive criticism maturely.
9. Be regular and punctual in attendance.
10. Follow appropriate policy for reporting absences.
11. Present a neat, clean appearance.
12. Comply with the stated dress codes.
13. Perform work in student and clinical labs as assigned following lab methods and procedures as taught.
14. Organize one's workload around the need to share equipment, reagents, and supplies, as necessary.
15. Use all instruments and equipment with care and respect.
16. Clean and maintain instruments, equipment, and microscopes appropriate.
17. Leave work area clean, orderly, and restocked when work is completed.
18. Follow safety procedures.
19. Submit all assigned work reports by the specified date and time they are due. Late material will be accepted only at the instructor's discretion and points may be deducted as appropriate.
20. Be responsible for all material presented in lectures, handouts, and in the assigned readings.
21. Take exams on the scheduled date and at the scheduled time unless prior notification has been given to the instructor and arrangements made.
22. Maintain confidentiality of patient information in accordance with medical professional ethics.
23. Show appropriate respect for other students, instructors, and patients.
24. Be courteous and respectful to patient when obtaining specimens or communicating with them.

For behavior that is threatening, violent, abusive or violates an individual's personal dignity, gender, religious beliefs or ethnicity, disciplinary action will be taken, which may include dismissal from the MLS program and documentation of the incident in the student's permanent records.

ATTENDANCE/ABSENCES

MLS Program Attendance

ABSENCES DURING LECTURE/LAB COURSES:

Due to the intensive scope of the program, lab work missed may not be available for make-up. Therefore, adherence to a policy of good attendance and punctuality is needed. **If you are ill or cannot attend class, you must report your absence to Med Lab Sciences (505-272-5434) or to your instructor prior to the start of lecture or lab time. It is the student's responsibility to coordinate any make-up assignments or tests with the instructor for each course.**

APPOINTMENTS DURING CLASS TIME:

If any appointment is necessary during class time, prearrangements are required if the absence is to be excused. Rescheduling of examinations, lab experience or practical training time due to an excused absence must be arranged with the course instructor or supervising technologist.

Clinical Rotation Hours and Attendance

ROTATIONS:

During clinical rotation courses, hours are set by the laboratory to which you are assigned and will be on Monday to Friday. Students must attend clinical rotations for a minimum of 32 hours per week. Generally, you can plan for a 6 to 8-hour shift. Breaks and mealtime will be allowed as workflow permits. Be sure your supervising technologist knows and approves of you leaving for break or lunch before leaving the lab.

ABSENCES DURING ROTATION:

Absences must be reported promptly to the rotation site and the MLS program (505-272-5434) no later than 9 am on the day of the unplanned absence. If > than 10% of the scheduled time in each rotation is missed, then it must be made up at a time convenient to the clinical site.

MAXIMUM NUMBER OF ABSENCES DURING WHOLE PROGRAM:

Students are expected to attend all meetings of the on-campus/hybrid courses in which they are enrolled. A maximum of ten (10) days are allowed for absences during the MLS program. Absences include emergencies, illness, and personal leave. A student with prolonged absence in any one course may be dropped from the course by the instructor with a grade of W (withdrawal) or given an I (incomplete) to extend the time in the course. A student with excessive (>10 days) absences may be dropped from the MLS program. Extended Medical Leave or Leave of Absence requests will be addressed on a case-by-case basis.

****Please refer to COVID-19 insert for information on special circumstance absences****

FINANCIAL INFORMATION

UNM Financial Aid

Students interested in applying for the Free Application for Federal Student Aid (FAFSA) can access information online at FAFSA (<https://studentaid.gov/h/apply-for-aid/fafsa>) . Financial aid is awarded based on need. The UNM Financial Aid Office (<https://financialaid.unm.edu/>) determines amounts to be awarded once a FAFSA is completed. There are other loan options available for students not qualified for FAFSA.

General Financial Assistance at the School of Medicine

Financial aid is available through the Student Financial Aid Office located at the HSLIC (west entrance, room 130A). Leslie Gennett Gast (LGast@salud.unm.edu) is the financial aid officer. Email or call 505-272-8008.

Professional Scholarships

Various national organizations offer scholarships. Some of these organizations are listed below:

- ASCP: <https://www.ascp.org/content/about-ascp/ascp-foundation/providing-scholarships>
- ASCLS: <https://ascls.org/eandr/>

Information will be posted on lab bulletin board outside of lab before the deadlines.

Other Scholarship Opportunities

CNAH: <https://hsc.unm.edu/cnah/for-students/financial-assistance.html>

UNM: <https://scholarship.unm.edu/>

NM Opportunity Scholarship:

<https://hed.state.nm.us/financial-aid/scholarships/new-mexico-opportunity-scholarship>

NM Student Loan-for-Service Program

Grants are available through the NM Commission on Higher Education/Financial Aid and Student Services for students who will work in underserved areas of the state after graduation. Applications are due July 1, and are available from the Commission on Higher Education at 1-800-279-9777 or visit the website:

http://www.hed.state.nm.us/students/alliedhealth_lfs.aspx

AHEC

The New Mexico Area Health Education Centers (AHEC) encourage middle and high students to pursue health professions careers; support health professional students and residents to provide health care in underserved communities; and assist health professionals in rural and underserved New Mexico communities to provide culturally sensitive and regionally appropriate health care.

State and federal funding allow AHEC to offer financial support to health professional students doing rural clinical rotations. Medical laboratory sciences students that chose to do clinical rotations in a rural setting may be eligible for financial support from AHEC. More information is available by asking the MLS advisor (Margaret Alba).

Lynn Saxton Award for the Outstanding Medical Laboratory Sciences Student

This award is given to an outstanding Medical Laboratory Sciences student each year. The award is given in honor of the first Director of the Medical Laboratory Sciences Program at UNM, Lynn Saxton. The award is based on academic abilities, leadership abilities, and professionalism exhibited. Faculty nominate students in the spring. The awardee receives a monetary award and certificate and has their name added to the plaque that remains at Med Lab Sciences.

Expenses

1. Tuition:

Tuition is the same as for undergraduate students at UNM and is payable to the UNM Cashier. Tuition increases are usually effective at the beginning of summer session. Refunds follow UNM's policies found in the Bursar's Office link <http://bursar.unm.edu/>

2. Textbooks:

Allow approximately \$700 for the purchase of textbooks. All books can be purchased (during the semester the courses are offered) at the Medical/Legal Bookstore located on the Health Sciences Center campus.

You can check the bookstore online to see which books are needed by using this link

<https://bookstore.unm.edu/courselistbuilder.aspx>

3. Additional Expenses:

a. Lab fee of \$550 –

\$275 lab course fee will be attached to MEDL 331L during the fall semester and \$275 will be attached to MEDL 432L during the spring semester.

b. You will be billed from the Bursar's office approximately \$40.00 during the fall and spring semesters for blood body fluid exposure/needle-stick insurance coverage while in the program.

c. You are required to carry health insurance under your own policy or that of your spouse or parent. If you need insurance coverage, the UNM student policy is available.

<https://hr.unm.edu/benefits/student-health-plan>

d. All students are required to have Sharpie marking pens when in the laboratory and on rotations.

e. If a course is only offered online, an additional \$100 charge per 3 cr. hr. course, \$70 per 2 cr. hr. course, and \$35 per 1 cr. hr. course will be added.

f. Laptop and headphones if taking courses online

HEALTH and WELLNESS / IMMUNIZATIONS

Pre-Entrance Health Exam

Immunizations required include tetanus/diphtheria, polio, and measles/mumps/rubella and hepatitis B series. TB skin test or x-ray and vision test must also be done prior to beginning the program. UNM Student Health Center or your personal health care provider can do the tests. **The TB test must be performed annually. Refer to Immunization Requirements for UNM Students in Healthcare Programs document in this manual.**

As of May 2022: **all current UNM HSC students are required to have completed their initial COVID-19 vaccine series and their initial booster dose of the vaccine when eligible according to FDA.**

<https://www.unm.edu/covid/>

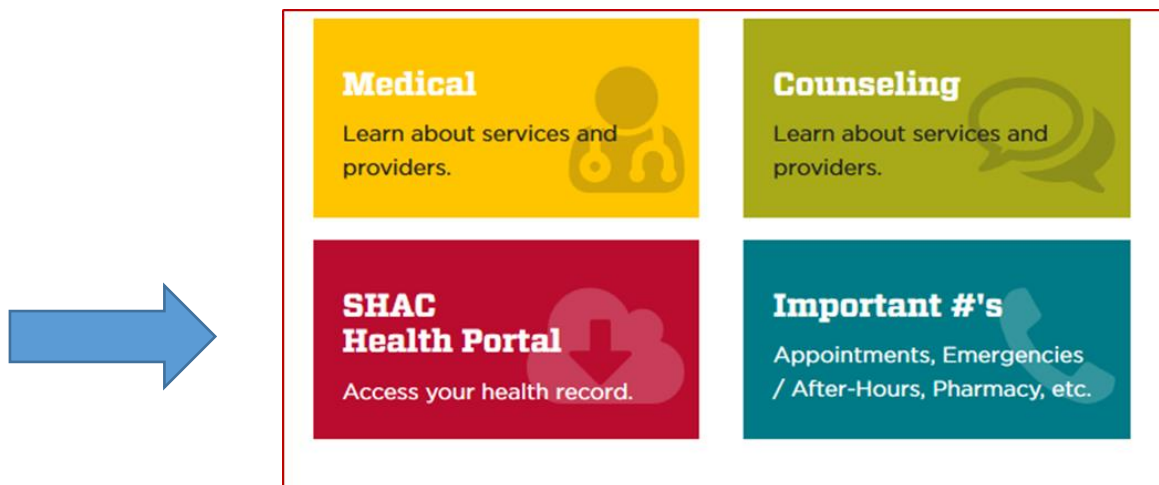
COVID-19 Immunization Exemption

Students requesting an exemption from receiving the required COVID-19 immunization can contact the MLS Program Director at bmasten@salud.unm.edu. An Exemption petition will be provided to the student and completed by the student. The MLS Program Director will submit the form to the HSC Registrar, Todd Hynson.

SHAC Health Portal

This can be used to access and print out immunization records and is found on the SHAC link

<https://shac.unm.edu/shac-health-portal.html>



At the log in prompt, enter your username and password (same username and password you use for myUNM) Select the down arrow on the immunization tab and select “view history.”

All healthcare students (e.g., Medical, Nursing, Physical Therapy, Occupational Therapy, Pharmacy, Physician Assistant, Dental Hygiene, Radiology, Speech-Language Pathology, Nutrition, Medical Technology, and Athletic Training), need to show evidence of having obtained the following immunizations and tests as part of their clinical education compliance. **Students need to submit their records to the UNM SHAC Allergy & Immunization Clinic for review and verification.** An appointment is also highly recommended.

If students have questions about these requirements, nurses in the Allergy and Immunization Clinic will advise, make recommendations, and provide vaccines or tests as indicated. Please call UNM SHAC reception to make an appointment after uploading documentation to the SHAC Health Portal, 505-277-3136.

Instructions on how to access the SHAC Health Portal and upload documents is located at <http://shac.unm.edu/services/allergy-immunization/hsc-clinical-students.html>.

All Health Sciences Center students are required to upload documents to verify immunization information. Acceptable documentation includes official vaccine records such as:

- World Health Organization Certificate of Vaccination
- Childhood vaccine cards
- State registry printout
- School records
- Medical records
- Employee records
- Civil Surgeon records

If you do not currently have records of your past Immunizations, you may want to check the following:

- Your High School
- State Department of Health
- Pediatrician &/or current PCP's office

Please see the following pages for requirements and recommendations

REQUIREMENTS FOR ALL PROGRAMS

MMR (Measles, Mumps, Rubella)* -- 3 options to meet requirement below

Option 1	Two doses of MMR vaccine
Option 2	Two (2) doses of Measles Two (2) doses of Mumps One (1) dose of Rubella
Option 3	Serologic proof of immunity for Measles, Mumps, and/or Rubella

**Serologic testing (Option 3) is required for individuals who received MMR vaccine prior to 1978*

Tetanus-diphtheria-pertussis -- One (1) dose of adult Tdap. If last Tdap is more than 10 years old, another dose of Tdap **or** Td is required.

Varicella (Chicken Pox) 2 options below

Option 1	Two (2) doses of varicella vaccine
Option 2	Serologic proof of immunity for varicella

Hepatitis B Vaccination **AND** Serologic Testing*

Option 1	Three (3) doses of Engerix-B, Recombivax or Twinrix
Option 2	Two (2) doses of Heplisav-B

A Quantitative Hepatitis B Surface Antibody (titer) is **also required and preferably should be drawn 4-6 weeks after completion of the 3-dose or 2-dose (Heplisav-B only) Hepatitis B series is complete. If negative, follow up vaccination and testing will take place based on CDC guidelines and protocol. Please consult with a SHAC Allergy & Immunization nurse for guidance. <http://www.cdc.gov/mmwr/pdf/rr/rr6210.pdf>*

Influenza One(1) dose annually during flu season by December 1st, or earlier if specified by program

Tuberculosis Testing (no history of positive result)* Baseline 2 step Tuberculosis Skin Test or IGRA Blood Test; Individuals with history of BCG vaccine are encouraged to have an IGRA blood test

Option 1	Two (2) TST placement and reads separated by at least 1 week and within 6 months of start of program
Option 2	IGRA blood test (QuantiFERON TB Gold [QFT] or T-Spot.TB) within 6 months before start of program

**Individuals with prior positive TB test history will need documentation of their positive test, a recent chest x-ray, and record for treatment of Latent TB Infection (LTBI) or Active TB Infection, if treatment completed. An annual symptom screen will be required for individuals who have not completed treatment for LTBI. Please consult with a SHAC Allergy & Immunization nurse for guidance.*

https://www.cdc.gov/mmwr/volumes/68/wr/mm6819a3.htm?s_cid=mm6819a3_w

OTHER RECOMMENDATIONS

COVID-19/SARS-CoV2	CDC recommends that everyone aged 6 years and older get 1 updated Pfizer-BioNTech or Moderna COVID-19 vaccine to stay up to date. Further considerations exist for those 65 and older and people who are moderately or severely immunocompromised.
Hepatitis A	Hepatitis A vaccine is recommended for person with chronic liver disease, international travelers, and certain other groups at increased risk for exposure to hepatitis A.
Meningococcal (MCV4)	Those who are routinely exposed to isolates of <i>N. meningitidis</i> should get one dose. A MCV4 series is recommended for HCP with known asplenia or persistent complement component deficiencies, because these conditions increase the risk for meningococcal disease. HCP traveling to countries in which meningococcal disease is hyperendemic or epidemic also are at increased risk for infection and should receive vaccine.
Pneumococcal (PPSV)	PPSV is recommended for healthy persons aged ≥65 years. PPSV is also recommended for persons aged <65 years with certain underlying medical conditions, including anatomic or functional asplenia, immunocompromise (including HIV infection), chronic lung, heart or kidney disease, and diabetes.

<https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6007a1.htm>

Potential Requirements (check with your program coordinator)

Medical clearance for N95 Respirator Fit Testing	If you are required to complete fit testing, please find instructions and form for clearance for fit testing at SHAC After clearance letter is obtained, UNM Environmental Health & Safety will perform testing: https://ehs.unm.edu/occupational-safety/respiratory-protection.html
Urine Drug Screening	
Annual TB Testing	Some clinical sites that students rotate through may require annual TB testing.

Malpractice Insurance (Liability Insurance)

The University of New Mexico will cover students for professional malpractice liability while they are a student performing the required procedures in their clinical rotation courses. NM Risk Management Evidence of Coverage current certificate information can be found under the rotation courses in CANVAS.

Safety Precautions/Protocol

Students will be instructed on safety procedures and the precautions to take to maintain a safe environment while handling specimens and performing techniques. General safety rules, chemical hygiene plans and the use of biohazard materials are covered in Orientation. These rules and more specific ones will be reviewed when appropriate in each of the courses. Gloves and long lab coats (provided by MLS) must be worn, and safety glasses or face shield should be used when patient specimens are handled in the student lab. Refer to MLS Safety Manual for more information. **NOTE:** If student is observed not following proper safety protocol in the lab, the instructor may ask the student to leave (even after passing required quizzes/training). ****Refer to COVID-19 section for specific COVID -19 related protocol. ****

Required Yearly Training

Per UNM Compliance, all MLS students are required to complete the following online training annually:

HIPAA Security Training HIPAA & Hi-Tech Training	Academic Integrity	HSC Code of Conduct and HSC Code of Ethics
Infection Prevention and Control Best Practices for HSC	Basic Annual Safety Training	Active Shooter
Blood Borne Pathogen Training	UNM HSC Compliance Training	Title IX/Grey Area Training*
Prevention of Sexual Harassment and Discrimination	Information Privacy and Security Awareness (new UNM student only)	Unconscious Bias Training (assigned in MEDL 445 course)

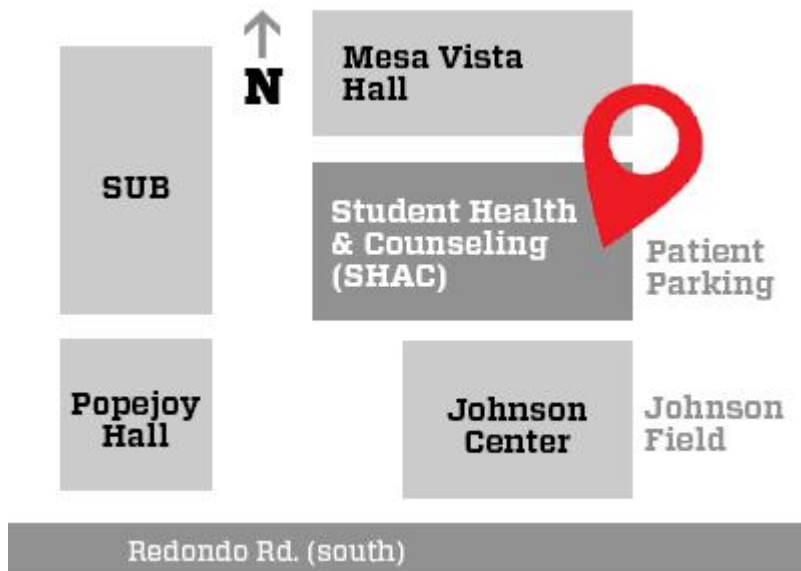
Students will receive email notifications (**salud.unm.edu**) email regarding access and training deadlines. The training is assigned on **UNM LEARNING CENTRAL** (<https://learningcentral.unm.edu>). *Annual Grey Area Sexual Misconduct Training is also required and may be available online.

Health Care

All MLS students are eligible to use SHAC (formerly known as the Student Health Center), located on Main Campus. The Center is a primary care facility offering general health care. For information or to schedule an appointment call 277-3136 or visit <https://shac.unm.edu/contact-shac/index.html>
Refer to map on next page.

UNM Psychiatric Center

Walk-in hours are available. Emergency and urgent care services provided 24 hours a day. Refer to website for information. <https://hsc.unm.edu/school-of-medicine/psychiatry-behavioral-sciences/contact.html>



Any student suffering injury during training on campus or at a clinical site and requiring health care should go to SHAC for care. If SHAC is closed, students should go to University Hospital Urgent Care facilities. Emergency injuries should be handled at the closest medical facilities.

Students and/or the student's insurance company are responsible for any cost of health services rendered to them while in the MLS program.

Virtual Health Care App

UNM is providing a virtual health and well-being platform for students: **TimelyCare**

This provides 24/7, on-demand medical care (via MedicalNow) and emotional support (via TalkNow).

These services are free to the students.

Download the TimelyCare app or access at: <https://app.timelycare.com/auth/login>

Incident Report

Injuries (including exposures) incurred during the MLS Program must be reported immediately (no matter how minor) to an instructor or to the immediate clinical supervisor. An online Accident, Incident and Spill Report (from the UNM Department of Risk Services <https://risk.unm.edu/>) must be filled out by the student involved or MLS faculty (for the student) within 24 hours of incident. A PDF copy of report will be placed in student's file.

Who can fill out form? Student, clinical preceptor or MLS instructor/Rotation Coordinator (when contacted)

What should be submitted to MLS Program if incident is reported? PDF copy of online form or provide information on the following:

- Name of student
- Date and place of incident
- Description of incident

Where is online form located? <https://risk.unm.edu/>

Risk Services Home



https://ehs.unm.edu/accident-incident-spill-reporting/index.html?_gl=1*1ke4c5h*_gcl_au*Njl4MzY1NzQzLjE2ODQzNDM0OTg

Health Insurance

All students are required to have health insurance while in the program. **All students are automatically charged for the University Insurance Program. Students MUST waive by the deadline if they do not want to be charged.** <https://hr.unm.edu/benefits/student-health-plan> This insurance program also offers coverage for spouse and dependents. A copy of the insurance card needs to be placed in student's folder. We will provide information to you on the first day of class.

Needle-Stick Insurance

You will be billed by the Bursar's office during the fall and spring semesters for the blood body fluid exposure/needle-stick insurance coverage. Refer to link below for more information.

<https://shac.unm.edu/services/allergy-immunization/blood-body-fluid-exposure.html>

AGORA Crisis Center

If students need to talk to someone about stress, life challenges, grief support or other stressful events, they can contact the anonymous volunteer helpline at 505-277-3013 (365 days/year). **This service is on Albuquerque main campus on 180 Sigma Chi Road. Walk in clinic hours are 9 am-5 pm, Monday-Friday.**

Website: <http://www.agoracares.org/>

Lobo Guardian

This is a mobile phone safety app that can be accessed at <https://loboguardian.unm.edu/>

With this app you can:

- **Set a Safety Timer and Status** -- Designate friends, family, and others as personal "Guardians" and establish Safety Timer Sessions with your Guardians. During the timer session Guardians can check your status and location. If the timer is not deactivated before it expires, your Guardians will be notified, and your phone's last location and status will be displayed.
- **Easy Emergency Communication** -- Make a direct emergency call to the UNM Police Department in Albuquerque that automatically delivers your Smart911 profile to the police response team. You can also call 911.
- **Report a Tip** -- Send a tip anonymously to the UNM Police Department in Albuquerque.



Safety on Campus

Blue emergency phones are located around the HSC campus that connect with UNM Dispatch (505-277-2241). UNM Police Depart provides escorts to on-campus locations 7 days a week. Contact: 505-277-2241

Per Campus Violence Policy 2210: Weapons are not permitted on campus. Some types of mace and stun guns are permitted for self- defense purposes (section 5.1 of Policy 2210). <http://policy.unm.edu/university-policies/2000/2210.html>

Reasonable Accommodation

The UNM MLS Program follows the University policy regarding reasonable accommodations (Policy 2310 <https://policy.unm.edu/university-policies/2000/2310.html>). Students can request services by contacting the UNM Accessibility Resource Center (ARC).

UNM Accessibility Resource Center (ARC)

Students requesting services from Accessibility Resource Center (ARC) are required to submit documentation of a disability to verify eligibility under the Americans with Disabilities Act Amendments Act (ADAAA), Section 504 of the Rehabilitation Act of 1973, and the University of New Mexico Policy 2310. ADAAA defines a disability as a substantial limitation of a major life function.

For more information regarding services please refer to the following website: <https://arc.unm.edu/about-us/contact-us.html> or call (505) 277-0316.

The office is located on the second floor of Mesa Vista Hall, Building 56 Room 2021 on main campus. Mesa Vista Hall is on the East side of the Cornell Mall opposite of the Student Union Building.

Vassar House

This is confidential resource center available to the UNM community on North Campus located at 917 Vassar. Services include those provided by the UNM Women's Resource Center and Accessibility Resource Center. For more information on services: <https://hsc.unm.edu/academic-affairs/vassar-house.html>

Lobo Respect Advocacy Center

This center provides support to students who need guidance after a crisis including but not limited to sexual assault/misconduct, hazing and hate/bias related incidents. The center serves as a confidential/anonymous reporting location for students. For more information: <https://loborespect.unm.edu/>

Mandatory Reporting Under Title 9/Lobo Respect

Our classroom and our university should always be spaces of mutual respect, kindness, and support, without fear of discrimination, harassment, or violence. Should you ever need assistance or have concerns about incidents that violate this principle, please access the resources available to you on campus, especially the Lobo RESPECT Advocacy Center and the support services listed on its website (<http://loborespect.unm.edu/>). Please note that, because UNM faculty, TAs, and GAs are considered "responsible employees" by the Department of Education, any disclosure of gender discrimination (including sexual harassment, sexual misconduct, and sexual violence) made to a faculty member, TA, or GA must be reported by that faculty member, TA, or GA to the university's Title IX coordinator. For more information on the campus policy regarding sexual misconduct, please see: <https://policy.unm.edu/university-policies/2000/2740.html>



Mandatory Sexual Misconduct Prevention Training:

<https://loborespect.unm.edu/education/mandatory-training/greyarea/about.html>

UNM provides a mandatory sexual misconduct prevention training, The Grey Area, to all new UNM students currently enrolled in 6 credits or more in a degree-granting program. On-line training (Think About It) is required annually after completing the initial Grey Area training. You will be given information via email on how to register for the mandatory training.

HPP Wellness Information

Resources for students in mental health crisis

Major mental health crisis	Go to UNM Psychiatric Center or Psychiatric Emergency Center	https://hsc.unm.edu/medicine/about/well-being/wellness-mental-health-resources/for-those-in-crisis.html
To talk with mental health support services	Contact Vassar House	https://hsc.unm.edu/academic-affairs/vassar-house.html
	Contact SHAC	http://shac.unm.edu/services/mental-health/index.html
UNM Mental Health and Counseling Site		https://hsc.unm.edu/medicine/about/well-being/wellbeing-resources/mental-health-and-counseling.html

Resource Numbers

Lobo Respect Advocacy Center	505-277-2911 (24-hour hotline)
Counseling	505-277-4537
Disability Services (ARC)	505-277-3506
Domestic Violence	505-640-5352
Rape Crisis	505-266-7711 (24-hour hotline)
Veterans Crisis Line	1-800-273-8255
Veterans Resource Center	505-277-3181
AA	505-266-1900
COSAP-Campus Office of Substance Abuse Prevention	505-277-2795
UNM Police Department	505-277-2241
LGBTQ Resource Center	505-277-5428
Dean of Students Office	505-277-3316
APD Albuquerque Police Department	505-242-COPS (2677)
Women's Resource Center	505-277-3716
Office of Professional Wellbeing	https://hsc.unm.edu/medicine/about/well-being/wellness-mental-health-resources/

If you are experiencing an emergency, dial 911

CLINICAL ROTATIONS

Rotation Requirements

All students must have the following completed prior to beginning their rotations:

- Completion of all first year didactic/lab courses with a grade of C or better
- Current TB test
- Current Flu shot
- Current HIPAA training (**Note:** if beginning rotations in Spring, you will need to wait till latest version of HIPAA is posted at the beginning of the year)
- Current proof of immunizations
- Background check (do this < 1 month before your rotation start date) - Can be done at APD*
- Urine Drug test (do this < 1 month before your rotation start date at a program approved testing facility like AnyLabTestNow: <https://www.anylabtestnow.com/albuquerque-87111/> . A 10 -panel urine drug screen with confirmation is required – per UNM SOM Illegal Drugs and Alcohol Use Policy (page 72) . Obtain required paperwork from Rosalia DeLeon at RLoyaVejar@salud.unm.edu
- Proof of COVID-19 vaccinations (required as of Fall 2021)

The program rotation coordinator will discuss this in detail the semester prior to starting rotations. All costs to complete these requirements will be paid by the student.

Rotation Courses at Affiliated Clinical Lab Sites

The clinical rotation courses are designed to offer students the experiences needed to obtain proficiency as a medical laboratory scientist in a modern clinical laboratory prior to employment.

General Info: Refer to Rotation Notebook for most current information. Contact Rotation Coordinator with questions. Rotation sites will have lab coats and gloves available. Masks may be available upon request. Cloth masks are not acceptable.

Rotation Courses to Register for if MLS (non- MLT): In final semester, all students attending full time must register for the following 19 credit hours. Notify Education Coordinator (Rosalia) for help with credit override.

Course Number	Course Name	Credits
MEDL 351	Basic Clinical Chemistry Rotation	3
MEDL 352	Basic Clinical Hematology/Hemostasis Rotation	3
MEDL 355	Urinalysis Rotation	1
MEDL 451	Advanced Clinical Chemistry Rotation	1
MEDL 452	Advanced Clinical Hematology/ Hemostasis Rotation	2
MEDL 453	Clinical Microbiology Rotation	5
MEDL 454	Clinical Immunohematology Rotation	4

NOTE: Rotations will be completed once the year of MLS instruction has been completed. Rotations will occur in spring or fall depending on when the student was admitted to the program.

Students (non-MLT) can plan on a 6-8 hour shift in the clinical lab during the 16-week semester in fall or spring. Students must attend clinical rotations for a minimum of 32 hours per week. The approximate number of days per rotation area are:

Areas: Basic Chemistry/Immunology	Suggested Time: 5 days for 2 weeks or 10 days
Areas: Advanced Special Chem/Tox/Immunology	Suggested Time: 5 days for 1 week
Areas: Routine Hematology/Hemostasis	Suggested Time: 5 days for 3 weeks or 15 days
Areas: Advanced Hematology/Hemostasis	Suggested Time: 5 days for 1 week
Area: Microbiology	Suggested Time: 5 days for 4 weeks or 20 days
Area: Immunohematology (BB)	Suggested Time: 5 days for 4 weeks or 20 days
Area: Urinalysis	Suggested Time: 5 days for 1 week or 5 days

****Processing/computers/managerial projects are incorporated in these rotations.**

Rotation Courses to Register for if Student is an MLT

Students that have completed an accredited MLT program will receive credit for the completed MLT rotation time if all requirements were met to pass the MLT program. **Notify Education Coordinator (Rosalia) for help with pre-requisite override.**

Course Number	Course Name
MEDL 451 (1 credits)	Advanced Clinical Chemistry Rotation
MEDL 452 (2 credits)	Advanced Clinical Hematology/ Hemostasis Rotation
MEDL 453 (5 credits)	Clinical Microbiology Rotation
MEDL 454 (4 credits)	Clinical Immunohematology Rotation
Total: 12 credits	

Clinical rotations for students that are MLTs will be completed during a 9- week period in fall or spring semester. Students can plan on a 6-8 hour shift in the clinical lab and must attend clinical rotations for a minimum of 32 hours per week. The approximate weeks per rotation are:

MEDL 451: Advanced Chemistry	1 week
MEDL 452: Advanced Hematology/ Hemostasis	2 weeks
MEDL 453: Microbiology	4 weeks
MEDL 454: Immunohematology (BB)	2 weeks

Adjustments can be made to rotation time under special circumstances with input from rotation coordinator, site contact and student.

The rules and policies of the clinical laboratory are provided and explained by the laboratory. The lab's policies are in addition to the policies of the MLS Program provided in this handbook.

Registering for Rotation Courses for Part-Time Students

Students that are attending the program part-time should meet with the MLS program advisor (malba@salud.unm.edu) to create a course plan that works for the student.

Placement for Rotations in Clinical Labs

Students are asked for their preference for clinical rotations in the semester prior to rotation semester. Students are placed at sites after consultation with the site. Students are placed in rural rotation sites as they are requested. Students doing rotations at a rural site will complete all clinical courses for the rotations before the rotations begin. It may be necessary to place only one student at a site at a time. Students not electing rural rotation sites will be placed at an Albuquerque site. Rotations occur during spring and fall semester.

Rotation Schedule and Accessibility

Please contact the UNM MLS rotation coordinator and the [UNM Accessibility Resource Center](#) if special accommodations are needed to fulfill your rotation requirements.

Clinical Rotation Courses and CANVAS

Students will use UNM CANVAS to access rotation course information, skills checklists, evaluations, projects, and assignments for each rotation. Study guides and related information is also accessible thru CANVAS.

Access to CANVAS for Rotation Trainers

Rotation students will provide access to the rotation site trainers by logging in to the Canvas course needed. Required passwords for completion of student documents will be provided by the MLS Rotation Coordinator. The trainers can then enter the password for access to the skills checklists and the professional development evaluation(PDE). PDF versions of the documents are available in each rotation course for rotation site trainer to print, complete and submit via scan to rotation instructor if that is preferred.

What to Do if Weather Delay or Snow Day during Rotation

Call 505-277-SNOW (7669) or sign up for LOBOAlerts (<https://loboalerts.unm.edu/>) for current information on UNM closures or delays.

- **UNM CAMPUS CLOSURE NOTIFICATION:** If the UNM campus closes due to snow, then the rotation student will stay home, notify their rotation site of the closure and absence for that day.
- **UNM CAMPUS CLOSURE NOTIFICATION WHILE YOU ARE AT THE ROTATION SITE:** if you are at the rotation site and receive notification of campus closure, the student can leave the rotation site early to avoid hazardous driving conditions. Notify the trainer before leaving.
- **UNM CAMPUS TWO HOUR DELAY:** Notify the rotation site about the delay and report to the scheduled rotation site when you can safely travel to the clinic site.

Students are not penalized for arriving late or missing a clinical rotation day due to adverse weather conditions. Notify the UNM MLS Rotation Coordinator if you are unable to safely travel to a clinic site.

Holidays Observed During Rotation:

Martin Luther King Day	Fourth of July	Labor Day	Thanksgiving Thursday and Friday
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*A reasonable student request to observe a holiday not listed above will be accommodated unless it imposes an undue hardship on fulfilling the course requirements. Student must notify the Rotation Coordinator as early as possible.

Clinical Rotation Affiliate Sites

Site/Address	Address	Description
Quest Diagnostics Core Lab	5601 Office Blvd NE #800, Albuquerque, NM 87109	It is a full- service group of laboratories.
Lovelace Medical Center (downtown)-TriCore	601 Dr. Martin Luther King Jr. Ave., NE ABQ, NM 87102	Rapid response labs/ specializes in neurosurgery, cancer therapy, and rehabilitation
Lovelace Women's Hospital- TriCore	4701 Montgomery Blvd. NE, ABQ, NM 87105	Rapid response labs
Lovelace Westside Hospital- TriCore	10501 Golf Course Rd. NW ABQ, NM 87114	Rapid response labs
TriCore Reference Laboratories - Core Lab	1001 Woodward Pl. NE, ABQ, NM 87102	Reference lab offers full lab services in all areas except blood bank to hospitals and physician offices in New Mexico and bordering state areas, like Colorado.
Presbyterian Kaseman-TriCore	8300 Constitution Ave NE, ABQ, NM 87110	Rapid response lab/ 200 beds acute general care facility in Albuquerque with an ICU and Psychiatric Unit. It is part of the Presbyterian Healthcare Services
Presbyterian Hospital-TriCore	1100 Central Ave SE, ABQ NM 87106	Rapid response lab/ 517-bed acute general care facility specializing in cardiology, women's health, neonatology, and organ transplants in Albuquerque.
Presbyterian Rust Medical Center- TriCore	2400 Unser Blvd, Rio Rancho, NM 87124	Rapid response lab/ a full-service hospital including an emergency department and Physicians Office Building located in Rio Rancho.
University Hospital-TriCore	2211 Lomas Blvd. NE, ABQ, NM 87106	Rapid response lab/ academic medical center that provides special care units and medical programs for Level I Trauma and Regional Burn Centers, Children's Hospital of NM, Kidney Transplantation, High Risk Maternity Care, Clinical Research Center, and Pediatric and Adult Oncology.
Sandoval Regional Medical Center-TriCore	3001 Broadmoor Blvd NE, Rio Rancho, NM 87144	Rapid response lab

Site/Address	Address	Description
Heart Hospital-TriCore	504 Elm St. NE 87102	55 bed hospital specializing in cardiac care
Raymond G. Murphy VA Medical Center	1501 San Pedro Dr. SE, ABQ, NM 87108	505-bed acute care teaching hospital affiliated with the UNM School of Medicine. It provides care for veterans as well as Kirtland AFB military personnel and their dependents. The laboratory is a referral laboratory for the VA system
Christus St. Vincent Regional Medical Center	455 St. Michaels Dr. Santa Fe, NM, 87505	Full- service CAP approved facility.
Eastern New Mexico Medical Center (pending)	405 W. Country Club Rd. Roswell, NM, 88201	Coverage for an acute care 162-bed facility, trauma center and an out-patient clinic in Roswell. This modern automated lab provides 24-hour coverage.
Gila Regional Medical Center (pending)	1313 E. 32 nd St. Silver City, NM 88061	63 bed general acute care facility which offers all routine tests. Provides services for the people and doctor's offices in the SW part of the state
Holy Cross Hospital	1397 Weimer Rd. Taos, NM 87571	Full- service JCAHO, CAP approved facility.
Lea Regional Medical Center (pending)	5419 N. Lovington Hwy, Hobbs, NM 88240	Full- service JCAHO, CAP approved facility
Rehoboth McKinley Christian Health Care Services (pending)	1901 Red Rock Dr. Gallup, NM	Full- service JCAHO, CAP approved facility with 118 beds. 75% outpatient
San Juan Regional Medical Center	801 W. Maple St. Farmington, NM 87401	General acute care facility offers all routine tests. The lab is a large, open area with blood bank, microbiology, histology/cytology, and lab offices on the periphery. This lab provides all routine tests.

Mission of UNM and MLS Program Regarding Rural Rotations

UNM is a state sponsored university which has a mission to place clinicians, including medical laboratory scientists in rural areas of the state, to meet the needs of rural or underdeveloped areas where there may be a shortage of health care options. In accordance with this mission, it may be required by the MLS program to place clinical rotation students at a rural location at least 50 miles outside of Albuquerque during their 16-week clinical rotation. **Housing and transportation will be the responsibility of the student.**

Alternative Experiences Option (MEDL 499 – 1-2 Credits)

This is a one-week (five days) rotation at a location where lab skills and background knowledge are applicable but clinical laboratory testing may not be the primary focus of the facility. OR, an additional week of rotation in a small clinical lab or in a specific area of a large lab can be chosen.

Type of labs/facilities for alternative experiences include the following but are not limited to those listed below.
NOTE: Some sites may not be available at certain times.

1. Forensic/Toxicology Lab
2. TriCore Molecular Diagnostic Core Lab - 2-week rotation includes: Cytogenetics, HLA, Immunoflow, Molecular Oncology: 2 cr. hrs.
3. Virology Lab
4. Student Health Center Lab
5. Veterinary Diagnostic Services - State Lab– 2-week rotation: 2 cr. hrs.
- 6.. Lab Education Program at UNM (assist in student MLS teaching lab)
7. Hospital Epidemiologist
8. Laboratory Management
9. Research Lab
10. Small Clinic Lab

Student Activities During Alternative Experiences:

- To learn about and experience a different and unique lab or lab related experience
- To perform procedures, projects, etc., under the facility's supervision
- To spend 36-40 hours/week in the alternative experience

Grading:

Alternative Experiences will be graded Pass/Fail with a grade of CR (credit) or NC (no credit) given. Grading is based on the following:

1. Submission of a written report.
Students will complete a written report (form available) on their experience.
2. Return of Professional Evaluation Form from Alternative Experience site.
It is the student's responsibility to have the site complete this form. Students must receive "Meets Expectation" in 72% of the areas to be acceptable.

If both items are acceptable, then a Credit grade will be given for the experience. If either or both items are not acceptable, a repeat or additional experience is required.

REVIEW WEEK and GRADUATION REQUIREMENTS

Graduation Requirements

All students must complete and meet requirements of the scheduled Media Lab CAT mock board exam each semester, attend review week and pass the final exit Media Lab CAT mock board exam, which will be administered the week after completion of the 16-week rotation period (at the end of spring or fall semester).

Media Lab Mock Board Exam: a scheduled mock board exam will be administered each semester of the MLS program via Media Lab which utilizes the Computer Adaptive Testing Method (CAT). Students are required to meet passing criteria set for each exam. The passing scores that must be achieved are:

New students: minimum overall score of 45

Returning students: minimum overall score of 45 and also higher than previous score; level of difficulty score must be higher than previous score. Students not meeting passing criteria will be assigned remedial training. **The four scheduled exams must be completed before the student is eligible for the final semester Mock Board Exit Exam.** Failure to complete the four scheduled exams will make the student ineligible to take the final exit exam.

Review Week:

Review week occurs during finals week, after the 16-week rotation semester has ended. A "To Do Checklist" (Includes assignments in Media Lab, attending a scheduled review session and other requirements as needed) must be completed to be eligible for the Exit Exam. Review sessions may be in person or via ZOOM. The goal of review week is to improve the student's ability to pass the Mock Board Exit Exam and the ASCP Board Exam.

Mock Board Exit Exam via Media Lab:

A Mock Board Exit Exam (via Media Lab) is given at the end of the program. Students are given the opportunity to review and take practice exams via Media Lab throughout the program to prepare for the exit exam. This exit exam will be offered after all other courses are completed and after the student has attended Review Week. The program's exam is a "mock certification exam", administered through Media Lab and utilizes the Computer Adaptive Testing Method (CAT) with 100 multiple choice questions. <https://www.medialabinc.net/> Students are allowed 2 hours for taking the exam. **Student must achieve a ≥60% to complete the MLS program and be eligible for the national certification exam. Level of difficulty of questions must be 6 or greater.**

Review material and recommended study plans to pass the exit exam can be found in CANVAS MEDL 454 (Blood Bank Rotation course) under SPECIAL SECTION: MLS ASCP PREP and REVIEW WEEK

If the Exit Exam score is <60% and LOD < 6, the student will not be eligible to graduate that semester. The student must register for MEDL 499 (Section 001) for the following semester and perform review tests as part of the remedial training. At the end of that semester, the student will retake the Mock Board Exit Exam and must achieve a ≥60% and a 6 or greater in level of question difficulty to graduate and complete the program. The student will then be eligible to take the national certification exam.

Completion of MLS program: all students who complete the MLS program (including passing the Mock Board Exit Exam) are given a document stating they completed the program. The issuing of this document is not contingent upon the student receiving a degree or passing the national certification exam.

Commencement (large UNM graduation):

Medical Laboratory Sciences students earning a degree from UNM may participate in UNM's commencement in May and December.

Convocation: The programs from the Health Professions have a short one-hour ceremony in May. Students that graduate in the spring or that completed the program the December before may participate in this ceremony. We highly encourage you to participate in the Health Professions Programs convocation. Information will be sent to you regarding time, date and where to order your graduation regalia.

Baccalaureate Honors:

Students planning to receive the BSMLS as their **first degree** from UNM and having an overall GPA of 3.0 or better before entering the MLS Program are eligible for Honors Designation. No application is necessary. Students who complete the MLS Program with an overall GPA of 3.5-3.74 will earn the designation of cum laude, or magna cum laude for a GPA of 3.75-3.89, or summa cum laude for a GPA of 3.9 or higher. Honors distinction will show up on your final transcript.

For more information, refer to: <https://sac.unm.edu/awards-and-honors.html>

The awarding of the degree is NOT contingent upon the student passing any national certification examinations.

The MLS Program does not offer departmental honors.

Graduation Eligibility:

To be eligible for graduation with a Bachelor of Science in Medical Laboratory Sciences, student must have the following:

- Completion of UNM Gen Ed requirements
- Completion of all course pre-requisites with a C or better
- 2.8 or > GPA for each section category of biology, chemistry, and math courses
- Completion of 63 semester hours of required MLS program courses with a grade of 72 or higher in each course
- Completion of all required documents and any UNM training assigned
- Approval of transfer courses by UNM

Check Lobo Trax frequently to make sure course requirements are being met and documented correctly. If there are questions or problems, contact the program Education Support Coordinator, Rosalia Deleon, rlayavejar@salud.unm.edu

Students completing UNM MLS Program but receiving degree from another institution

Students receiving their bachelor's degree from another institution must:

- Meet all necessary pre-requisite courses required for Track 2 option (person with a degree).

Biology	Chemistry	Math
18 hours Including 2 semesters Anatomy/Physiology (lab not required)	12 hours Including Organic Chemistry I and lab or Integrated Biochemistry	1 college level algebra or higher
Microbiology (course completed <7 years ago)		
GPA in entire section: ≥ 2.8	GPA in entire section: ≥ 2.8	GPA in entire section: ≥ 2.8

- Signed document from registrar of degree granting school confirming that student has met their requirements for receiving their degree

NOTE: It is the student's responsibility to meet deadlines at degree granting school to graduate as planned

Letters of Recommendation

Students requesting a letter of recommendation from MLS faculty for entrance into a graduate program should plan to take and pass the ASCP Board of Certification exam.

NATIONAL CERTIFICATION EXAM (ASCP BOC)

How to Apply for the ASCP National Board Certification Test

The national certification exam is given by the Board of Certification (BOC) with the American Society for Clinical Pathology (ASCP).

1. Student must successfully complete the UNM MLS program (includes passing the program exit exam.)
2. Student is responsible for submitting their application to the certifying agency and paying the appropriate fees.
3. ASCP MLS exam application can be accessed at <https://www.ascp.org/content/board-of-certification/apply-now-check-status-update-info#>
Refer to your UNM Student Handbook for information on when to apply in your last semester of the UNM MLS program.
4. ASCP will contact the UNM MLS program to verify student will complete program on date stated on application (usually graduation date).
5. Students can take the test as soon as they complete the UNM MLS program.
6. An official transcript with your degree conferred on the document **must be sent by the student after completion of the ASCP BOC test** to receive complete test report and official BOC card.

**** If you are receiving a BS in MLS: In order to receive your test scores and BOC card, an official transcript from UNM Registrar must be requested after your degree has been conferred. Official transcripts can be requested 2-3 months after your graduation date. ****

Contact UNM Registrar at:

<https://registrar.unm.edu/transcripts/transcript-request-information.html>

The official transcript must be sent to ASCP.

Refer to ASCP Site for latest information on how/where to submit official university transcript:

https://www.ascp.org/content/board-of-certification/get-credentialed#us_certifications

Taking or passing a national certification exam is NOT required for completion of the UNM MLS program or for granting of a bachelor's degree in MLS

Information Required for ASCP Board of Certification Test

Application can be accessed at:

<https://www.ascp.org/content/board-of-certification/get-credentialed/>

You may need some of the information listed here to complete your application.

Exam Category: MLS Route 1

Accredited Program Information: NAACLS

School Code: 030007

Date Program Began: Enter date you started in program

Date Program Ends: Enter date of graduation from the program

Name of Institution and Address:

University of New Mexico, MSC09 5250

1 University of New Mexico

Albuquerque, NM 87131-0001

505-272-5434

Program Director: Barbara Masten

Application Guidelines for Students from Accredited Programs (When to Apply)

Program Completion (When you graduate)	Submit ASCP BOC Application	Prospective Exam Eligibility (When you can take the test)
May 1- 14	April 1	May 15-August 15
May 15-31	April 15	June 1-August 31
Dec 1-14	Nov 1	Dec 15-March 15
Dec 15-31	Nov 15	Jan 2-March 31

PROFESSIONAL ORGANIZATIONS

Professional Society

Students are encouraged to join the American Society for Clinical Laboratory Sciences (ASCLS). This is a means of keeping yourself informed on current developments within your profession. You will find the journals and newsletter interesting.

Applications are available on the Student Board outside lab Room 230.

There are also other specific professional societies that students can join for free like ASCP.

Refer to links below:

ASCLS: <https://www.ascls.org/membership/join>

ASCP: <https://www.ascp.org/content/my-role/student>

Student Society

Medical Laboratory Sciences Student Society (MLSSS) – This organization is comprised of students currently in the Med Lab Sciences program. The purpose of this organization is to provide information and resources for the MLS student to be successful in the MLS program and in their future profession. The organization will also provide opportunities for members to serve the community through volunteer events. For more information contact Margaret Alba at malba@salud.unm.edu.

UNM Student Activities Center (SAC)

SAC oversees the UNM student organizations and student government opportunities. For more information: <https://sac.unm.edu/>

Social Media Links

The Medical Laboratory Sciences Student Society can be joined by searching for the following:

Facebook: UNM Med Lab Sciences Student Society

Instagram: unmmmlsprogram

National and State Meetings

Many of our professional organizations have yearly conferences/meetings (ASCP, ASCLS, AABB, AACC, ASHI, ASM). We will post information on the student board outside room 230 regarding the dates and location of these meetings. In addition to the meetings, clinical sites have grand rounds and other continuing education sessions. Students are encouraged to attend but must prearrange for the time away from the lab with their instructors/clinical preceptors.

UNM and MLS Program Policies

Family Educational Rights and Privacy Act (FERPA)

Faculty and staff of the MLS program complete annual FERPA training. This Federal Statute governs student education records including:

- Student's right to access their records
- Student's right to amend their records
- Student's right to limit disclosure of personal identifiable information

For more information: <https://registrar.unm.edu/privacy-rights/ferpa.html>

Curricular Grievances and /or Concerns

Any questions regarding course organization, expectations, grading, assignments, etc. should be directed to the course instructors first and then if concerns persist, students should discuss with the MLS Program Director.

For the purpose of academic disputes only and formal appeals of those academic disputes, the MLS Program shall follow the process outlined in the Faculty Handbook D175

<https://handbook.unm.edu/d175/>

The UNM Grievance Policy and Procedure is outlined in The Pathfinder

<https://pathfinder.unm.edu/campus-policies/student-conduct-and-grievance-procedures.html>

Misconduct

UNM may take disciplinary action against a student for a violation of the Student Code of Conduct or other UNM policy when the offense occurs on UNM premises or at a UNM-sponsored event, or when the violation occurs off campus and failure to take disciplinary action is likely to disrupt the academic process or other campus functions, or endanger the health, safety or welfare of the UNM community or any individual student or employee. <https://handbook.unm.edu/d175/>

University of New Mexico School of Medicine Health Professions Programs

Student Due Process Policy (Approved May 12,2022)

I. Introduction

This University of New Mexico Health Professions Programs Student Due Process Policy (hereafter "Due Process Policy") outlines for students, faculty and administrators in the School of Medicine Health Professions Programs, the course of action that is available to a Health Professions Programs student should his or her individual program take either an adverse or corrective action against the student for failure to maintain the academic, professional and/or ethical requirements and standards of the program.

The individual programs that make up the Health Professions Programs and that follow this Due Process Policy are: Dental Hygiene, Emergency Medical Services Academy-Paramedic and Bachelor of Science Programs, Medical Laboratory Sciences, Occupational Therapy, Physician Assistant Program, Physical Therapy, and Radiologic Sciences. Each of these individual programs must have a student guide/handbook made available to its students that includes, at a minimum, the program's (1) academic requirements; (2) professionalism and/or ethical requirements and standards; (3) a description of the program's process for dismissing a student or otherwise sanctioning a student for failing to meet program requirements; and (4) a copy of this Due Process Policy.

The individual programs that make up the Health Professions Programs are responsible for monitoring their students' performance and compliance with academic, professionalism and ethical requirements and standards. The individual programs decide whether to dismiss or suspend a student or take other action for unsatisfactory performance pursuant to program policies and procedures. As discussed below, a student can appeal the program decision pursuant to this Due Process Policy.

II. Adverse and Corrective Action Defined

The distinction between an adverse and corrective action is important. Adverse actions are those that separate the student from his or her Health Professions Programs and include dismissal and suspension. Also, requiring a student to repeat a significant part of the program's curriculum so that completion of the program will be delayed by more than one semester is an adverse action.

A corrective action involves the program imposing an educational prescription that, in the opinion of designated program faculty, is necessary in order to improve the student's performance. Corrective actions include, but are not limited to, requiring a student to take a specific course, narrowing the choice of elective courses, mandating a student meet with a program advisor regularly, and mandating additional professionalism training.

Adverse actions are subject to being appealed by the student as provided for in Sections III through VI herein. Corrective actions cannot be similarly appealed by the student, but may be reviewed at the student's request as provided for under Section VIII of this Due Process Policy.

III. Appeal of Program Decision Imposing Adverse Action

A student who disagrees with his or her Health Professions Program's decision imposing adverse action is entitled to appeal that decision to the Health Professions Programs Appeals Committee, which is composed of members of the Health Professions Programs Evaluation Committee. The request for appeal must be made in writing to the Assistant Dean for Health Professions, stating the reasons why the student disagrees with the Health Professions Program's decision, and must be received by the Assistant Dean within fifteen (15) calendar days after the student receives the program's written letter imposing adverse action. If the student fails to notify the Assistant Dean within fifteen (15) calendar days, this shall be considered a waiver of his/her right to appeal the adverse action and the Health Professions Program's decision shall be final for the University of New Mexico.

IV. Formation of a Health Professions Programs Appeals Committee

When an appeal is timely made by a student, the Assistant Dean for Health Professions Programs will form a Health Professions Programs Appeals Committee ("Appeals Committee") consisting of four (4) faculty members from the Health Professions Programs Evaluation Committee ("Evaluation Committee") and one (1) student in good academic standing from the same program but a different class/cohort than the student bringing the appeal.

The Evaluation Committee consists of one faculty member from each program appointed by the director of the program and up to three (3) members appointed by the Associate Dean for Health Professions Programs. Evaluation Committee members serve a 3-year term which may be renewed for one additional 3-year term. Ideally, the Evaluation Committee will have a mixture of experienced and new members. Members will receive an orientation when appointed to an Appeals Committee, including a review of this Due Process Policy and any relevant policies from the appealing student's program.

The Associate Dean of Health Professions Programs will review the composition of the Appeals Committee with the student making the appeal. If the student objects that any member is biased against the student or otherwise may not be a fair Appeals Committee member, the Associate Dean will consider the student's objections and decide whether to remove the members. The Associate Dean's decision is final. If a Committee member is removed for cause, the Associate Dean will appoint a new member if one is available from the Health Professions Programs Evaluation Committee. If a new member is not available, the Appeals Committee will proceed to hear the appeal with three faculty and one student member. The Appeals Committee will select one of its faculty members to serve as chair.

V. Review of Appeal by Health Professions Programs Appeals Committee

The Appeals Committee will accept relevant documentary evidence for review from the student and the director of the program that took the adverse action. Each party will be provided with a copy of the other's submission. The Appeals Committee will conduct individual interviews with the student, director and faculty from the program that took adverse action and others with relevant information.

The Appeals Committee will decide who will be interviewed. These interviews will be tape recorded and the student will be offered an opportunity to listen to the tapes. The student will not attend the actual interviews. After the Appeals Committee concludes its interviews, if it has additional questions for the student and/or if the student wants to respond to statements from any of the witnesses, the student will be offered one opportunity to meet with the Appeals Committee.

After all of the interviews have been completed, including the final interview with the student, the Appeals Committee will deliberate in closed session. Within thirty (30) calendar days of completing the interviews, the Appeals Committee will decide the appeal by a vote (simple majority) of its members and issue its written decision, which will include its rationale. The final decision will be to uphold or overturn the adverse action imposed on the student by the program. The student and the program director will each be sent the Appeals Committee's decision.

In arriving at its decision, the Appeals Committee shall not overrule the academic judgment of a faculty member in the program on the assignment of grades to the student. The Appeals Committee should, as appropriate in the case, consider: (1) whether the program followed its own policies governing student performance, advancement and program completion; (2) whether the evidence supports the program's decision; and (3) whether the student has significant new information that bears on the program's decision that was not available to the student when that decision was made. If the Appeals Committee finds that the student has significant new information, the appeal shall be referred back to the student's program for reconsideration of the adverse action in light of that information. If the program affirms the adverse action, the student may request review by the Appeals Committee. The Appeals Committee will consider any additional relevant evidence and/or witness interviews and issue its written decision within thirty (30) calendar days.

VI. Appeal to the Dean

Either the student or the program director may appeal the decision of the Appeal Committee to the Dean of the School of Medicine or designee in writing within thirty (30) calendar days of receipt of the Appeals Committee's decision. Failure to submit a timely appeal means that the student and/or program director waive their right to appeal and the decision of the Appeals Committee shall be final for the School of Medicine.

The Dean or designee will review the student's academic record; the decisions of the program, Health Professions Programs Appeals Committee, and any other documents in the student's program file. Additionally, the Dean may meet with the student and program director. The Dean (or designee) shall issue a written decision on the appeal and send a copy to the student and the program director.

VII. Discretionary Review by the UNM President and Board of Regents

Discretionary review by the UNM President and Board of Regents, as provided in the UNM Student Grievance Procedure, is accorded to students in academic programs in the HSC. The President and the Board of Regents will normally accept review only in extraordinary cases, such as where proper procedures have apparently not been followed, where the decision appears to be unsupported by the facts, or where the decision appears to violate University policy.

VIII. Review of Corrective Action

As stated in Section II herein, a student is not entitled to go through the appeals process described above to dispute corrective action imposed by his or her program. If the student believes that the corrective action is fundamentally flawed, unfair, or otherwise inappropriate, the student may request review by the School of Medicine Senior Associate Dean of Education. The student shall present his or her reasons for disputing the corrective action in writing. The Senior Associate Dean of Education may meet with the student and may discuss the matter with the program director and faculty and the Associate Dean of the Health Professions Programs, as the Senior Associate Dean deems appropriate. The decision of the Senior Associate Dean of Education is final for the University of New Mexico and is not subject to discretionary review by the President or the Board of Regents.

General Provisions

Minor deviations from this Due Process Policy are permitted so long as they do not substantively impact the due process rights of the student.

For good cause, the time limits for written decisions to be made can be extended. Good cause includes the fact that a deadline falls during school holidays, vacations, or summer session if parties or decision makers are absent. Any such time extensions should be communicated in writing to all interested parties and the decision will be made thereafter as expeditiously as possible.

The University of New Mexico Health Professions Programs reserves the right to make changes to this Due Process Policy as it deems necessary, with the changes applicable to all students then in attendance in a Health Professions Program.

_____End of **Student Due Process Policy Document** (Approved May 12,2022) _____

Most current version found: <https://hsc.unm.edu/medicine/education/health-professions/>

UNM School of Medicine Policy Title:

University of New Mexico School of Medicine Policy on Illegal Drugs and Alcohol Use

The University of New Mexico School of Medicine (UNM SOM) is committed to creating and maintaining a campus free of drugs and the illegal use of alcohol. Drug and alcohol use on campus poses a serious threat to the health and welfare of faculty, staff, and students; impairs work and academic performance; jeopardizes the safety and well-being of other employees, students, and members of the general public; and conflicts with the responsibility of the UNMSOM to foster a healthy atmosphere for the pursuit of education, research, and service.

This UNM SOM Policy on Illegal Drugs and Alcohol Use is written and adopted in accordance with Federal laws and University policy in response to our commitment to maintaining a safe environment. Regents' Policy 2.6, Drug-Free Environment, states the unlawful manufacture, distribution, dispensing, possession or use of controlled substances or alcohol on UNM property or as part of any of its activities by any member of the University of New Mexico community, faculty, staff, or student, is strictly prohibited.

Routine Drug and Alcohol Screening

A critical part of medical education involves learning experiences in hospitals and other health care facilities ("Facilities"). Use of these Facilities in training is essential, and students must be able to complete their assigned rotations in order to successfully complete their medical school education. Most, if not all of these Facilities have policies requiring drug testing and/or criminal background checks for employees, students, and volunteers.

Based upon the requirements of Facilities, all SOM students must undergo a 10-panel drug and alcohol screening prior to their participation. The screening will take place at the student's expense. The method of testing will be urinalysis and urine sample will be collected and tested by a private laboratory selected by the College or experiential site, utilizing generally accepted pathological methods.

The collection and coding of specimen samples will be executed in such a manner as to ensure confidentiality. Appropriate "chain of custody" methods will be exercised to ensure complete integrity of the specimen. Prescription or over-the-counter medications must be disclosed to private laboratory prior to providing a urine sample or on the day immediately following the drug screen procedure. Medications disclosed will require written confirmation from the prescribing provider. It is recognized that some legal, acceptable medications may result in a "positive" test and will not be cause to implement any type of disciplinary procedures.

Consistent with federal law and the SOM affiliation agreements with Facilities, a positive test for THC will be considered a failed drug screen, regardless of whether the student has a NM medical cannabis card from the Department of Public Health Cannabis Program.

Positive Result or Refusal to Submit to Screening

Students who test positive or refuse to submit to a routine drug screen will be referred to the Associate Dean of Students, who will review the case, or lack thereof. The student will then be

referred to CSPE for further review and to outline recommendations and/or accommodations to resolve the issue on a case-by-case basis.

Substance Abuse Policy

Students who are impaired due to substance use are strongly encouraged to voluntarily seek professional health care. Students may seek assistance through the Student Health and Counseling Center (SHAC), UNMSOM's Office of Physician and Student Wellness, the Associate or Assistant Deans for Students Affairs and/or private counseling.

The UNMSOM advises students to voluntarily seek assistance before their academic performance and/or professional development is adversely affected and is brought to the attention of CSPE. Students who voluntarily seek and comply with treatment prior to unsatisfactory academic performance and/or professionalism issues will not be subject to formal academic disciplinary action for substance abuse.

Students who voluntarily identify a substance use concern may be required to obtain the most effective treatment for substance use including some or all of the following: care in a residential treatment facility, outpatient management programs, and random testing for substance of abuse. The financial responsibility for required substance abuse treatment and subsequent follow up is borne by the student.

Once unsatisfactory academic performance and/or professionalism concerns are present and substance abuse and/or student impairment is found to be a contributing factor, the matter will become a part of the student's permanent record. Consistent with the School of Medicine Handbook, students with substance abuse issues may be referred to Committee on Student Promotion and Evaluation (CSPE) for review and possible disciplinary action, up to and including dismissal from the SOM.

Adherence to this policy will be monitored by the Curriculum Committee, reviewed on an annual basis, and modified as appropriate.

Responsible Office:	Office of Medical Student Affairs
Approving Bodies:	Curriculum Committee, Committee on Student Promotions & Evaluation
Date of Approval:	
Scope:	Medical Students

Professional Ethics Regarding Patient Information

As part of your training, you will hear and learn a great deal about individual patients and their illnesses. This information is to be held in strict confidence. Never discuss patients or privileged laboratory information outside of the lab or teaching situation. Violation of these professional ethics can result in your dismissal from the program.

UNM MLS Lab Book Check Out Policy

The MLS Program provides some books that can be used as reference while in the lab. Students can check books out for use during daily lab session by asking MLS Teaching Assistant (Amy). A checkout form will be completed.

Books must be returned by end of class period or designated time. A **HOLD** will be placed on final MLS program completion if materials checked out are not returned to Amy as required.

Documenting Problems with UNM CANVAS

Please send an email to the MLS course instructor if you are experiencing problems with CANVAS. MLS faculty will document reoccurring problems and will contact CANVAS Help Desk to address common issues that are impacting students. (Ex: unable to submit homework, cannot access videos).

UNM Inclement Weather Policy

In the event of inclement weather, students are advised to check LOBO Alerts online or call **505-277-SNOW** to determine if there has been a delay in start time of your class or closure of the campus. You may also contact the instructor of your course via CANVAS or their salud.unm.edu email.

For more detailed information on UNM's policy please go to the following website:

<https://policy.unm.edu/university-policies/3000/3435.html>

What to do if weather delay

Campus Class	Online Class	Rotation
<ul style="list-style-type: none">• Check LoboAlerts or call 505-277-SNOW• Check CANVAS course messages and announcements to see if instructor provided updated class meeting information• Email instructor in Canvas if you are unable to safely travel to campus	<ul style="list-style-type: none">• Check CANVAS course for message from instructor regarding changes in scheduled online ZOOM, TEAMS, or web conferencing• Call instructor or MLS program if your internet is down and you are unable to attend scheduled meeting	<ul style="list-style-type: none">• Report to scheduled rotation site if you can safely travel to the clinic site• Notify rotation site if you are unable to safely travel to the clinic site• Notify the UNM MLS Rotation Coordinator if you are unable to safely travel to the clinic site

Teach Out Plan for MLS Program

In the event of a natural disaster or other event that impacts the physical facilities of the University of New Mexico Medical Laboratory Sciences Program, the University of New Mexico will make every effort to relocate the program to another building or campus location while repairs are in-progress. The program will also provide distance learning if needed.

In the event that University of New Mexico makes the decision to discontinue the Medical Laboratory Sciences Program a Teach-Out Plan will be developed by the program that ensures that all students currently enrolled in the program will be able to complete the program in an appropriate timeframe.

In either situation, the Teach-Out Plan course schedule will be distributed to students to ensure that they are aware of the plan. The University of New Mexico will also provide professional counseling and advisement services to students that are impacted by program changes.

In the event a clinical site closes and is unable to complete the clinical experience for the student as described in the Affiliation Agreement, the student will be moved to another clinical site. Moving the student to another site is typically feasible as we have a number of clinical sites and our clinical site preceptors understand the importance of the clinical experience. The program will also provide an alternative on-campus clinical experience if needed.

Academic Integrity and Honesty Policy

ACADEMIC DISHONESTY is any conduct which involves deception or fraud in academic work, or which enables a person to obtain an unfair advantage in academic matters. Academic dishonesty includes, but is not limited to:

1. CHEATING: intentionally using or attempting to use unauthorized materials, assistance, information, or study aids in any academic exercise.
2. FABRICATION: intentional, reckless, and unauthorized falsification or invention of any information or citation in an academic exercise.
3. PLAGIARISM: intentionally, recklessly, or knowingly misrepresenting the work, words, or ideas of another as one's own in any academic matter.
4. LYING: intentionally giving false information, submitting false documents, or intentionally misleading anyone in connection with any academic matter.
5. UNAUTHORIZED COLLABORATION: assistance or collaboration which has not been expressly authorized by the instructor. Students who are not clear on what assistance or collaboration is permitted should assume that none is permitted or contact the instructor promptly and directly to inquire.
6. MISREPRESENTING GROUP CONTRIBUTION: intentionally or otherwise allowing one's name to be included as an equal contributor on or to group work when that is not the case.
7. FACILITATING ACADEMIC DISHONESTY: intentionally or knowingly helping or attempting to help another to violate any provision of this policy or obstructing a policy investigation. This category includes the failure to report known or suspected cases of academic dishonesty.

Our Commitment

Medical Laboratory Sciences Program faculty, staff and students commit to values of trust, honesty, integrity, and accountability. We will not tolerate academic dishonesty.

We recognize that academic dishonesty is a corrosive force in any university community. Apathy or acquiescence in the presence of academic dishonesty is not a neutral act, as it undermines the bonds of trust and integrity among members of the MLS Program community, defrauds those who may eventually depend on our knowledge and integrity, and devalues the MLS Program culture.

By enrolling in any course in the MLS Program, the student accepts the MLS Program Academic Honesty Policy and affirms the following pledge:

I will not lie, cheat, fabricate, plagiarize, or use any other dishonest means to gain unfair academic advantage

Credit: adapted and modified from UNM Anderson School of Management and Gary Pavela.

Medical Laboratory Sciences Expanded Academic Honesty Policy

Our Commitment

Medical Laboratory Sciences (MLS Program) faculty, staff and students commit to values of trust, honesty, integrity, and accountability. We will not tolerate academic dishonesty.

Overview

Acts of academic dishonesty include plagiarism of written assignments, or portions thereof, providing papers and/or files for an assignment to another student, cheating on quizzes and exams, and theft or other misuse of school-provided computing resources. Acts of academic dishonesty will be dealt with in accordance with the MLS Honesty Policy and UNM policies on acceptable computer use.

Rationale

We recognize that academic dishonesty is a corrosive force in any university community. Apathy or acquiescence in the presence of academic dishonesty is not a neutral act, as it undermines the bonds of trust and integrity among members of the MLS Program community, defrauds those who may eventually depend on our knowledge and integrity, and devalues the MLS Program culture.

Applicability

Persons employed at MLS in any capacity and all students enrolled in any program or course at MLS Program are required to conduct themselves in a manner consistent with the MLS Program Academic Honesty Policy. Each is responsible to acquaint him or herself with it.

Academic Dishonesty Defined

ACADEMIC DISHONESTY is any conduct which involves deception or fraud in academic work, or which enables a person to obtain an unfair advantage in academic matters. Academic dishonesty includes, but is not limited to:

1. **CHEATING:** intentionally using or attempting to use unauthorized materials, assistance, information, or study aids in any academic exercise.
2. **FABRICATION:** intentional, reckless, and unauthorized falsification or invention of any information or citation in an academic exercise.
3. **PLAGIARISM:** intentionally, recklessly, or knowingly misrepresenting the work, words, or ideas of another as one's own in any academic exercise.
4. **LYING:** intentionally giving false information, submitting false documents, or intentionally misleading anyone in connection with any academic matter.
5. **UNAUTHORIZED COLLABORATION:** assistance or collaboration which has not been expressly authorized by the instructor. Students who are not clear on what assistance or collaboration is permitted should assume that none is permitted or contact the instructor promptly and directly to inquire.
6. **MISREPRESENTING GROUP CONTRIBUTION:** intentionally or otherwise allowing one's name to be included as an equal contributor on or to group work when that is not the case; and
7. **FACILITATING ACADEMIC DISHONESTY:** intentionally or knowingly helping or attempting to help another to violate any provision of this policy or obstructing a policy investigation. This category includes the failure to report known or suspected cases of academic dishonesty.

Responsibilities

To promote the highest standards of academic integrity, all members of the MLS Program community agree to abide by this policy, agree to its reporting requirements, and accept the following additional responsibilities:

STUDENTS: ACADEMIC HONESTY PLEDGE

By enrolling in any course at MLS Program, the student accepts the MLS Program Academic Honesty Policy and affirms the following pledge:

I will not lie, cheat, fabricate, plagiarize, or use any other dishonest means to gain unfair academic advantage.

FACULTY: CLEAR EXPECTATIONS, EFFORTS TO DISCOURAGE ACADEMIC DISHONESTY, AND REPORTING

In all academic settings, MLS Program faculty members shall provide students with clearly expressed expectations regarding academic honesty and shall make all reasonable efforts to discourage and deter academic dishonesty. Consistent with UNM policies, when academic dishonesty is detected or suspected, the affected MLS Program faculty member has the responsibility to take appropriate action under the circumstances. In any instance where the academic dishonesty penalty impact is equal to or greater than one letter grade in the course, the faculty member shall make an informational report to his or her department chair and the MLS Program Director. The MLS Program Director shall thereupon make an informational report to the HPP Associate Dean of Students. The reporting objective is to:

- a) identify and monitor the nature and severity of any academic dishonesty at MLS Program
- b) facilitate University enforcement of academic dishonesty penalties, especially where multiple infractions involving the same student may occur in more than one University college.

STAFF/ADMINISTRATION: AWARENESS, COMPLIANCE, REPORTING, RECORD-KEEPING AND REVIEW

MLS Program staff and administrative personnel accept responsibility to support faculty and students in achieving and maintaining academic honesty by establishing and maintaining procedures for fostering awareness and compliance, reporting and record-keeping, and undertaking periodic review of MLS Program's policy for academic honesty.

Reporting Academic Dishonesty

All members of the MLS Program community – including students, faculty, staff, and administration – share the responsibility to challenge and report, in good faith, actual or suspected acts of academic dishonesty. Any member of the MLS Program community who has witnessed an act of academic dishonesty or has information that would lead a reasonable person to the conclusion that such an act has occurred or been attempted, is expected to report this knowledge promptly to the course instructor, the MLS Program Director, or the HPP Assistant Dean of Students.

Acknowledgement: Special recognition to Gary Pavela, Director of Judicial Programs and Student Ethical Development, University of Maryland, and author of the Model Code of Academic Integrity.

Academic Honesty Task Force

Faculty and Staff will:

1. Act as a "champion" for the Academic Honesty Policy (marketing, advocacy, and program continuity)
2. Identify, develop, and recommend Academic Honesty resources for students, faculty, and staff - provide examples of academic dishonesty, develop, and publish faculty guidelines and recommendations to help deter academic dishonesty, explore, and recommend anti-plagiarism software (e.g., Turn-it-in or other), etc.
3. Monitor the program and make recommendations for improvement to reporting and adjudication processes
4. Maintain Academic Honesty materials in CANVAS or another form that is easily accessible

Plagiarism

The MLS Program follows the UNM Plagiarism Guidelines and UNM Academic Integrity Policies.

University of New Mexico Plagiarism Guidelines

Plagiarism is the use of another person's ideas, words, phrases, sentences, facts, graphics, charts, tables, graphs, audio-visuals, or other intellectual products without appropriately citing and crediting the original source {s}. Plagiarism in any form constitutes academic misconduct. Allegations of plagiarism are considered serious and are investigated under UNM Faculty Handbook Policy E: 40. Appropriately citing sources brings deserved credit to the work of other writers, indicates the level and quality of research conducted, provides a scientific foundation for scholarship, builds solidarity in the academic community, and facilitates the reader's ability to validate claims and pursue independent learning.

Examples of Plagiarism

The following are considered examples of plagiarism but are not inclusive. It is within the discretion of the committees considering an allegation of plagiarism to determine if other actions not listed here also constitute plagiarism. All UNM faculty, staff, and students are encouraged to complete tutorials and courses on plagiarism offered through UNM Academic Integrity and Research Ethics program.

- The submission of efforts of others as your own personal or group work in either clinical or classroom assignments such as group projects, collaborative research, examinations, or tutorials.
- Use of direct quotations without the use of quotation marks and referencing of the source of the quotation.
- Incorrect paraphrasing information without proper citation of the source.
- Failure to provide adequate citations for material used.
- The purchase of a scholarly paper or any other academic product from the Internet or any other

commercial sources and submitting it as your own work.

- Downloading work from the Internet and submitting it as your own without citation.
- Directly copying and pasting from any source, electronic or written, into any academic assignment without explicit citation of the original source.
- Submission of a work product from a previous course for credit in a current course without direct permission of the instructor.
- Inappropriate and unattributed use of the cut/paste function in electronic medical record documentation of clinical care.
- Being aware of your co-author's plagiarism and failing to address it.

Consequences of Plagiarism

UNM considers plagiarism as academic dishonesty and research misconduct that violates University's policies, mission, and the spirit of a university education. The following procedure will be followed when a student is suspected to have plagiarized.

Process for addressing academic misconduct based on plagiarism allegation:

1. The instructor will notify the student verbally and in writing that there is concern regarding plagiarism.
2. If it is determined that plagiarism has occurred, consequences may include a lowered grade, failure of the assignment, or failure of the course. The instructor may require the student to resubmit the assignment.
3. The instructor will send a notification of the nature of the plagiarism and the action to the Dean of Students to determine if further action is warranted. The Dean's Office will review the incident and determine if other penalties are appropriate depending on the seriousness of the plagiarism and the context in which it occurred as well as the student's explanation.

<https://grad.unm.edu/resources/graduate-students/academic-integrity-and-research-ethics/documents/academic-integrity.html>

Version 21 October 2016 (AAT/WLG)

Additional resources on plagiarism for MLS students:

How to cite sources and prevent plagiarism:

<http://libanswers.unm.edu/faq/133656>

Regent's Policy Manual (Section 4.8: Academic Dishonesty):

<https://policy.unm.edu/regents-policies/section-4/4-8.html>

Social Media Policy

The MLS program is aware of the role that social media plays in helping to quickly disseminate and share valuable information to enhance overall educational and life processes. **As in any public forum or discourse, we ask that our students engage in social media in a friendly, fair, and professional manner.**

Any discussion of health care settings in which the student is immersed shall be limited to those that bring educational value to be shared with peers and superiors, that adhere strictly to the rules and regulations set by the Health Accountability and Portability Act of 1996.

The posting of anonymous gram stains, peripheral blood or body fluid cells is permitted as long as any and all personal identifiers are withheld.

As in the real physical or cyber world, we require that no information be shared in any format or forum that will reveal test questions or any other protected academic materials, as well as anecdotal stories about patients with whom you may come into contact.

Refer to UNM Social Media Guidelines for more information

<https://social.unm.edu/guidelines/index.html>

Service Work Policy 2021

Service work in the laboratory is not required for admittance to the UNM MLS Program.

During clinical rotation courses, UNM MLS students may not be used by the clinical affiliate site(s) for service work, i.e., students may not be substituted for regular clinical staff. MLS students should focus on their educational clinical rotation training and the achievement of clinical rotation objectives. The clinical affiliate trainer/preceptor will supervise students during their educational clinical rotation training.

Students may work for the clinical affiliate site outside of the clinical rotation assignment time, but this work must be non-compulsory and will not substitute for the required clinical training hours. Of note, while on clinical rotation, students are not considered employees of the clinical affiliate site, even if they work there at other times.

MLS Students as Workers in a Clinical Site Policy 2021

UNM MLS students in a clinical rotation at an approved clinical site **will not** be considered employees of the clinical facility for any purpose and **will not** be expected to perform duties of a paid employee while in training. UNM MLS students are placed at clinical sites for education purposes only and shall be considered trainees working under direct supervision of the clinical facility's designated trainer/preceptor. Students will not be used to replace staff at the clinical site and will not be responsible for providing laboratory services to patients. This information can be found in the clinical site affiliation agreement under the "Relationship of Parties" section.

UNM MLS students should contact the UNM MLS Rotation Coordinator if there is a violation of this policy during their rotation time.

Clinical Rotation Addendum 2021: If Clinical Placement Cannot Be Made

UNM MLS program admits a maximum of 22 students per year to ensure availability of rotation sites in Albuquerque and surrounding areas. Students agree to the possibility of a rural (outside of Albuquerque) clinical site placement when the MLS program agreement is signed upon admittance.

If clinical rotation placement is not possible for a student at the student's preferred site, an alternate site is used for that semester.

Clinical sites reserve the right to deny student placement even if the student has met all the program and site requirements.

Every opportunity will be taken to provide students with timely clinical rotation assignments so they may graduate on time.

If a clinical site is not able to accept a student(s) for the entire clinical rotation, the following may occur:

- Combination of alternate sites are used to complete required training in each clinical section. This requires students to rotate thru more than one facility during their assignment time in clinical rotation.
- If short-staffed in a certain clinical section, a shortened rotation (several days with a maximum of a week) may occur in combination with an arranged MLS Lab teaching project for the student during the remainder of the section rotation. During this time, the rotation student helps new students in the MLS lab learn the laboratory techniques.

If limited clinical sites are available, a waiting list will be utilized. Students who show the most dedication to the program will be placed in clinical rotation first. Dedication is evident by:

- a. Academic achievement, based on grade-point average
- b. Attendance record, based on number of unexcused absences and tardiness

The student may receive an "I" incomplete, until a clinical site is available.

UNM Medical Laboratory Sciences Program Contract

To instill the role of professional med lab scientist, the UNM Medical Laboratory Sciences program requires students to initial and sign the following contract when they begin the program. Students are expected to abide by the behaviors outlined in this contract.

By signing, the student also agrees that they have read and understand the policies stated in the UNM MLS Student Policy Handbook

Please initial each item, then sign and date at the bottom and return form to MLS Program

____ I will treat peers, faculty, staff and clinical preceptors with respect and tolerance for personal differences. I will refrain from being disruptive in the classroom/lab. UNM permits dismissal from the course/program for infractions.

____ I will demonstrate a willingness to adapt to change by being flexible in unforeseen/unavoidable circumstances (like schedule changes).

____ I will abide by the guidelines prescribed by each instructor in the preparation of course requirements and will prepare myself for the class by reading all necessary assignments or procedures.

____ I will demonstrate honesty by performing my own work when taking exams and completing assignments, admitting mistakes, and taking corrective measures.

____ I understand that I cannot use headphones in the clinical laboratory (noise cancelling earplugs are acceptable)

____ I understand that if I do not submit all required materials by the last day of the areas of Clinical Rotation that I will be given a grade of zero to be factored into the calculation of the final grade. (Regarding Clinical Rotations in last semester)

____ I understand that I must have a criminal background check and current HIPAA training on file with MLS in case the Clinical Site needs it. (Regarding Clinical Rotations in last semester)

Print Name

Signature of Student/Date

UNM Medical Laboratory Sciences Program Contract

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By signing, the student also agrees that they have read and understand the policies stated in the UNM MLS Student Policy Handbook

Student copy

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I understand that I must have a criminal background check and current HIPAA training on file with MLS in case the Clinical Site needs it. (Regarding Clinical Rotations in last semester)

COVID-19 Protocol for MLS

COVID-19 Procedures as of Spring 2024

Procedures and protocols are changing frequently. Please refer to the following regularly to check current protocols required by UNM, School of Medicine and the MLS Program:

- **UNM.edu email communications from MLS program director Barbara Masten:** read all communications sent via email to be aware of any changes to Covid protocol that all MLS students must follow

Required for Return to HSC CAMPUS/MLS Campus Courses:

Requirement	Due Date
All MLS students are required to complete the UNM MLS Conduct Policy for On-Campus Activity Spring 2024	Prior to returning to campus. This form must be on file with the MLS Program.
All UNM students must be up to date on COVID-19 vaccination/booster (limited exceptions)	By Friday January 12,2024 (provide proof to MLS program)
All students must provide proof of vaccination to UNM and the MLS program	By Friday January 12,2024

Campus Closure due to COVID-19 Restrictions:

1. In case of UNM Campus Closure: the UNM MLS Program will follow a combination of UNM Main Campus and Health Sciences Center (HSC) protocols. The MLS Program will maintain contact with students thru the unm.edu email and the salud.unm.edu email.
2. If UNM campus closure is mandated: remote teaching will be provided when possible and mandatory on campus labs will be postponed. Completion of required labs will be done at a later date when students are allowed on campus. Final Course grades may be delayed due to closure but will be entered once the students have completed any remaining required labs.

**UNM Medical Laboratory Science Program
Conduct Policy for On Campus Activity Spring 2024**

UNM Health and Health Sciences programs and clinical areas will continue to maintain their COVID-19 vaccine requirements. For updated information, please refer to:

<https://hsc.unm.edu/covid-19/students-faculty-staff/medicine.html>

I will follow current UNM Health Sciences Center (HSC) policies.

Symptom Attestation:

☐ If I have any of the symptoms listed below or posted on any HSC building entrances, I will not come to campus or enter the building

- Primary symptoms include fever, cough, or shortness of breath.
- Additional symptoms include chills, repeated shaking, muscle pain, headache, sore throat, loss of taste and smell.
- Known encounter with someone with COVID-19.

☐ I will inform the UNM MLS Program Director and Associate Program Director via email at bmasten@salud.unm.edu and malba@salud.unm.edu respectively, and the course instructor if I need to miss class due to symptoms listed above.

☐ I will await instructions from the UNM MLS Program Director/Associate Program Director or course instructor regarding when I am allowed back on campus.

☐ If I am unable to attend scheduled on-campus activities due to COVID-19 infection or exposure, I will work with the Program Director/Associate Program Director and course instructor to develop a plan for my continued education.

Student concerns:

☐ If I am uncomfortable participating in laboratory activities, I will contact the UNM MLS Program Director and the course instructor to discuss my concerns.

☐ If I elect not to participate in laboratory activities, I will discuss altered curricular plans with the UNM MLS Program Director.

☐ If I have concerns that I am in a higher risk category for COVID-19, I will contact the Program Director to discuss my concerns.

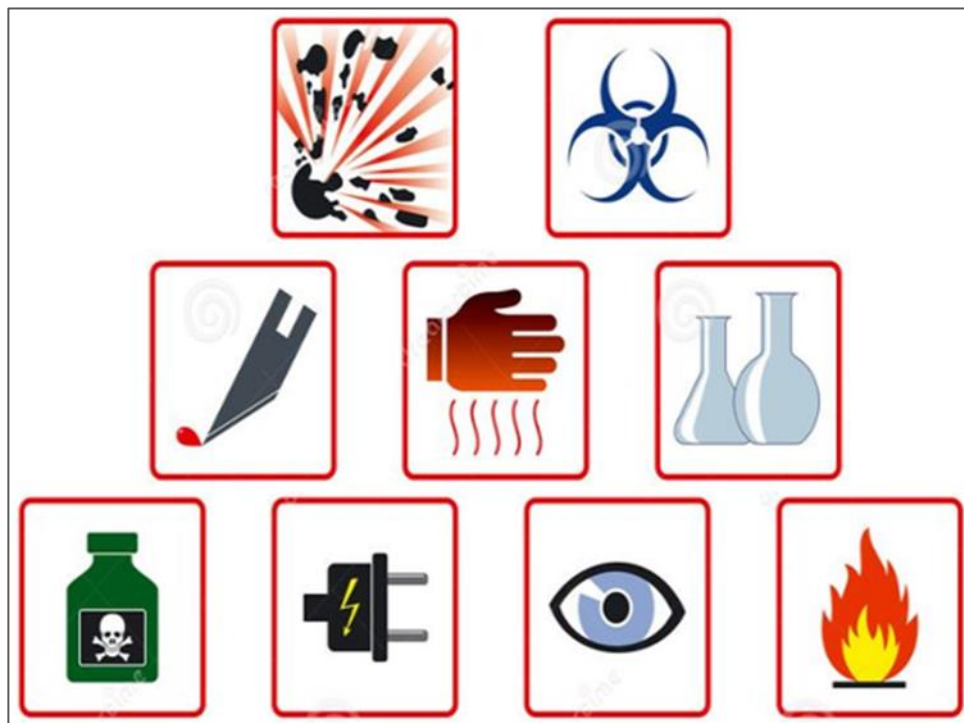
By signing this document, I agree to abide by the above-outlined standards of conduct for curricular activities on campus. I agree to participate fully in the scheduled curricular activities, and I understand that any change in my willingness or ability to do so must be provided to the UNM MLS Program Director in writing.

Printed Name

Signature

Date

UNM MLS Laboratory Safety Manual



Medical Laboratory Sciences Program
Department of Pathology
University of New Mexico
Version Spring 2024

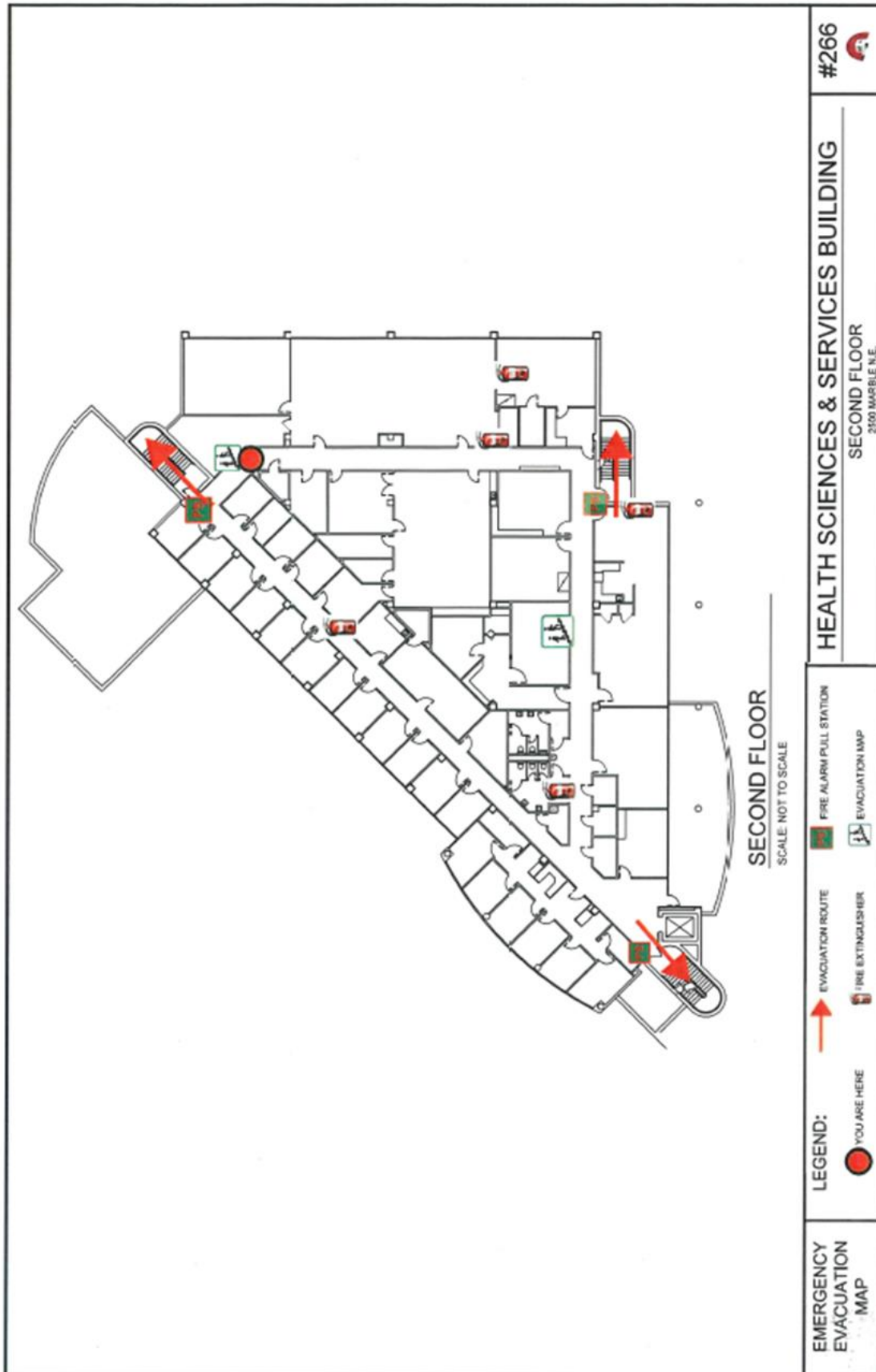
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Rev. 12/2014
 Edited by
 I. Allison

Laboratory Safety Manual

Introduction

The modern clinical laboratory is a workplace where many hazardous chemicals, complex instrumentation, and potential pathogens are encountered on a daily basis. However, the laboratory can be a safe place to work and learn if possible hazards are identified, and safety and infection control protocols are followed.

Very specific work practice controls, engineering controls, and personal protective equipment are available to help provide safeguards against hazardous materials and pathogens.

This safety manual has been prepared as an educational resource for students, staff, and faculty. This manual is intended to:

1. Outline general principles of infection control.
2. Describe potential laboratory safety hazards and protective mechanisms associated with each of the following categories:
 - a. biological (including blood-borne pathogens)
 - b. chemical
 - c. fire and explosion
 - d. electrical
 - e. equipment or mechanical
3. Define safety rules for the clinical laboratory, including good personal habits, housekeeping practices, and laboratory techniques.
4. Describe accidental biohazards or other physical and chemical hazards that might occur in the MLS Teaching Laboratory, and proper protocols for prevention and follow-up.
5. Discuss factors associated with disaster preparedness as it pertains to the MLS Teaching Laboratory.

NOTE: Students are prohibited from being alone in the MLS Teaching Laboratory after hours.

UNM Medical Laboratory Sciences Teaching lab is inspected by UNM Environmental Health and Safety for compliance with UNM Chemical Hygiene Plan.
Last inspection: March 2023

Section I. General Laboratory Safety

A. Introduction

We all have the responsibility to maintain a constant concern for safety in the laboratory. Good personal habits, housekeeping practices, and laboratory technique can all help ensure that the laboratory is a safe place to learn and work.

B. Laboratory Dress Code Policy

1. Medical Laboratory Science students, staff, and faculty are required to dress according to the standards established in the policy when in the MLS Teaching Laboratory. This dress code policy addresses issues related to safety.
2. Shoes should be comfortable, water-repellent, and must enclose the entire foot. To avoid injury to the feet from items dropped or spilled, no open-toed, open-heeled, perforated, or mesh shoes are allowed. Nonskid, flat-soled shoes should be worn to prevent possible serious injuries from falls.
3. Open-toed, open-heeled, perforated, or mesh shoes are acceptable in the classroom, but **NOT** in the laboratory.
4. Laboratory coats must be worn at all times in the MLS Teaching Laboratory, regardless of the activity. This includes, but is not limited to, lecturing in the laboratory area, practicing manual differentials or reviewing gram stains outside of a regularly scheduled laboratory session, studying in the laboratory outside of scheduled laboratory sessions, etc.
5. Laboratory coats must be fully buttoned. They must be clean and in good repair. Laboratory coats must not be worn outside of the laboratory.
6. Leggings and hosiery (nylons) are not recommended because chemicals or specimens, if spilled, can ‘wick” and be held against the skin for prolonged periods of time, causing extensive exposure and/or injury.
7. Scrubs are acceptable, but a laboratory coat must still be worn when in the laboratory.
8. Baseball hats are not allowed. Hats with a brim that obscures the eyes are not allowed. Other headgear including beanies, scarves, headbands, etc., may be worn as long as they are tied back and do not pose a danger of being caught in equipment, contaminating or being contaminated with specimens/reagents, and are not distractions.
9. Long, dangling jewelry is not permitted in the laboratory.
10. Long hair and beards must be tied back in such a way as to avoid contamination and interference with laboratory equipment and specimens.
11. Sunglasses and other darkly tinted eyewear are not allowed.
12. Students may keep laboratory-appropriate clothing or shoes in their assigned laboratory lockers to change into as necessary. Students are encouraged to have spare, clean laboratory-appropriate clothing in their lockers in the event of a spill or an emergency.

C. Good Personal Habits: Reminders

1. Wear proper attire and protective clothing as described above in Section I.B., Laboratory Dress Code Policy.
2. Wash hands after entering and before leaving the laboratory.
3. **Never** eat, smoke, drink, chew gum, apply cosmetics, or adjust contact lenses while in the laboratory.
4. Tie back long hair and trim beards to avoid possible entanglement in equipment or instruments. In addition to personal injury, contamination of specimens, work areas, or reagents may occur from shedding of long hair and beards.
5. **Never** pipette by mouth, rather, use pipetting bulbs.
6. Develop the habit of keeping hands away from the mouth, nose, and eyes to prevent self-inoculation with infectious agents.
7. **Do not** put objects in mouth (like pens, pencils, or pipettes).
8. Wear gloves when working with biologic specimens or hazardous chemicals. Change gloves when contaminated.
9. Wear goggles and masks or face shields when splashing or spattering of chemicals or specimens may occur. Carefully dispose of contaminated glassware and other objects to avoid “back-splatter”.
10. **Never** store food or beverages in refrigerators or freezers containing chemicals, microorganisms, or clinical specimens.
11. Develop the habit of frequent hand washing, especially after removing gloves and other protective wear, before leaving the laboratory, before eating or drinking, after using the lavatory, and when hands are visibly contaminated with blood, body fluids, or tissues.

D. Good Housekeeping Practices

1. Keep work areas free of chemicals, dirty glassware, and contaminated articles such as paper towels or lint-free tissues.
2. Decontaminate equipment and counters upon entering the laboratory and before leaving the work area with a freshly made 1:10 dilution of household bleach.
3. Clean up spills immediately and properly per policy (see II.G.).
4. Store chemicals properly according to their labels and Safety Data Sheets (SDSs).
5. Do not submit worksheets that have become contaminated; transfer results and data to new worksheets before submission.

E. Good Laboratory Techniques

1. Use the provided personal protective equipment (PPE).
2. Read all labels and instructions carefully.
3. Label containers of reagents and solutions with the substances contained and appropriate warnings.
4. Be familiar with the properties and hazards of chemicals for their safe handling and disposal.
5. Be careful when transferring chemicals from container to container.
6. **Never** add water to acid and **always** add acid to water **slowly**.
7. **Do not** operate new or unfamiliar equipment until proper training and authorization have been given.
8. In preparing specimens, prevent aerosols and the resultant possible spread of infectious agents by:
 - a. **Never** opening the lids of centrifuges until the centrifuge has come to a complete stop.
 - b. **Only** opening specimen tubes by gently twisting the stoppers and lifting them out (sometimes holding a lint-free tissue over the stopper may prevent aerosolization).
 - c. Capping all tubes to be centrifuged prior to centrifugation (except blood bank tubes).
9. The laboratory instructor must approve all persons entering.
10. Minimize use of sharps. Needles and scalpels are to be used according to institutional guidelines: do not re-cap needles. Most sharps should be discarded in sharps containers that are closable, puncture-resistant, and leak-proof on sides and bottoms. However, non-contaminated plastic pipets that are sharp enough to burst a balloon, Pasteur pipets, and pipet tips should be disposed of in broken glass receptacles.
11. Contaminated sharps, including coverslips, slides, glass, plastic pipets that are sharp enough to burst a balloon, Pasteur pipets, and pipet tips are discarded immediately or as soon as possible in biohazard sharps containers that are closable, puncture-resistant, leak-proof on sides and bottoms, and labeled or color-coded appropriately.
12. Test tube racks or other secondary containers such as carts must be used to move specimens in the laboratory.
13. Stocks and other cultures must be stored in a leak-proof container when work is complete. A sealed, leak-proof container, labeled with a biohazard symbol, must be used to transport stocks and cultures from one room to another.
14. Cultures should be disinfected/inactivated prior to disposal, either by chemical disinfection or autoclaving.
15. Contaminated materials that are to be decontaminated at a site away from the laboratory shall be placed in a durable leak-proof container labeled with a biohazard symbol, which is closed before being removed from the laboratory. Hazardous waste pickup is arranged through Environmental Health and Safety (<https://ehs.unm.edu/waste-management/index.html>) and requires a Chemical Waste Pickup Request Form <https://ehs.unm.edu/waste-management/index.html>

16. Broken glass must be handled using a dustpan and broom or forceps/tongs, not picked up by students or laboratory personnel by hand. Broken glass must be disposed of in a broken glass box, unless it is contaminated and should be disposed of in a biohazard sharps container. If contaminated, the broom will need to be disposed or sterilized.
17. Know where the Safety Data Sheets (SDSs) are located.
18. Learn emergency procedures and become familiar with the location of fire exits, fire extinguishers, eyewash stations, fire alarms, and showers.

Section II. General Principles of Infection Control

A. Disease Transmission

1. Infectious organisms travel by very specific routes of transmission. The four major pathways are contact, airborne, vehicle, and vector. However, the contact and airborne routes are the main methods of transmission in the health care environment, as vehicle and vector routes are rarely encountered.
2. Contact
 - a. This type of organism transmission is the most significant and frequent of the four routes. It may involve:
 - i. Direct contact in which a physical transfer of an infectious agent occurs between an infected individual and a susceptible host.
 - ii. Invasive contact in which moist body substances containing infectious organisms (like blood) touch non-intact skin or mucous membranes. For example, inoculation of contaminated materials, as in fecal-oral transmission via poor hand hygiene or touching the face or mouth with contaminated hands in the laboratory; or percutaneous injection via mishandled needles or sharp objects.
 - iii. Indirect contact in which a susceptible individual contacts a contaminated object, such as contaminated instruments and equipment.
3. Airborne and Droplet
 - a. Airborne transmission occurs when the moisture in respiratory droplets evaporates and leaves pathogens suspended in the air. Infectious organisms can travel on air currents and through ventilation systems before being inhaled by a susceptible individual. Tuberculosis, chickenpox, and measles are transmitted via this route.
 - b. Droplet transmission is usually thought of as a splashing or splattering that can cause aerosol formation producing large particles that pass three feet or less. It can be of particular concern in the laboratory when handling potentially infectious liquids.

B. Blood-borne Pathogens

1. Definition

- a. **Blood-borne pathogens** are disease-causing infectious agents that may be present in human blood and can cause disease in humans. The pathogens of significance for clinical laboratories include Hepatitis B Virus (HBV), Human Immunodeficiency Virus (HIV), Hepatitis C Virus (HCV), Hepatitis D Virus (Delta Agent, HDV), and syphilis.

2. Transmission

- a. Infectious blood-borne pathogens are transmitted when blood or **“other potentially infectious materials” (OPIM)** contact mucous membranes, non-intact skin, or when contaminated surfaces or items are touched.
 - i. OPIM are substances such as body fluids, objects visibly contaminated with blood, any unfixed human tissue or organ (other than intact skin), HBV- or HIV-containing cell or tissue cultures, and organs or tissues from experimental animals infected with HBV or HIV.
 - ii. Non-intact skin may include, but is not limited to, abrasions, burns, cuts, hangnails, paper cuts, and rashes. Puncture wounds or cuts from contaminated sharps may also transmit blood-borne pathogens.
- b. Cerebrospinal fluid (CSF) may harbor prions in addition to blood-borne pathogens

3. Table 1 summarizes possible routes of exposure.

*Table 1: Possible Routes of Exposure to Infectious Agents in the Clinical Laboratory**

<u>Route</u>	<u>Situation</u>
<i>Ingestion</i>	<i>Mouth pipetting</i> <i>Splashed infectious material</i> <i>Contaminated clothing, devices, fingers, or gloves</i> <i>Contaminated pens or pencils inserted into the mouth</i> <i>Consumed food /drink</i>
<i>Inoculation</i>	<i>Needle stick accident</i> <i>Cuts from sharp objects</i>
<i>Skin and mucous membrane contamination</i>	<i>Splashes into eyes, mouth, nose</i> <i>Spills or splashes on intact or non-intact skin</i>
<i>Inhaled infectious aerosol</i>	<i>Streaking media</i> <i>Flaming or cooling inoculating loop</i> <i>Mixing microbial suspensions by pipette</i> <i>Expelling air from a syringe</i> <i>Withdrawing needle from rubber stopper</i> <i>separating needle from syringe</i> <i>Centrifuging specimens</i> <i>Mixing instruments such as blenders or shakers</i> <i>Pouring or decanting fluids</i> <i>Opening culture containers or blood tubes</i> <i>Spilling infectious material</i>

*Adapted from Sewell, D.L. (1996)

C.1. Blood-borne Pathogens Standard and Universal Precautions

The **Blood-borne Pathogens Standard** was enacted to protect any individual who might reasonably contact blood or other possible infectious material in the normal course of performing their job or laboratory procedure.

C. 2. Universal Precautions refers to a standard method of infection control in which **ALL** human blood and certain human body fluid specimens are treated as if known to be infectious for HBV, HCV, HIV, and other pathogens.

- a. Universal Precautions apply to the following potentially infectious fluids:
 - Amniotic
 - Blood
 - Cerebrospinal
 - Pericardial
 - Peritoneal
 - Pleural
 - Saliva
 - Semen
 - Vaginal Secretions
- b. Universal Precautions *do not* apply to the following body fluids unless they are visibly contaminated with blood:
 - Feces
 - Nasal Secretions
 - Sputum
 - Sweat
 - Tears
 - Urine
 - Vomitus

D. Standard Precautions:

This is the guideline to which the MLS Teaching Laboratory adheres.

In 2007, the CDC published new guidelines which synthesized the major features of Universal Precautions and Body Substance Isolation to prevent transmission of a variety of organisms. Standard Precautions represent minimum infection prevention measures that apply to all patient care. Standard Precautions include guidelines on hand hygiene, use of personal protective equipment, respiratory hygiene and cough etiquette, safe injection practices, and safe handling of potentially contaminated equipment or surfaces. Standard Precautions imply that “all blood and body fluids are potentially infectious and should be treated accordingly.”

E. Biosafety Levels (Biosafety in Microbiological and Biomedical Laboratories, 5th Edition (BMBL5), 2009 (<https://www.cdc.gov/biosafety/publications/bmbl5/>))

1. The principal hazardous characteristics of an agent are: its capability to infect and cause disease in a susceptible human or animal host, its virulence as measured by the severity of disease, and the availability of preventive measures and effective treatments for the disease.
2. **Biosafety level 1 (BSL-1)** is the basic level of protection and is appropriate for agents that are not known to cause disease in normal, healthy humans.
3. **Biosafety level 2 (BSL-2)** is appropriate for handling moderate-risk agents that cause human disease of varying severity by ingestion or through percutaneous or mucous membrane exposure.
4. **Biosafety level 3 (BSL-3)** is appropriate for agents with a known potential for aerosol transmission, for agents that may cause serious and potentially lethal infections and that are indigenous or exotic in origin.
5. Exotic agents that pose a high individual risk of life-threatening disease by infectious aerosols and for which no treatment is available are restricted to high containment laboratories that meet **biosafety level 4 (BSL-4)** standards.

Table 2 gives more details. See below.

Table 2. Summary of Recommended Biosafety Levels for Infectious Agents

BSL	Agents	Practices	Primary Barriers and Safety Equipment	Facilities (Secondary Barriers)
1	Not known to consistently cause diseases in healthy adults	Standard microbiological practices	<ul style="list-style-type: none"> No primary barriers required. PPE: laboratory coats and gloves; eye, face protection, as needed 	Laboratory bench and sink required
2	<ul style="list-style-type: none"> Agents associated with human disease Routes of transmission include percutaneous injury, ingestion, mucous membrane exposure 	BSL-1 practice plus: <ul style="list-style-type: none"> Limited access Biohazard warning signs “Sharps” precautions Biosafety manual defining any needed waste decontamination or medical surveillance policies 	Primary barriers: <ul style="list-style-type: none"> BSCs or other physical containment devices used for all manipulations of agents that cause splashes or aerosols of infectious materials PPE: Laboratory coats, gloves, face and eye protection, as needed 	BSL-1 plus: <ul style="list-style-type: none"> Autoclave available
3	Indigenous or exotic agents that may cause serious or potentially lethal disease through the inhalation route of exposure	BSL-2 practice plus: <ul style="list-style-type: none"> Controlled access Decontamination of all waste Decontamination of laboratory clothing before laundering 	Primary barriers: <ul style="list-style-type: none"> BSCs or other physical containment devices used for all open manipulations of agents PPE: Protective laboratory clothing, gloves, face, eye and respiratory protection, as needed 	BSL-2 plus: <ul style="list-style-type: none"> Physical separation from access corridors Self-closing, double-door access Exhausted air not recirculated Negative airflow into laboratory Entry through airlock or anteroom Hand washing sink near laboratory exit
4	<ul style="list-style-type: none"> Dangerous/exotic agents which post high individual risk of aerosol-transmitted laboratory infections that are frequently fatal, for which there are no vaccines or treatments Agents with a close or identical antigenic relationship to an agent requiring BSL-4 until data are available to redesignate the level Related agents with unknown risk of transmission 	BSL-3 practices plus: <ul style="list-style-type: none"> Clothing change before entering Shower on exit All material decontaminated on exit from facility 	Primary barriers: <ul style="list-style-type: none"> All procedures conducted in Class III BSCs or Class I or II BSCs in combination with full-body, air-supplied, positive pressure suit 	BSL-3 plus: <ul style="list-style-type: none"> Separate building or isolated zone Dedicated supply and exhaust, vacuum, and decontamination systems Other requirements outlined in the text

F. Limiting Exposure to Infectious Agents

1. Engineering Controls

- a. Per NIOSH, "Engineering controls protect workers by removing hazardous conditions or by placing a barrier between the worker and the hazard. Examples include local exhaust ventilation to capture and remove airborne emissions or machine guards to shield the worker." (<http://www.cdc.gov/niosh/engcontrols/>)
- b. Examples encountered in the MLS Teaching Laboratory include:
 1. Hand washing facilities
 2. Eyewash stations
 3. Sharps containers
 4. Orange biohazard signs, labels, and bags

2. Work Practice Controls or Administrative Controls

- a. **Work practice controls** are the *behaviors* required to use engineering controls effectively. Work practice controls include:
 1. Timely hand washing (before beginning laboratory procedures, after removing gloves, when visibly contaminated, before leaving the laboratory, and after using restroom facilities).
 2. The proper use and removal of personal protective equipment (including not wearing exposed or dirty lab coats outside the laboratory).
 3. Proper needle and sharps disposal.
 4. No eating, drinking, chewing gum, smoking, applying cosmetics or lip balm, or handling contact lenses in the laboratory.
 5. No mouth pipetting, splashing, or aerosolization occurs in the laboratory.
 6. Proper storage of food or drink in areas away from blood or OPIM.
- b. Personal electronic devices are prohibited in the Biosafety Level 2 (BSL2) laboratory.
 1. Cell phones: Faculty, staff, and students are allowed to have cell phones in the laboratory for **emergency purposes only**.
 - a. The cell phone must be kept in a pant or shirt pocket and not in the pocket of the lab coat and not on the benchtop. To answer or respond to a communication on the cell phone, the person must remove lab coat, wash hands, and exit laboratory area.
 - b. Use of a cell phone in the laboratory area for instructional purposes requires instructor permission. The device must be **sanitized before it is removed** from the laboratory.
 2. Recording device, laptop/tablet, and other digital devices: Students must have instructor permission to use a recording device, laptop/tablet, and other digital devices in the MLS Teaching Laboratory. The device must be **sanitized before it is removed** from the laboratory.
 3. Use of headphones and earbuds are not allowed in the laboratory.

For students sensitive to noise, disposable ear plugs will be provided upon request.

3. Personal Protective Equipment (PPE)

- a. Exposure to infectious agents may exist even when engineering and work practice controls are implemented. **Personal protective equipment (PPE)** is specialized clothing or equipment worn or used for protection against hazards. Personal protective equipment is used as an additional safeguard from contamination of clothing, skin, mucous membranes, or puncture wounds.
- b. Types of personal protective equipment available for use in the MLS Teaching Laboratory include:
 - i. Gloves
 - (A) Gloves provide an effective barrier, but disinfecting or washing them may enhance penetration of liquids
 - (B) Do not wash and re-use gloves.
 - (C) Discard gloves when visibly contaminated or torn into regular trash unless heavily contaminated.
 - ii. Laboratory coats
 - (A) Disposable laboratory coats are provided by the MLS Program
 - (B) Laboratory coats must be knee-length, buttoned and always worn in the MLS Teaching Laboratory, regardless of the activity.
 - iii. Masks /eye protection
 - (A) Eye protection (safety glasses or goggles) is provided for students and should be worn any time that body fluids (including blood and blood serum) are handled in the MLS Teaching Laboratory. Eye protection is also required during use of chemicals, as described in Section II, Chemical Safety.
 - (B) Personal prescription safety glasses must have side shields and be decontaminated with a freshly made 1:10 dilution household bleach solution before leaving the lab. Household bleach is 5.25% w/v sodium hypochlorite.
 - (C) Usually, prescription glasses are *not* a substitute for safety glasses, but can be worn under many of the goggles and safety glasses available in the MLS Teaching Laboratory.
 - (D) Standard surgical masks are also available. (Surgical masks provide minimal protection from aerosols and air-borne contaminants. Respirator masks can be obtained for students with severe respiratory conditions and on recommendation of a physician but must be specially fitted and tested.)
 - (E) Masks and eye protection must be worn together. Goggles and a properly fitted surgical mask substitute for a face shield.

- iv. Face shields
 - (A) Provide an alternative to a mask and eye wear worn together.
 - (B) Clean appropriately if contaminated.
- v. Gloves, masks, eye protection, and face shields are provided at no additional charge to the student. Latex-free nitrile gloves are the standard for MLS Teaching Laboratory use.
- vi. If blood or OPIM contaminates clothing, the clothing must be removed and placed in an appropriately designated area or container. Notify a faculty or staff member immediately.
- vii. If a laboratory coat becomes contaminated, it is important to remove the garment in such a way as to avoid contacting the outer surface. If the contamination penetrates the inner surface of the coat, use extreme caution when removing. Any contaminated clothing must also be removed. Students are advised to have an extra set of clothes in their laboratory lockers in the event of contamination to their personal clothing.
- viii. All personal protective equipment must be removed before leaving the laboratory. If equipment has become contaminated, check for exposure of non-intact skin, and wash appropriately, if necessary; also notify a faculty member. The equipment (for example, goggles or face shields) must also be appropriately cleaned before storing.

NOTE: Faculty or staff can require specific PPE at any time.

C. Decontamination Procedures

1. Cleaning a spill of blood, body fluids, or cultured organisms:
 - a. Always wear gloves (puncture-resistant utility gloves are best) and a lab coat.
 - b. Contain the spill: cover an area that extends beyond all visible material and liquid with disposable, absorbent material (gauze pads or paper towels) absorb the spill with a disposable (gauze pad or tissue paper towel).
 - c. Saturate the absorbent material with a freshly made 1:10 dilution of household bleach. If the spill is large, use a less dilute solution of bleach. Start pouring or squirting at the outer edge of the absorbent material and work toward the center, generously saturating all the material. A 15–20-minute contact time is recommended, but it also depends on the spill.
 - d. For other disinfectants, carefully follow the manufacturer's instructions). Keep the material moist. Add more disinfectant if necessary.
 - e. Discard everything into the appropriate container by using the biohazard- designated dustpan and brush. If there is no broken glass or other "sharps" in the spill, it can be discarded into a biohazard bag. If the spill contains broken glass, everything, including all the absorbent material, should be discarded into a large sharps container. Do not remove broken glass from the debris.

2. Decontaminating and cleaning pipets and glassware:

- a. Because of their potential to puncture, all serological pipets, either glass or disposable plastic, and all pipette tips, whether used to manipulate blood, blood products or other potentially infectious materials (OPIMs) **CANNOT** be disposed in any plastic bags. All disposable pipets used for handling potentially infectious materials are considered contaminated sharps and must EITHER be decontaminated prior to disposal in a broken glass container OR must be disposed in a rigid, closable, appropriately labeled sharps container constructed to contain all contents and prevent leakage. Also, any item that has a pointed end or can poke through a biohazard bag should be disposed of in a sharps container; this includes wooden applicator sticks, glass pipets, glass microscope slides and cover glasses, and broken glass tubes. Intact glass tubes should be gently placed in biohazard bags to prevent breakage.
- b. Pipettes and glassware that have not been exposed to biological specimens, but have transferred or stored reagents and chemicals, must be placed in appropriate containers for cleaning.

3. Decontaminating and cleaning instruments or equipment:

- a. Instruments or equipment that have been in contact with infectious materials must be handled carefully.
- b. Refer to the instrument-specific manual to determine the appropriate cleaning procedure. If no procedure is specified, wearing gloves and a laboratory coat, clean with soap and a freshly made 1:10 dilution of household bleach until no blood or contaminants are visible.
- c. Autoclave any parts of an instrument or equipment that can be placed in the autoclave.
- d. Dispose of cleaning towels in appropriate biohazard containers.

4. Routine Decontamination:

All equipment and working surfaces, including bench tops, are to be cleaned and decontaminated with an appropriate disinfectant (freshly made 1:10 dilution of household bleach solution) routinely before and after completing laboratory sessions. In addition, surfaces must be disinfected immediately after becoming contaminated. The surfaces should be left damp with the disinfectant.

5. Disposal of Contaminated Materials:

- a. Dispose all materials and specimens used in the MLS Teaching Laboratory in biohazard bags or sharps containers that will be autoclaved. Such materials and samples include, but are not limited to, Petri dishes with organisms, agar, and broth tubes with organisms, EDTA and citrated blood tubes, blood culture bottles, and tubes containing serum. **Dispose of paper towels used to decontaminate work surfaces in a biohazard container.** Dispose of paper towels used for drying hands in a regular trash receptacle.
- b. Figure 1 illustrates an Occupational Safety and Health Administration (OSHA) approved biohazard label that identifies acceptable biohazard disposal receptacles. This symbol should be found on all sharps containers and biohazard bags in the MLS Teaching Laboratory.

Figure 1: Biohazard Label



Section III. Chemical Safety

A. Introduction

Certain chemical substances used in the MLS Teaching Laboratory are potentially hazardous. These hazards depend on the physical and chemical properties of the materials. Knowing how to properly move and store chemicals, as well as what to do in case of an accident, will minimize danger from exposure.

B. Hazardous Chemicals

1. Hazardous chemicals are those substances that pose a risk of damage to the lungs, skin, eyes, or mucous membranes following short or long-term exposure. Per OSHA (OSHA Hazard Communication: Standard; <https://www.osha.gov/Publications/OSHA3844.pdf>) these include any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified.
 - a. Physical hazard means a chemical that is classified as posing one of the following hazardous effects: explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid or gas); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; or in contact with water emits flammable gas.
 - b. Health hazard means a chemical that is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard.
 - c. Simple asphyxiant hazard means a substance or mixture that displaces oxygen in the ambient atmosphere and can thus cause oxygen deprivation in those who are exposed, leading to unconsciousness and death. Simple asphyxiants are of particular concern in enclosed spaces. Some examples of simple asphyxiants include nitrogen, helium, neon, argon, krypton, and xenon.
2. Hazardous chemicals may be categorized as follows:
 - a. Organic Solvents
 - i. In general, solvents are liquids capable of dissolving or dispersing other substances. In the laboratory, organic solvents are generally light hydrocarbons used for solubilizing lipids or extracting desired substances from a non-miscible aqueous solution. They are usually volatile and can often penetrate the skin. Work in a well-ventilated area when using solvents.
 - b. Corrosives (Caustics)
 - i. The major classes of corrosive chemicals are strong acids (pH < 2.1), highly alkaline bases (pH > 12.5), dehydrating agents, and oxidizing agents. Mixing should always be performed by adding the **chemical to water** to avoid a possibly violent reaction and subsequent spattering.
 - ii. Corrosives, if inhaled or ingested, cause severe damage to the gastrointestinal and respiratory tracts. Some substances, like sulfuric acid, penetrate deep into tissues and cause serious burns. Other corrosives may be extremely damaging to the eyes.

Immediately irrigating the exposed tissue with water is critical. Continued flushing with water for a minimum of 15 minutes is essential in minimizing tissue damage. If the eyes have been affected, they must be rinsed thoroughly while the eyelids are held open.

c. Irritants

- i. These substances cause reversible inflammatory effects on living tissue by chemical action at the site of contact.
- ii. Formaldehyde is both an irritant and a potential carcinogen. OSHA has issued a specific formaldehyde standard that recognizes the hazards associated with the use of formaldehyde in the laboratory. An aqueous solution of formaldehyde is called "formalin." It is used to preserve fecal parasites for laboratory examination as well as to fix tissue specimens for anatomic pathology.

d. Carcinogens

- i. Carcinogens are actual or potential cancer-causing agents. Per OSHA (OSHA Hazard Communication: Hazard Classification Guidance for Manufacturers, Importers, and Employers. OSHA 3844-02 2016), carcinogen are substances or mixtures of substances which induce cancer or increase its incidence. Substances and mixtures which have induced benign and malignant tumors in well-performed experimental studies on animals are considered also to be presumed or suspected human carcinogens unless there is strong evidence that the mechanism of tumor formation is not relevant for humans.
- ii. Widely recognized carcinogens are benzene and toluene. Small amounts of the weak carcinogen alpha-naphthol (1-naphthol) are used to develop the Voges-Proskauer reaction in microbiology. Ethidium bromide, a powerful mutagen, is used to visualize DNA in molecular diagnostics. Students must carefully follow instructions for the use and disposal of these reagents.

e. Toxins (Poisons)

Many chemicals are toxic or poisonous, and cause illness or death, when relatively small amounts are inhaled, swallowed, or absorbed through the skin. Toxic effects may be either local or systemic. Metallic mercury and its compounds are toxic. OSHA standards specify permissible exposure limits (PELs) to OSHA-regulated toxic chemicals. A PEL identifies the level and duration of allowable exposure to a particular toxic chemical. Check warning labels and other available information to determine if a chemical is toxic.

f. Ignitables

Per OSHA, ignitables are solids, liquids, or compressed gasses which are capable of being set afire. These chemicals include both combustible and flammable liquids, as defined by their flash points. The flash point is the lowest temperature at which a liquid emits vapors in such quantities that, when combined with air near the surface of the liquid, forms an ignitable mixture. Flammable liquids have a flash point below 100 °F. OSHA defines combustible liquids as those substances with a flash point at or above 100 °F but below 200°F. Acetone and ethanol are flammable liquids while acetic acid is a combustible liquid. Avoid open flames and sparks and ensure proper ventilation when handling or storing flammables.

g. Explosives (Reactives)

Explosive chemicals are reactive and unstable substances that explode easily and sustain a violent chemical change, often at normal temperatures and pressures. Store and handle explosives according to the SDS.

C. Chemicals in the Clinical Laboratory

1. Common hazardous chemicals found in clinical laboratories include:

acetone	glutaraldehyde
acetic acid	isopropanol
any common concentrated acid (hydrochloric, nitric, sulfuric)	methanol
any common concentrated base (sodium hydroxide, ammonium hydroxide)	toluene
ethanol	xylene
formaldehyde	

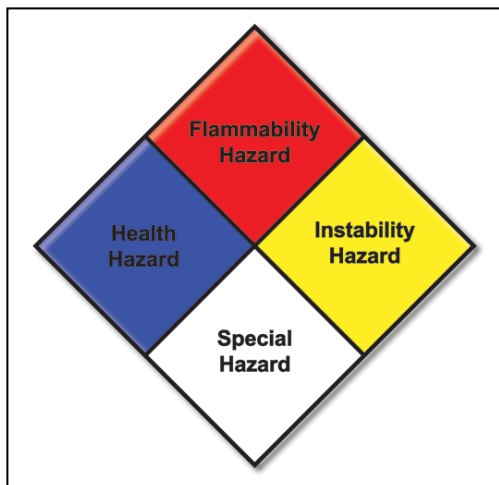
2. The OSHA permissible exposure limits (PEL) for chemicals can be found at the OSHA website; Permissible Exposure Limits – Annotated Tables (<https://www.osha.gov/dsg/annotated-pels/index.html>). Students must take the time to read procedures carefully before performing *any* laboratory test to avoid exceeding the PEL for any substance.

D. Product Warning Labels Used in Laboratories

1. NFPA System

Labels warning of a hazard should be affixed to a chemical or product. The National Fire Protection Association (NFPA) developed the Hazard Identification System (HIS). The basic HIS symbol consists of four small square diamonds in a larger diamond, each color-coded to indicate a specific hazard. The numerical rating of 0 – 4 shows the severity of the hazard.

Figure 2: National Fire Protection Rating System (NFPR)



Health Hazards (blue:

0 = No hazard.

1 = Can cause irritation if left untreated.

2 = Can cause injury. Requires prompt treatment.

3 = Can cause serious injury despite medical treatment.

4 = Can cause death or injury despite medical treatment.

Flammability (red)

0 = Will not burn.

2 = Ignites after considerable preheating.

3 = Ignites if moderately heated.

3 = Can be ignited at all normal temperatures.

4 = Very flammable gases or very volatile flammable liquid.

Reactivity (yellow)

0 = Normally stable. Not reactive with water.

1 = Normally stable. Unstable at high temperature and pressure. Reacts with water.

2 = Normally unstable but will not detonate.

3 = Can detonate or explode but requires strong irritating forces or heating.

4 = Readily detonates or explodes.

Special Hazards (white)

OX = Oxidizer

ACID = Acid

ALK = Alkali

COR = Corrosive

SA = Asphyxiant

-- W -- = Reacts violently or explosively with water

The NFPA hazard sign is most often displayed on commercial product labels. However, when a chemical is transferred from its original container, the new container must be labeled to indicate the identity of the contents and appropriate hazard warnings. The hazard labeling is not required if the contents of the secondary container are completely used, during the same shift or laboratory session, by the same individual who originally transferred the chemical. The label must include the following information:

- Name of reagent
- Reagent concentration
- Initials of person who prepared the reagent
- Date of preparation
- Expiration date
- Special storage requirements

2. HMIS System

The National Paint and Coatings Association developed the Hazardous Materials Information System (HMIS) that also uses a numerical rating system color-coded by category to indicate the potential degree of hazard associated with a chemical material. The HMIS method specifies the PPE that should be used when handling a chemical with a letter-coding system and representative pictographs.

Figure 3: Hazardous Materials Information System (HMIS)

Source: safetysign.com

HAZARD INDEX		PERSONAL PROTECTION INDEX	
4	Severe Hazard	A	G
3	Serious Hazard	B	H
2	Moderate Hazard	C	I
1	Slight Hazard	D	J
0	Minimal Hazard	E	K
* An asterisk or other designation corresponds to additional information on a data sheet or separate chronic effects notification		F	X
HEALTH <input type="checkbox"/> <input type="checkbox"/> FLAMMABILITY <input type="checkbox"/> PHYSICAL HAZARD <input type="checkbox"/> Personal Protection		Consult your supervisor or S.O.P. for "Special" handling directions	
		A	n
		o	p
		q	r
		s	t
		u	w
		y	z

E. Safety Data Sheets (SDS)

1. Per OSHA, "The Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)), revised in 2012, requires that the chemical manufacturer, distributor, or importer provide Safety Data Sheets (SDSs) (formerly MSDSs or Material Safety Data Sheets) for each hazardous chemical to downstream users to communicate information on these hazards. The information contained in the SDS is largely the same as the MSDS, except now the SDSs are required to be presented in a consistent user-friendly, 16-section format." (Hazard Communication Standard: Safety Data Sheets. OSHA 3514)
2. The SDS should include the following information:

Section 1: Identification

Section 2: Hazard(s) Identification

Section 3: Composition/Information on Ingredients

Section 4: First-Aid Measures

Section 5: Fire-Fighting Measures

Section 6: Accidental Release Measures

Section 7: Handling and Storage

Section 8: Exposure Controls/Personal Protection

Section 9: Physical and Chemical Properties

Section 10: Stability and Reactivity

Section 11: Toxicological Information

Section 12: Ecological Information (non-mandatory)

Section 13: Disposal Considerations (non-mandatory)

Section 14: Transport Information (non-mandatory)

Section 15: Regulatory Information (non-mandatory)

Section 16: Other Information [when the SDS was prepared, when the SDS was last revised, where the changes have been made to the previous version, etc.]

3. Household chemicals that can be purchased by the consumer for personal use in the same concentration as what is used in the clinical laboratory (substances like bleach or sink cleaners) do not have to be listed in the chemical inventory, nor do they require an SDS.

F. Handling of Chemicals

1. Know how to identify hazardous chemicals and know what special warning labels mean.
2. Use the SDS to learn specific hazards of a chemical as well as any special handling requirements and emergency and first aid requirements.
3. Ensure ventilation is adequate for the chemical being handled.
 - a. Wear approved respirators when the air may be contaminated with harmful fumes, mists, gases, or vapors.
 - b. Use a fume hood for any procedure which might result in the release of toxic chemical vapors.
 - i. Generally, a hood or local ventilation device should be used when working with any perceived volatile substance. Leave the hood on when not in active use if toxic substances are also stored within the hood. Work toward the center of the hood and avoid using the first six inches behind the opening. Also, while working in the hood, notify the instructor immediately if fumes are smelled.
 - ii. The student should be able to explain the difference between a fume hood and a biosafety cabinet. Because of the delicate nature of the filters in a biosafety cabinet, caustic and volatile chemicals should never be used there. Conversely, the strong exhaust pressure and lack of filters make a fume hood an inappropriate area to handle cultures, body fluids and other biohazardous materials.
4. Personal protective equipment and clothing/Tips for handling chemicals
 - a. Eye protection: Safety glasses with side shields, chemical goggles or face shields must be worn when pouring chemicals and cleaning up spills (or whenever there is a possibility of splashing). Do not wear contact lenses when handling chemicals that could splash or emit dangerous vapors. (Vapors can seep under lenses and get trapped.)
 - b. Gloves: Nitrile gloves (not latex) must be worn when the potential for contact with toxic materials exists. Inspect the gloves before each use and replace them frequently to avoid contaminating other objects or yourself. Wash hands and other exposed skin after removing gloves. Do not wash and reuse gloves.
 - c. Lab coats: Protective clothing must be worn properly to keep clothes and skin free of chemicals. Carefully remove any clothing that has been contaminated (or is suspected of being contaminated) with toxic chemicals, dusts, fumes, or liquids.
 - d. Flush the outside of acid bottles with water before opening them.
 - e. *Pour **acid into water**; do not pour water into acid.*
 - f. Keep acids and other bottles containing corrosive chemicals tightly stoppered. Flush with water and dry them before storing or replacing on a shelf.
 - g. Do not lay stoppers down on any surface where persons may contact them and/or the residual reagent on the bench.
 - h. Carry beakers, reagents, and flasks with fingers around the body of the container. Do not grasp or carry containers by holding the edge of the lip.

- i. Do not stopper bottles of alkaline solutions, or solutions containing significant quantities of soluble salts, with glass stoppers.
 - i. There is a high probability that the stopper will stick in the neck of the bottle. This tightness results because of etching of the glass at the stopper, by evaporation of the solution, or because of the formation of adducts binding the glass. Clean, washed artificial rubber stoppers or Teflon-lined screw caps should be used.
- j. When heating liquids on a hot plate, use beaker covers, if available, to prevent spattering.
- k. *Always* wipe bench tops clean. Drops of acid or other corrosive chemicals may cause severe burns.
- l. *Always* use a suction filler or bulb when pipetting chemicals.

G. Storage of Chemicals

The storage of hazardous chemicals is partly controlled by standards set by governmental agencies as well as other factors, such as the environmental controls of the building. Efforts have been made to maintain the storage of hazardous chemicals used in the MLS Teaching Laboratory in the most acceptable manner. The following are general guidelines for the storage of chemical hazards regardless of the setting.

1. Every chemical should have a specific storage place and should be returned to the location after use.
2. Only use approved storage containers.
3. Obtain breakage protection for large glass bottles. Use rubber bottle carriers for containers of concentrated reagents containing more than 500 mL if available.
4. Store large containers near the floor to minimize the danger of falling.
5. If possible, store chemicals on shelves with lips or raised edges to reduce the possibility of a container falling off and to minimize leaks or spills should they occur. Try to avoid storage on bench tops and in hoods.
6. Store the smallest amounts of chemicals as practical.
7. Replace chemicals that are no longer used, that show signs of deterioration, or whose container is old, leaking, or corroded.
8. Do not store water-reactive chemicals where contact with water might occur; likewise, avoid exposure to heat or direct sunlight.
9. Separate chemicals that are potentially incompatible and that might react with one another to produce an explosive, toxic, or flammable product. For example, store acids in an acid cabinet and store flammable chemicals in a flame cabinet.
10. Isolate toxic chemicals from other substances and store them in an identified area that is cool, well-ventilated, and away from moisture, light, heat, acids, and oxidizing agents.
11. Secure cylinders of compressed gases to a wall or counter and stored in well-ventilated, dry areas and away from corrosive chemicals, vapors, or sources of ignition.

12. The storage of flammable liquids requires special procedures:

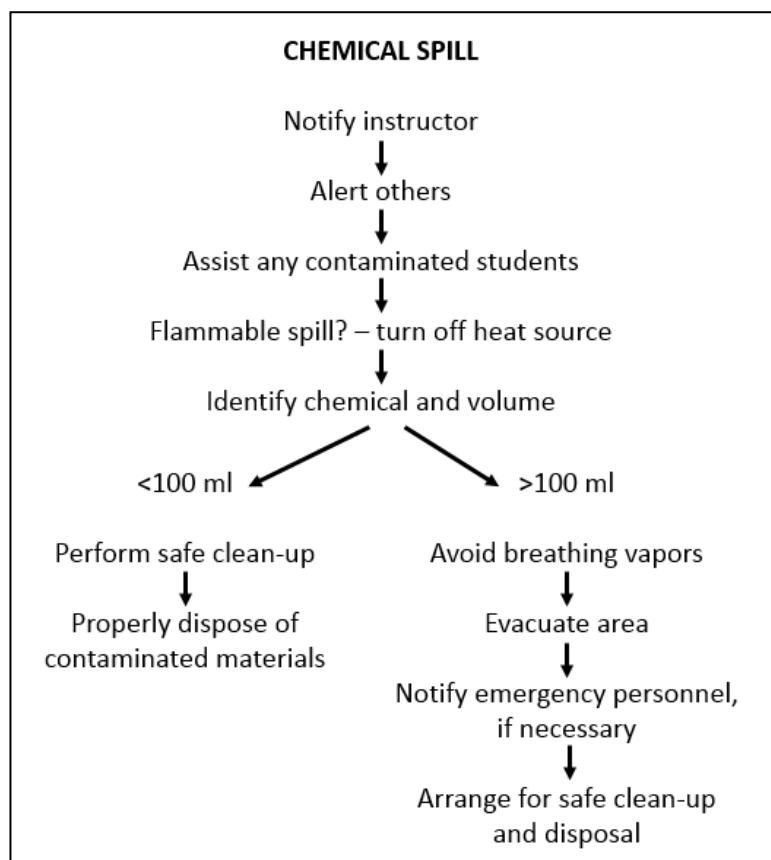
- a. Store containers of one gallon or less in a solvent storage cabinet.
- b. Bottles used at the bench should not exceed one pint (almost 500 mL).
- c. Ethyl ether should be stored either in a storage room or in an explosion-proof refrigerator.
- d. Flammable organic extracts should be placed in an explosion-proof refrigerator or freezer.
- e. All aisles and exits near flammable storage cabinets should be open and not blocked.
- f. Ensure that accidental exposure to strong oxidizing agents is not possible.
- g. Store flammables away from any possible source of ignition.

H. Spills and Exposures

1. All spills should be cleaned up using appropriate safety procedures, described below. If there is any question what to do, ask your instructor. The **UNM Environmental Health and Safety Duty Officer at 505-951-0194 is available to answer additional questions.**
2. Cleaning:
 - a. First, report the incident to the laboratory instructor.
 - b. For spills greater than 100 mL:
 - i. Consult the appropriate SDS or product label for information regarding spills and leaks, cleanup techniques, and personal protective equipment to be worn during a cleanup.
 - ii. Avoid breathing vapors.
 - iii. Remove all sources of ignition.
 - iv. Evacuate the area immediately.
 - v. Warn others of the hazard.
 - vi. Notify emergency personnel, if necessary.
 - vii. Arrange for the safe cleanup of the chemical using a commercially available spill kit or by notifying the institutional spill control team by calling: **UNM Environmental Health and Safety Duty Officer at 505-951-0794**
 - viii. ***If it is a biohazard spill***, contain spill with absorbent material then saturate the material with a freshly made 1:10 dilution of household bleach solution from the edges inward. Let stand 20 minutes as described above. Wipe up the absorbent material then dispose in biohazard bag. Wipe spill area with more 1:10 bleach. Wash hands.
 - c. For Spills less than 100 mL:
 - i. Wear nitrile gloves and other appropriate protective clothing.
 - ii. Absorb the spill with paper towels.
 - iii. ***If it is a biohazard spill***, **spray** spill with freshly made 1:10 bleach solution and let stand 20 minutes. Wipe up spill and dispose in biohazard bag. Wipe spill area with 1:10 bleach. Wash hands.

- iv. Contact the **University Biosafety Officer (505-272-5993; 505-272-8001)** for the proper disposal of waste generated from spills.

Figure 4: Chemical Spill Protocol



3. Contact Exposure
- Notify the laboratory instructor immediately.
 - Flush copiously with water and wash with soap and water.
 - Remove any contaminated clothing.
 - If the eyes or mucous membranes are involved, flush with water for at least 10 – 15 minutes by using a sink eyewash. Eyewash stations and safety showers are located by supply room and prep room in Lab Room 230. Go either immediately to University Hospital Emergency Room, escorted by MLS faculty or staff, or directly to the Student Health Center, for medical evaluation and follow-up. For life threatening injury or illness call emergency medical services by dialing 911.**
 - Refer to <https://ehs.unm.edu/accident-incident-spill-reporting/index.html> or refer to Risk Services page (<https://risk.unm.edu/reporting-an-incident.html>). Report to the MLS Program and the Department of Risk Services within 24 hours of the incident.

- f. If severe burns are involved, apply cold wet cloths, gauze, or paper towels, and immediately seek medical attention as above.
- g. If there is a liquid nitrogen contact, treat it as frostbite; apply cold water and seek medical attention as above.

4. Post-Exposure/Injury Procedures

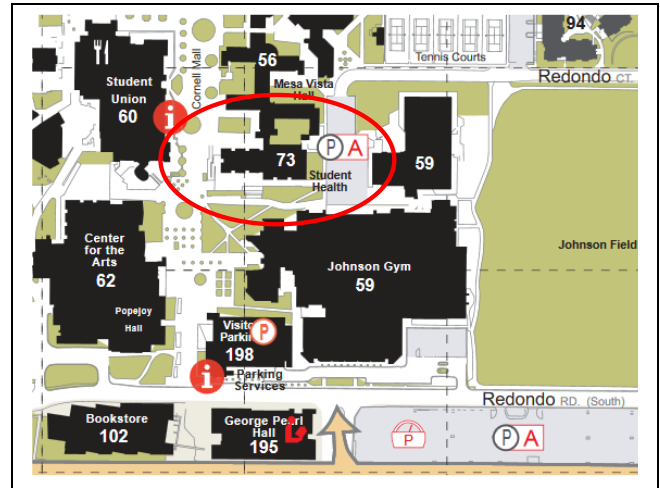
If there is an exposure of potential blood-borne pathogens to non-intact skin or mucous membranes (such as a needle stick or splashing in the eyes), or a chemical exposure or other serious injury, the student should proceed as follows, depending on his / her location.

a. In the MLS Teaching Laboratory:

- i. Immediately notify the laboratory instructor.
- ii. Perform appropriate first-aid procedures to include washing the skin or wound with soap and water or flood the affected mucous membranes with water.
- iii. Go immediately to the University Hospital Emergency Room, escorted by MLS faculty or staff.
- iv. Working with MLS faculty or staff, complete online form located on the UNM Risk Services website (<https://risk.unm.edu/>) and submit a PDF copy of the completed form to the MLS Program. See Appendix II for more information.

NOTE: During laboratory sessions in MLS, the student is covered by personal insurance and UNM Needle stick insurance (<https://shac.unm.edu/services/allergy-immunization/blood-body-fluid-exposure.html>) and not the university.

A detailed map of the University of Michigan Medical Center campus. The map shows various buildings labeled with numbers: 234, 266, 299B, 299C, 228, 253, 211 (Basic Medical Sciences Building), 201, 264, 227, 235A, 235 (University Hospital), 269, and 2. A red arrow starts at a red 'P' in a parking lot at the top left and points down to building 235. Building 235 is circled in red and has a blue 'H' icon next to it. A red 'P' with the word 'Admin' is located at the bottom right. The map also shows streets and green spaces.



Student Health & Counseling (SHAC) is on main campus north of Johnson Center and across the mall from (east of) the Student Union Building (SUB)

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I. Disposal

The exact procedures in which chemical wastes are discarded varies from substance to substance. The following are guidelines to be used:

1. Spent solvent wastes:

This type of waste must be deposited in a separate container labeled as “solvent waste” and discarded according to university policy.

2. Concentrated acids or bases:

These chemicals are not to be poured down the sewer. If properly diluted with copious amounts of running water, they may be discarded down a chemical sink.

3. Formalin, methanol, and ethanol:

These chemicals may be discharged into the sewer system.

4. Malodorous, lachrymatory (chemical that causes tears, pain, and blindness), highly toxic substances, and flammable chemicals:

Such substances must *never* be discarded into the sewer system. Consult the instructor and the SDS for the proper disposal methods.

NOTE: The University of New Mexico has a detailed system for hazardous waste management which can be found on the website for UNM Environmental Health and Safety at <https://ehs.unm.edu/> . All chemicals used in the MLS Teaching Laboratory are listed with the **UNM Environmental Health and Safety**. The list is available upon request.

Section IV. Fire Safety

A. Introduction

1. Many potential fire hazards exist in the MLS Teaching Laboratory. Knowing basic concepts associated with flammable substances, guidelines for fire prevention, and specific procedures for fire protection can ensure the MLS Teaching Laboratory is a safe place to work and learn.
2. Three factors must exist simultaneously for a fire to occur: fuel, oxygen, and an ignition source. The most practical methods for fire control involve restricting contact between flammable substances and an ignition source.

B. Sources of Fire

1. Flammable Substances
 - a. Flammable materials readily catch fire and liquids may emit vapors that can burn or explode.
 - b. Liquids
 - i. Common flammable liquids in the clinical laboratory are solvents which release vapors that burn.
 - ii. The **flash point** of a liquid is the lowest temperature at which it emits vapors in such quantities that, when combined with air near the surface of the liquid, forms an ignitable mixture.
 - iii. Liquids with low flash points, high vapor pressures, and a wide flammability range have the greatest potential for catching on fire.

Table: Common flammable liquids used in the clinical laboratory and their flash points

<u>Chemical</u>	<u>Flash Point (°C / °F)</u>
Acetic acid	39 / 102.2
Acetic anhydride	49 / 120.2
Acetone	-18 / -0.4
Benzene	-11 / 12.2
1-Butanol ¹	29 / 84.2
Ethanol (anhydrous)	13 / 55.4
Propanol (Isopropyl alcohol) ²	11.7 / 53.06
Methanol	12 / 53.6
Toluene	4 / 39.2
<i>m</i> -Xylene ³	27 / 80.6
<i>o</i> - Xylene ⁴	32 / 89.6
<i>p</i> - Xylene ⁵	27 / 80.6

- 1 *n*-butanol, Butyl alcohol, *n*-butyl alcohol, Propyl carbinol
- 2 Ethyl methyl ketone, 2-Butanone, MEK, Methyl acetone
- 3 meta-Xylene, 1,3-Dimethylbenzene
- 4 ortho-Xylene, 1,2-Dimethylbenzene
- 5 para-Xylene, 1,4-Dimethylbenzene

iv. Consider the following when storing flammable liquids:

(A) Quantities greater than one liter should be stored in metal containers, preferably safety cans.

(B) Small quantities in use at the bench should be stored in well-ventilated areas, away from exposure to direct sunlight.

c. Gases

i. Compressed and liquefied gases are dangerous.

ii. Be aware that during a fire, heat will raise enough pressure to rupture the cylinder.

d. Solids

i. Most combustible solids are fire safe unless ground into powder form.

ii. Magnesium and zinc dust may explode on contact with air. Use exhaust hoods with these chemicals.

iii. Metal solids like sodium react on contact with air and their moisture causes rapid oxidation that can result in ignition, handle with extreme caution.

iv. Peroxide-forming compounds (including ethyl ether, isopropyl ether, dioxene, tetrahydrofuran) are very sensitive to heat, friction, impact, light, oxidizing agents and reducing compounds. Peroxides should be handled as follows:

(A) Use minimal quantities.

(B) Use ceramic or wooden spatulas (instead of metal) to avoid metal contamination and possible explosive decomposition.

(C) Clean up spills with vermiculite.

(D) When disposing, dilute with water and then with a liquid-reducing agent such as ferrous sulfate or sodium bisulfate.

2. Sources of Ignition

a. Common ignition sources are open flames, electrical equipment, hot surfaces, spontaneous heating, sparks, static charges, friction, and overheating of flammable liquids.

b. Flammable substances and ignition sources should not come into contact.

- c. Ignition sources that demand special awareness are as follows:
 - i. Refrigerators
 - (A) Vapors released by low flash point flammable liquids have been ignited when non-explosion-proof refrigerators have been used for their storage (the light bulb or switch provided the ignition source).
 - ii. Static Electricity
 - (A) Lab coats made of synthetic fabrics may accumulate static electricity that will discharge with a spark near metallic objects.
 - iii. Electrical Equipment
 - (A) Motor-driven electrical equipment should have a non-sparking induction motor instead of a series-wound motor with carbon brushes.
 - (B) Non-sparking motors in vacuum pumps, mechanical shakers, stirring motors, magnetic stirrers and rotary evaporators ensure that flammable liquids will not ignite.

C. Fire Prevention

Any fire may be prevented by implementing safe laboratory practices as follows:

1. Do not use refrigerators for storage of flammables unless properly modified and labeled.
2. Avoid storing flammables in direct sunlight.
3. Ventilate areas where flammables are to be used.
4. Avoid filling low boiling point liquids to the top of a closed container.
5. Store flammable acids and bases separately.
6. Use proper disposal methods for flammables.
7. Do not use gasoline, alcohol, or other highly flammable volatile liquids for cleaning.
8. Empty containers should be rinsed three times with distilled water and disposed of with caps or stoppers removed.
9. Do not use a hot plate, gas, or flame to heat flammable solvents.
10. Any spilled liquid should be cleaned up immediately; sand or commercial absorbent will prevent spread and reduce the fire hazard.
11. Safety shielding should be worn during procedures with explosion risk.
12. Keep work areas obstruction-free.
13. Transfer flammable solvents by pouring through a stainless-steel funnel to which ground leads have been attached.

D. Fire Safety Equipment

Fire extinguishers: Types

1. Several types of fire extinguishers are available depending on the nature of the fire. The multipurpose (or ABC) extinguisher is often used in healthcare institutions because it reduces the confusion associated with choosing the type of extinguisher.

2. Each student has the responsibility to know the location of all fire extinguishers in the laboratory.

Table 4: Types of fires and appropriate extinguishers.

Class of Fire	Type of Fire	Type of Extinguisher
A	Wood, paper, cloth, trash, plastics	Water, CO ₂ , dry chemical
B	Flammable liquid, gases, grease	Dry chemical, CO ₂ , foam
C	Electrical	CO ₂ or vaporizing liquid nonconductor
D	Combustible metals (magnesium, sodium, potassium)	Dry chemical

3. Operation (the “**PASS**” procedure)
 - a. Pull pin.
 - b. Aim nozzle on horn at the base of the fire.
 - c. Squeeze the lever or handle.
 - d. Sweep the base of the fire.

E. Fire Protocol

1. Evaluate the Fire
 - a. Is it manageable, not spreading and not too smoky?
 - b. Is it small enough to manage with appropriate means or a fire extinguisher (trash can size or smaller)?

NOTE: *Only consider fighting a small, manageable fire like a wastebasket fire, non-spreading liquid fire, or an electrical fire where the plug can be safely pulled.*
2. Sound the Alarm
 - a. Pull the nearest alarm box. **Each student is responsible for knowing the location of fire alarms available to the laboratory.**
 - b. If access to the alarm is blocked, call 911 and report the fire, but the alarm box should always be activated first if possible.
 - c. Remove anyone from immediate danger.
 - d. Close all doors and windows in the area.
3. Calmly alert Others
 - a. Alert others in the area.
 - b. **DO NOT** shout, “Fire”, or incite panic.
4. Evacuate

- a. Immediately evacuate the laboratory and the building. The evacuation routes are posted in the MLS Teaching Laboratory. The evacuation routes can also be found inside the front cover of this manual.
- b. Walk — DO NOT RUN — to the nearest exit.
- c. Do not use the elevators.
- d. Assemble outside and wait for directions from the instructor; assist in identifying missing persons, if necessary.

F. Summary of Fire Safety

1. Precautions

- a. Know where the fire evacuation plan is located.
- b. Know where fire extinguishers and fire alarms are located.
- c. Maintain marked, unobstructed exits.
- d. Store flammables in explosion-proof cabinets and in safety cans.
- e. Keep sources of ignition away from flammables.
- f. Only use equipment approved by Underwriter's Laboratories (UL).
- g. Avoid using extension cords.
- h. Prohibit smoking in the laboratory.
- i. Dispose of flammables properly.

2. Do's and Don'ts

- a. Pull the alarm nearest the area of the fire.
- b. Report the fire.
- c. If the fire is small, attempt extinguishing it by using the proper extinguisher.
- d. If evacuation becomes necessary, use only stairwells for exiting.
- e. Close all windows and doors before leaving an area.
- f. STOP, DROP and ROLL: If clothing catches fire, drop to the floor and roll.
- g. If trapped in a fire, crawl to the exit; smoke rises, so breathing is easier at floor level; also, breathing through a wet towel helps.
- h. Do not block exits and do not re-enter a building.
- i. Do not panic.
- j. Do not run.

3. The acronym “**RACE**” is another useful method for remembering the proper response to a fire:
- a. **R** = Rescue — Rescue anyone in immediate danger; alert others to assist.
 - b. **A** = Alarm — If the fire alarms have not sounded, pull the nearest fire pulls.
 - c. **C** = Contain — Make sure all doors are closed. Turn off all fans, hoods, or other air-moving systems. Place water-saturated blankets or towels under doors to contain smoke. Turn off all oxygen sources.
 - d. **E** = Extinguish (or evacuate) — Extinguish the fire if your safety can be assured by smothering it with a fire blanket or with a fire extinguisher. Evacuate to the nearest “safe zone.”

Section V. Electrical Safety

A. Introduction

Electrical equipment may be a source of fire, burns, or electrical shocks. Care must be taken to minimize electrical hazards in the laboratory, especially since so much electrical equipment is used.

B. Causes of Electrical Hazards

1. Spilled liquids in contact with instrument circuit boards.
2. Broken or damaged instrument components.
3. Faulty cords or wires (especially ground wires).
4. Improper repairs to electrical equipment.

C. Precautions

1. All electrical equipment should be periodically inspected for current leakage, faulty cords, or damaged components.
2. Restrict the use of extension cords to only temporary or emergency use. Note that longer cords leak more current. Heavier gauge cords leak less.
3. All electrical equipment should be grounded and have three-pronged Underwriter Laboratory (UL), or Canadian Standards Association (CSA) approved plugs.
4. Immediately repair faulty cords or broken connectors.
5. Never overload electrical outlets or circuits.
6. Unplug electrical equipment before servicing (even if the service is as minor as replacing the light bulb in a microscope).
7. Use electrical equipment according to the manufacturer's directions.
8. Use a surge protector on sensitive electronic equipment (and computers) to allow for unexpected spikes in electrical power.
9. Signs and labels should be used to warn of the presence of high voltage equipment or other electrical hazards.
10. Report all shocks to the instructor, including minor tingles.
 - a. Small tingles may indicate a potentially greater problem.
 - b. Shut off the current or unplug the instrument.
 - c. Do not use an instrument that is causing shocks.

D. Electrical Emergency

1. Immediately call 9-911 if someone is experiencing electrical shock.
2. Call **UNM campus police dispatch at 505-277-2241** to report an electrical emergency and get the power turned off. Campus police will get hold of Facilities Maintenance.
3. Use a Class C fire extinguisher to control an electrical fire.
4. Do not attempt to turn off or unplug malfunctioning instruments or equipment because of the considerable danger of further injury.
5. Do not touch an individual who is receiving live current as the current can pass through the individual.
6. If the person is still in contact with the electrical source, only attempt to rescue the shocked individual by using a non-conductive material such as a wooden chair to move the individual away from the electrical source. Even this should be done extremely carefully, making sure the rescuer is not wet or standing in water, and is not wearing any conductive material such as necklaces, etc.
7. **If the electrical source is a high voltage source, no one should approach closer than 20 feet.** In all reality, the safest course is to get the experts on the scene as quickly as possible and let them handle it.

Section VI. Mechanical Safety

A. Introduction

Research and clinical laboratories utilize a variety of equipment and instruments. Mechanical hazards may result from improper use, storage, or disposal of glassware, sharps, or equipment. Some general guidelines follow below.

B. Equipment/Instruments

1. Cover the back of long hair, including beards, to avoid them being caught in moving parts of equipment or instruments.
2. Never stop a centrifuge with the hands but wait until it stops on its own.
3. Do not operate new or unfamiliar equipment or instruments without proper training and authorization.
4. Follow preventive maintenance schedules established by the instructor for equipment and instruments.

C. Glassware and Sharps

1. Handle glassware carefully to avoid breakage that could cause injury or infection.
2. Do not expose hot glassware to cold water. (Allow hot glassware to cool before washing or placing in a sink.)
3. Dispose of contaminated glass and sharp objects (micro capillary pipettes, Pasteur pipettes, and needles) in puncture-resistant containers.
4. Store sharp objects carefully to avoid skin punctures or cuts.
5. Wear safety goggles when using glassware on a burner.

Section VII. Accidental Exposure

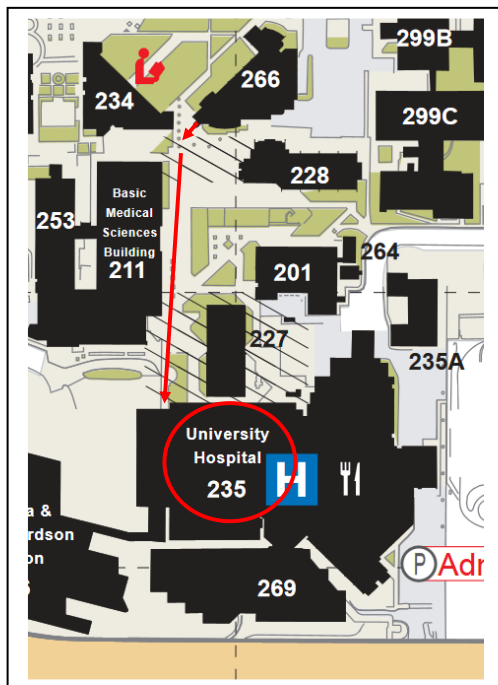
Post-Exposure/Injury Procedures

If there is an exposure of **potential blood-borne pathogens** to non-intact skin or mucous membranes (such as a needle stick or splashing in the eyes), or a chemical exposure or other serious injury, the student should:

A. In the MLS Teaching Laboratory:

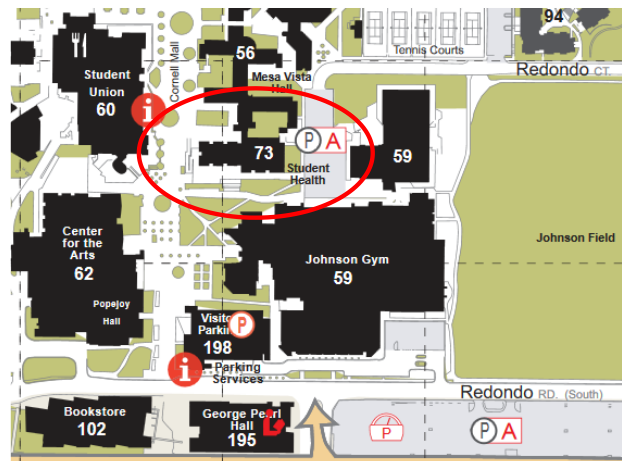
1. Immediately notify the laboratory instructor.
2. Perform appropriate first-aid procedures to include washing the skin or wound with soap and water or flood the affected mucous membranes with water.
3. Go immediately to the University Hospital Emergency Room, escorted by MLS faculty or staff.
4. Working with MLS faculty or staff, complete online form located on the UNM Risk Services website (<https://risk.unm.edu/>) and submit a PDF copy of the completed form to the MLS Program. See Appendix II for more information.
5. **NOTE: During laboratory sessions in MLS, the student is covered by personal insurance and UNM Needle stick insurance (<https://shac.unm.edu/services/allergy-immunization/blood-body-fluid-exposure.html>) and not the university.**

University Hospital



UNM Student Health Center

Student Health & Counseling (SHAC) is on main campus north of Johnson Center and across the mall from (east of) the Student Union Building (SUB)



B. In a Clinical Rotation

1. Immediately notify the education coordinator or supervising technologist.
2. Perform appropriate first-aid procedures to include washing the skin or wound with soap and water or flood the affected mucous membranes with water.
3. Go to nearest Hospital Emergency Room, escorted by clinical site individual.
4. Working with MLS faculty or staff, complete online form located on the UNM Risk Services website (<https://risk.unm.edu/>) and submit a PDF copy of the completed form to the MLS Program. See Appendix II for more information.
5. Working with clinical site management, complete and submit incident forms required by clinical site.

NOTE: During the clinical rotation, the student is considered a “student intern” and is covered by UNM Evidence of Coverage Policy. A current copy is in each rotation course in CANVAS.

C. Exposure to Blood or Body Fluids via Puncture or Mucous Membrane Exposure

What to expect if you are exposed to potentially infectious materials such as blood or body fluids via puncture (needle stick) or exposure to mucous membranes:

1. The student will be counseled by health care professionals about HIV risk and the possibility of prophylactic treatment.
2. A baseline blood sample will be drawn as soon as possible for HIV and Hepatitis C as well as to confirm Hepatitis B immune status and to determine the need for additional Hepatitis B vaccination.
3. A blood sample will be drawn for HIV testing at one week, 6 weeks, 3 months, and 6 months post-exposure.
4. A blood sample will be drawn for Hepatitis C testing at 6 months post-exposure.

Section VIII. Emergency Preparedness

An integral component of safety in the laboratory is emergency preparedness. Information providing guidance on recognizing and responding to potential hazards can be found on the website at <https://campussafety.unm.edu/emergency-communication.html> .

Campus Preparedness

1. As part of our preparation, the MLS Program will institute a “buddy system” so that each person will be accounted for in case of any disaster.
2. The three central themes for individual disaster preparedness are as follows:
 - a. Have an emergency kit. It is recommended that all faculty, staff, and students have an emergency kit. At minimum, kits should contain:
 - Drinking water (one gallon per day per person)
 - Food
 - Flashlight with fresh batteries
 - Important documents including phone numbers and descriptions of medical conditions
 - Medicine
 - Complete change of clothing, including shoes
 - Whistle or tapping device (so that potential rescuers can hear you)
 - Blanket
 - Personal hygiene goods
 - Plastic bags
 - NOAA all-hazards radio with fresh batteries
 - b. Make a plan.
 - i. Know your facility’s evacuation plan (evacuation plan for the MLS Teaching Laboratory can be found in the inside cover of this manual) and potential exit sites.
 - ii. The emergency point of assembly for the Health Sciences Service Building is shuttle stop if evacuating from lab Room 230 and HSC grass area if evacuating from Room 246 classroom
 - iii. Know where the nearest on-campus Emergency Blue Light Phone is located.
 - iv. Know how to contact [UNM Police Department](#) (505) 277-2241 or 911 from a campus phone.
 - c. Stay informed.
 - i. If you have not done so, go to UNM Lobo Alerts (<http://loboalerts.unm.edu/>) and sign up for Lobo Alerts.

B. Shelter in Place

In some instances, it is safer to shelter in place and wait for further instructions. Shelter in place orders are usually given to protect people from moving into an area where they could encounter danger. If you are instructed to Shelter in Place, then:

1. Lock or secure the door
2. Move away and stay away from windows and glass.
3. If possible, check for LoboAlerts or email alerts, or the UNM web page for updates and further instructions.
4. Do not call 911 or the UNM Police Department for information. Call *ONLY if you need immediate assistance or you are trapped.*
5. *Stay calm and stay put, Emergency Personnel will find you*
6. Don't leave your room until instructed by a Police Officer or authority figure.

C. The Warning Siren

If you hear the siren and there has been no advance notification, assume it to be a real alert and take these two actions:

1. **Step One:** Seek shelter in the nearest building
2. **Step Two:** Seek additional information from
 - a. [LoboAlerts](#)
 - b. [Email Alerts](#)
 - c. [UNM Emergency Management Web Page](#)
 - d. [Local Media](#)

D. UNM Police Services

The UNM Police Department offers safety escort services to anyone needing a safety escort from an **on-campus** location to another **on-campus** location 24 hours, 7 days a week. ***They do not provide safety escorts to off-campus locations.***

FOR EMERGENCIES: Call 911

For all other calls / UNM PD dispatch	(505) 277-2241
Escorts:	(505) 277-2241
Records:	(505) 277-3150
Lost and Found:	(505) 277-0081
UNM Security:	(505) 277-6059
UNM Hospital Security (North campus):	(505) 272-2160

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APPENDIX I: Pathogen Data Sheets

Below is a list of live biological agents with which students work in the Medical Laboratory Science Program. Pathogen Data Sheets for each organism can be obtained from the Public Health Agency of Canada (<https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment.html>).

Bacteria and Viruses:

<i>Acinetobacter calcoaceticus</i>	<i>Haemophilus parainfluenzae</i>	<i>Serratia</i> species
<i>Acinetobacter</i> species	<i>Klebsiella pneumoniae</i>	<i>Shigella</i> Group B
<i>Burkholderia cepacia</i>	<i>Listeria</i> species	<i>Staphylococcus aureus</i>
<i>Citrobacter freundii</i>	Methicillin Resistant <i>Staphylococcus aureus</i>	<i>Staphylococcus saprophyticus</i>
<i>Corynebacterim</i> species	<i>Micrococcus luteus</i>	<i>Stenotrophomonas maltophilia</i>
<i>Elizabethkingia meningoseptica</i>	<i>Moraxella (Branhamella) catarrhalis</i>	<i>Streptococcus</i> Group A
<i>Enterobacter aerogenes</i>	<i>Morganella morganii</i>	<i>Streptococcus</i> Group B
<i>Enterobacter cloacae</i>	<i>Neisseria</i> species	<i>Streptococcus</i> Group D
<i>Enterobacter</i> species	<i>Nocardia</i> species	<i>Streptococcus pneumoniae</i>
<i>Enterococcus faecalis</i>	<i>Proteus mirabilis</i>	<i>Streptococcus</i> species not A/B
<i>Enterococcus</i> species	<i>Proteus vulgaris</i>	<i>Streptococcus viridans</i> group
Enterohemorrhagic <i>Escherichia coli</i>	<i>Providencia</i> species	<i>Streptomyces</i> species
<i>Escherichia coli</i>	<i>Pseudomonas aeruginosa</i>	Vancomycin Resistant Enterococci
<i>Gardnerella</i> species	<i>Salmonella</i> Group B	
<i>Haemophilus influenzae</i>	<i>Serratia marcescans</i>	

Mycology:

<i>Acremonium species</i>	<i>Cryptococcus albidus</i>	<i>Rhizopus species</i>
<i>Alternaria species</i>	<i>Cryptococcus lauren</i>	<i>Rhodoturula species</i>
<i>Aspergillus fumigatus</i>	<i>Curvularia species</i>	<i>Saccharomyces cervesiae</i>
<i>Aspergillus nidulans</i>	<i>Epidermophyton floccosum</i>	<i>Saccharomyces species</i>
<i>Aspergillus terreus</i>	<i>Fusarium species</i>	<i>Scedosporium apiospermum</i>
<i>Candida albicans</i>	<i>Geotrichum candidum</i>	<i>Scedosporium monosporium</i>
<i>Candida glabrata</i>	<i>Geotrichum species</i>	<i>Scedosporium species</i>
<i>Candida guilliermondii</i>	<i>Gliocladium species</i>	<i>Scopulariopsis species</i>
<i>Candida kruzei</i>	<i>Microsporum canis</i>	<i>Sporothrix schenkii</i>
<i>Candida parapsilosis</i>	<i>Microsporum gypseum</i>	<i>Trichophyton mentagrophytes</i>
<i>Candida peruzei</i>	<i>Mucor species</i>	<i>Trichophyton rubrum</i>
<i>Candida tropicalis</i>	<i>Penicillium species</i>	<i>Trichophyton tonsurans</i>
<i>Cladosporium species</i>	<i>Phialophora verrucosa</i>	<i>Trichosporon beigeli</i>

APPENDIX II:

Incident Report

If an MLS student has an incident (exposure, injury, other) while in MLS class or in an MLS clinical rotation site, the UNM Risk Services requires an online report to be filed within 24 hours of the incident.

Who can fill out form? Student, clinical preceptor or MLS instructor/Rotation Coordinator (when contacted)

What should be submitted to MLS Program if incident is reported? PDF copy of online form or provide information on the following:

- Name of student
- Date and place of incident
- Description of incident

Where is online form located? <https://risk.unm.edu/>

Risk Services Home



https://ehs.unm.edu/accident-incident-spill-reporting/index.html? gl=1*1ke4c5h* gcl au *NjI4MzY1NzQzLjE2ODQzNDM0OTg