



**COLLEGE of NATURAL SCIENCES
AND MATHEMATICS**

THE UNIVERSITY OF TOLEDO

MEDICAL LABORATORY SCIENCE

CLINICAL MANUAL

Spring 2026

FOREWORD

The clinical curriculum in the Medical Laboratory Science Program is designed to provide you with a strong background in the principles and methodologies involved in the various sub-disciplines of Medical Laboratory Science. To assist you successfully in making the transition from a student to a practicing professional, clinical experience provides an integral part of your education. This experience gives you the opportunity to apply what you have acquired on your college courses as well as experience the laboratory working world in the care and treatment of patients.

The staff of the affiliated laboratories are interested in your professional development. They give freely of their time and talents to help you grow in your profession. Therefore, you have an obligation to the clinical faculty, to the university faculty and to yourself to make the most of your clinical experience by developing high standards of academic performance as a student and by following the standards required of you as a professional.

This MLS program is responsible for obtaining clinical experience for you. If an affiliate cannot fulfill their agreement, another clinical site will be found, or the student can find a suitable hospital laboratory that the university can make an agreement with to finish their clinical experience.

This manual is designed to assist you in understanding your role in the affiliated laboratories. The information should mutually help you and the laboratory staff understand in terms of roles, requirements, and responsibilities.

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CLINIC POLICIES

Attendance

Full-time attendance, i.e. **32 hours a week**, is required during the clinical rotation. The rotation assignments have been carefully planned so that each student can have the best possible experience. Any changes in the schedule will have to be approved by the Program Director in collaboration with the Laboratory Manager/Director of the clinical site.

The start time for each department is pre-arranged with the preceptor of that department.

The hours vary with each clinical site. A typical day will consist of an 8-hour shift with a 30-minute lunch. Lunch periods and breaks are assigned at the discretion of each individual department supervisor and/or preceptor.

During the clinical rotation, the student is to notify the Site Coordinator and the site preceptor each day they will not be present due to illness or emergency. The call must be made at least one hour prior to the scheduled time as well as each succeeding day of absence. Because certain laboratory procedures are performed at specific times during the day or specific days of the week, it is imperative that a student be present and on time each day for the student to gain as much knowledge and experience as possible.

An excused absence is defined as:

1. personal emergencies, including, but not limited to, illness of the student with a physician's excuse or of a dependent of the student, as defined by the Family Medical Leave Act, or death in the family.
2. religious observances that prevent the student from attending class.
3. participation in university-sponsored activities, approved by the appropriate University authority, such as intercollegiate athletic competitions, R.O.T.C. functions, academic field trips, and special events connected with coursework.
4. government-required activities, such as military assignments, jury duty, or court appearances; and
5. any other absence that the Site Coordinator approves.

One incidence of an absence is defined as one or more consecutive days of absence. If a student has more than two (2) incidences of unexcused absences, the student may be dropped from the externship.

Tardiness is defined as checking in after the scheduled time. A student who is 15 minutes late checking in is considered tardy. Three tardies constitute one incidence of unexcused absence. Again, the student may be dropped from the externship if s/he has more than two (2) incidences.

The students shall not leave hospital premises during school hours or leave the hospital early without first obtaining permission from their Site Coordinator and preceptor. The decision as to whether an absence or tardiness is excusable will be made on a case-by-case basis.

Days missed during the clinical rotation must be made up on regular weekdays, weekends, holidays or evenings at the discretion of the Site Coordinator, Laboratory Director, and course preceptor. Attendance will be documented on the “affecter behavior” rubric associated with each class.

Health Examination and Requirements

Each student enrolled into the program is required to have a history and physical examination in the first semester of the program to be prepared for the clinical rotation in the Spring semester. Students are prohibited from engaging in laboratory activities or attending clinical facilities if this information is not on file.

In addition to the physical examination, students are required to complete the following health requirements:

- Hepatitis B immunizations or positive for hepatitis B surface antibody confirming immunity.
- Two MMR (measles, mumps, rubella) vaccinations, or mumps, rubella and rubeola titers confirming immunity.
- Positive history of chicken pox, Varicella immunization or Varicella titer confirming immunity.
- Tuberculosis, skin test (PPD) written documentation within the last 12 months. If the student has not had a PPD within the last 12 months, he or she must complete the Two Step PPD prior to the beginning of clinical rotations. There must be a minimum of 7 days between the two PPD tests and both tests must be completed within a 3-week period.
- Tetanus/Diphtheria – adult booster required within the past 10 years.
- Current Flu vaccine
- Proof of medical insurance (photocopy of parent’s card will satisfy this requirement).

All expenses incurred in obtaining physical, laboratory tests, immunizations, vaccinations, and other health requirements are the responsibility of the student. Currently enrolled students may obtain services through the UT Main Campus Medical Center.

Background Checks and Drug Screens

A student may need a background check and/or a drug screen within 6 months prior to starting the clinical rotation. The student may also be responsible for the cost of these services.

Information as to the exact type of background checks and the vendor to be used for drug screens is usually provided by the clinical site.

For example:

- ProMedica & The Toledo Clinic require a 10-panel drug screen but no background check.
- University Hospital in Cleveland requires a background check but no drug screen.
- UTMHC doesn't require neither a drug screen nor background check.
- Memorial Hospital of Union County requirements will be discussed.

UT Wellness offers drug screening and background checks if needed. Students will be informed of any additional requirements for the specific site.

Clinic Dress Code

Since personal appearance and hygiene and adherence to institutional policies are regarded as important aspects of the student's overall clinical education process, the following dress code policy is to be observed at the clinical site:

1. Wearing name badges vary amongst institutions – you will be informed when you are assigned.
2. Individual clinical sites may require students to wear a uniform or scrubs.
 - a. Jeans of any style or color are not to be worn.
 - b. T-shirts or sweatshirts with any "iron-on" design, any logo or advertising (other than the facility's logo) are not to be worn.
3. Appropriate underclothing is required, and it should be concealed by outer garments.
4. No open-toed shoes, clogs, sandals, or boots are permitted. Winter boots are to be removed in the locker area. It is suggested that comfortable rubber-soled shoes are to be worn.
5. Hair, including beards, mustaches and sideburns must be well-groomed and worn at a length or in a style that does not pose a safety hazard or infection control problem. Shoulder length hair should be tied back when encountering patients and in technical areas.

5. Fingernails should be kept clean and no longer than ¼ inch from tip of finger. Artificial nails including gels, acrylics, extenders, etc. are not permitted on any person having patient contact.
6. Small styles of earring secured by piercings through the ear lobes are permitted. No other jewelry, except for a wedding band and wristwatch, is to be worn at the clinical site. Any other body piercing (e.g. cartilage, tongue) must not have any jewelry (including studs) through them unless they are totally always covered by clothing or adhesive tapes.
7. Tattoos are to be always covered. (depending on hospital policy)
8. Smoking is not permitted on hospital campuses.
9. Colognes and perfumes are to be avoided because some patients and employees are allergic to them.
10. Student use of cell phones/smartphones in the clinical lab is strictly prohibited. Cell phones/smartphones may be used only during breaks and in accordance with policies of the individual clinical site. Students can only access the Internet with the permission of the preceptor and/or laboratory manager/director.

Emergency Preparedness

Each affiliated institution has developed an emergency preparedness plan to ensure the safety of its patients, visitors, and staff. During the first week of clinical rotation, every MLS student will be oriented to the emergency preparedness plan of the institution. If the rotation schedule is disrupted or has to be shortened due to a devastating natural disaster, act of terrorism or infectious disease epidemic, the MLS program will work with students impacted by this decision to determine the most effective way for them to complete the remaining required externship work. Decisions will be made with consideration of safety for students and faculty, i.e. preceptors, as the first consideration and with respect to the policies and practices of the affiliated institutions.

Holidays

Students at the clinical affiliates will follow the holiday policy of the affiliates.

Spring Break

No Spring Break will be offered during the clinical rotation.

Clinical Standards

Clinical instructors/preceptors in each department at the affiliates are responsible for scheduling the bench rotation within the department, providing study aids and/or exercises, and providing appropriate assignments or reference materials as needed to help meet the performance objectives. Appropriate instruction will be individualized as the patient workload and staffing permit.

Students must maintain a satisfactory evaluation in each of the clinical courses of the program. Attitude, attendance, and cooperation (affecter behaviors) will be taken into consideration and documented in the evaluations completed by the clinical instructors/preceptors at the end of each clinical laboratory rotation and will be part of the total grade for the externship courses.

*Each student will have a competency list for each area that they are in. Also, there is a place for the clinical preceptor to initial and date the competency completed. **At the end of the competency sheet the evaluation needs to be done by the clinical preceptor and reviewed with the student.** The clinical preceptor will comment on the student's abilities as **competent** or **needs improvement**. If there is improvement, it is expected the preceptor will elaborate as to where the student could improve.*

The evaluation will need to be scanned and uploaded to Ultra (Bb) for that course.

Students are expected to assume responsibility for their own learning by preparing for technical instruction and reviewing previously learned tasks and subject matter as needed.

Students that are not competent must meet with the MLS Program Director & Supervisor/clinical preceptor to resolve the deficiency. This means that their clinical rotation time could be extended.

Clinical competencies:

1. MEDT 4951 Clinical Externship: Microbiology descriptions & expectations:

Course Description: University of Toledo affiliated Clinical Laboratories offer Clinical Microbiology laboratory experience in clinical microbiological cultures and assay techniques and methods. This rotation **may** include parts of immunology, molecular, parasitology, mycobacterium, virology and mycology.

Expectations

It is up to the Clinical Microbiology supervisor/preceptor to determine if a procedure can be observed or performed. Here are suggestions that are desirable from the perspective of the UT MLS program.

- Procedures that students are allowed to perform, it is beneficial to the student to be involved more than once. It is suggested that students will have an opportunity to perform the procedure many times before being evaluated on it.
- Students must be able to offer a detailed discussion of biochemical principles of media and spot tests used for presumptive identification.
- Be able to observe and discuss the procedure in resulting normal flora and potential pathogens.
- Students could have the opportunity to observe/discuss or perform antibiotic sensitivities under supervision.
 - Include D tests or other manual antibiotic testing.
- Students would be able to experience reading clinical smears.
- Students would be able to discuss the criteria for evaluating the quality of sputum specimens.
- It is also advantageous for students to get direct experience in setting up QC organisms for the week.

2. MEDT 4952 Clinical Externship: Chemistry – course descriptions & expectations.

Course Description:

Clinical laboratory experience in an affiliated Clinical Sciences Laboratory focused on clinical chemistry procedures, techniques, principles, and relationship to disease states. May also include immunology techniques.

Expectations:

It is up to the Clinical Chemistry supervisor/preceptor to determine if a procedure will be observed or performed. Here are suggestions that are desirable from the perspective of the UT MLS program.

- Procedures that students can perform are beneficial to the student to be involved more than once. Please give the students opportunity to perform the procedure enough before evaluating them.
- Most importantly, students must be able to offer a detailed discussion of the test principle, procedure, reference values, etc.
- It is particularly important that students discuss with you pre-analytical, analytical, and post-analytical errors in clinical chemistry:
 - Specimen collection includes anticoagulants, hemolysis, lipemia, and IV contamination.
 - Analytical testing errors

- involving new lots, calibrator expiration, QC rules, and expiration.
 - Discussion on SDIs or outside Quality assurance/control platforms that chemistry reports to.
 - Temperatures for reagent storage
 - Maintenance
 - Water testing
- Discussion of post-analytical testing and how results are documented and communicated.
- Discussion of the process of reflex testing.
- The students with the discretion of the Chemistry preceptor should be able to calibrate, perform preventative maintenance, and Quality Control.
 - Discuss with the preceptor on when to calibrate, or the timing of maintenance.
 - Discuss what QC rules are used in determining when QC is out of range, how SD and SDI are used.
- Perform any manual testing and result under the supervision of the preceptor.
 - Students must not work as a technologist or report outpatient results by themselves.
- Students write about the methodology and interferences that are analytical or preanalytical.
- Students will document when a result is critical and call the nurse.
- Students must be prepared with their notebooks and are engaged (willing to operate analyzers when asked, punctual both at the beginning of the day and breaks) while in chemistry.

3. MEDT 4953 Clinical Externship: Hematology – Course descriptions & Expectations.

Course Description: Clinical laboratory experience in an affiliated Clinical Sciences Laboratory focused on analytical hematological methodologies, correlation of tests with disease state, hematopoiesis and hemostasis, quality control and instrumentation and manual methods.

Expectations:

*It is up to the **Hematology supervisor/preceptor** to determine if a procedure is observed or maybe performed.* Here are suggestions that are desirable from the perspective of the UT MLS program.

- Procedures that students can perform are beneficial to the student to be involved more than once. Please give the students opportunity to perform the procedure enough before evaluating them.
- As part of the competency, students need to write in their notebook the methodology of the hematology analyzers. In Hematology, writing the Coulter principal vs the flow cytometry of others to discuss later is important.

- Students need to be able to interpret when factor assays are available on the testing platform.
- Students need to be able to perform at least 25 normal diffs and 15 abnormal differentials and be within 10 to 15% of the preceptor's results.
- Students need to be able to perform manual cell counts and be able to be within the appropriate range of the preceptor.
- Students must use their notebook for documentation of the work done in hematology, patient reporting, QC, instrument methodology, and calculations.
- Students must be able to perform reticulocyte counts and interpret them in disease states.
- Students will perform serological testing related to infectious disease in their clinical rotations.
- Finally, students must meet affective behaviors: punctuality, preparedness with notebook and taking notes, and willingness to perform tasks.

4. MEDT 4954 Clinical Externship: Immunoematology – Course description & Expectations. Course Description:

Clinical laboratory experience in an affiliated Clinical Sciences Laboratory focused on methodologies and problem-solving in immunoematology, including crossmatching, antibody identification, blood component preparation, and transfusion and quality assurance.

It is up to the **Blood bank supervisor/preceptor** to determine if a procedure can be observed or performed. Here are suggestions that are desirable from the perspective of the UT MLS program.

- Procedures that students are allowed to perform, it is beneficial to the student to be involved more than once. It is suggested that students will have an opportunity to perform the procedure many times before being graded on it.
- Most importantly, students must be able to offer a detailed discussion of the test principle, procedure, reference values, etc.
- The students with the discretion of the Blood Bank preceptor should be able to
 - perform preventative maintenance on analyzers,
 - take temperatures on refrigerators.
 - strict procedures on accepting units from the Red Cross,
 - performing Quality Control
 - determining when QC is out of range, how SD and SDI are used.
- Perform any manual testing and result under the supervision of the preceptor.
 - ***Students are not allowed to work as a technologist or be left alone when patient results are reported.***
- Students are required to take notes about the methodology of analyzers and interferences that are analytical or preanalytical.
- Students are required to document when a result is critical and is called to the nurse.

- Students must be prepared with their notebooks and are engaged (willing to operate analyzers when asked, punctual both at the beginning of the day and breaks) while in Blood Bank.
- Preceptors will determine if students can observe any mass transfusion while in process.
- Student repeating any antibody identification, selection of units, elution or absorptions are up to the discretion of the preceptor.
- Preparation of any unit is under the supervision of the preceptor.

Clinical Curriculum:

Courses	Description	Credit Hours
MEDT 4951	Clinical Externship: Microbiology	4
MEDT 4952	Clinical Externship: Chemistry	2
MEDT 4953	Clinical Externship: Hematology	2
MEDT 4954	Clinical Externship: Immunohematology	3
MEDT 4500	Clinical Research and Correlation	<u>3</u>
		Total 14

Note: MEDT 4500 will be taken on UT campus or online with permission with students in advance.

Clinical Rotation

1. Each student will rotate through the laboratory for **15 weeks (M-R)** with **Fridays on campus**. The rotation will commence January 12, 2026, and end April 23, 2026. The approximate number of weeks of full-time study for each lab discipline is left to the clinical affiliate discretion except for. Microbiology, which needs 4 weeks to allow cultures to grow and work up.
2. Students ***are required to fulfill the competency listed for that area***. We are aware that affiliates will have different test menus and thus may or may not have the tests listed. It is of the utmost importance that a student's performance and quantity are documented if testing is done.
3. ***Time in each department will be left to the discretion of that institution and their schedule to accommodate the student.***
4. Please make available time for students to attend one hour lecture face-to-face or online during their rotation. Case studies presentation by UTM pathologists Drs. Gohara, Hubbard, and Booth. In December hours of these

presentations will be available. At this time, we do not know when the lectures will take place.

5. An addition to a standard clinical rotation, histology rotation, if possible, for at least a day or a week to give the students full laboratory experience. Adding histology in rotation provides an overall clinical enrichment. Students will not be evaluated in histology.

STUDENT SERVICES

Certification Examination

Students who have successfully completed the Medical Laboratory Science program are eligible to take a national certification examination. *However, passing a certification examination is not a graduation requirement.* The Board of Certification examination given by the American Society for Clinical Pathology is done on computer at one of the Pearson Professional Centers. Students interested in taking the BOC examination may apply at www.ascp.org or download the application and mail it to ASCP. Students are responsible for completing the applications and submitting them along with fees and the supporting documents for the examinations. Guidelines for applying and taking the exam can be found on the ASCP website.

Students must complete all requirements for the MLS degree for the NAACLS approved Program Director to approve them for the certifying examination.

Health Services

Students are required to carry health insurance while they are in the clinical phase of the program.

Refer to: <https://www.utoledo.edu/depts/hr/student-health-insurance/>

In the event of an emergency medical need while in an affiliated institution, students could be treated in the institution's emergency department. Some institutions may treat students who are exposed to blood and body fluids in their Occupational Medicine Department. Students and their health insurance agencies must assume financial responsibility for such treatment.

Student Employment

During the clinical rotation, students are never to be considered employees and therefore are not allowed to work independently at a bench, operate analyzers or finalize lab results without the proper supervision from an assigned lab instructor or department technical supervisor. They **may not** be substituted for regular staff during their student experiences.

Students could be hired as employees to work only on benches where they met the required training competencies, and such competencies have been documented in the students' file.

Any scheduled work time cannot interfere with the already established student clinical rotation schedule. It is highly recommended that students do not work more than 20 hours per week. Attempts should be made to avoid working the night before a major exam.

Students who are hired by clinical affiliates will also have to abide by the employment policies of the said affiliates in addition to the policies and procedures of the University.

Student employment in clinical settings outside of academic hours is optional to the student and not required for the successful completion of the program.

Convocation & Graduation/Commencement

1. **Convocation:** occurs the day before graduation at the Art building beside Wolf Hall.
 - a. Pins and cords are given to all graduates during convocation.
 - b. Students that are summa cum laude are recognized by Dean Seigar.
2. **Graduation:**

You must apply. "If you fail to apply for graduation, your graduation date will be postponed. Students should apply to graduate for the term in which all degree requirements will be completed."

To graduate you need to: the semester before you graduate.

Apply <https://www.utoledo.edu/offices/registrar/graduation.html>