Medical Laboratory Technology (MLT)

Medical Laboratory Technology (MLT)

A medical laboratory technician (MLT) uses laboratory skills, computers, technology, and knowledge of pathology to provide information needed by the physician to diagnose, treat, and prevent disease.

In clinical chemistry, for example, the MLT determines enzyme levels to diagnose a heart attack, glucose levels to monitor diabetes, and cholesterol levels to prevent heart disease. In hematology, the MLT studies blood cells to diagnose anemia and leukemia. In immunohematology, the MLT prepares blood for transfusions. In the microbiology department, the organism causing an infection is identified and antimicrobials for treatment are determined.

The placement rate for co-op assignments and for graduates of the Cincinnati State MLT program is nearly 100%, because of unmet demand for entry-level employees in regional clinical laboratories.

The Medical Laboratory Technology program is accredited by The National Accrediting Agency for Clinical Laboratory Sciences, 5600 North River Road, Suite 720, Rosemont, IL 60018-5119. Phone: 773-714-8880.

For more information, please contact the Health and Public Safety Division at (513) 569-1670.

To apply for this program at Cincinnati State, visit the Admissions (http://www.cincinnatistate.edu/academics/admission) section of the College website.

Medical Laboratory Technology (MLT)

Semester 1		**Lec**	**Lab**	**Credits**
CHE 115	General, Organic, and Biological Chemistry	3	3	4
MAT 151	College Algebra	3	2	4
FYE 1XX First Year Experience Elective (**B**)		1	0	1
Semester 2				
MLT 100	Introduction to Medical Laboratory Analysis (**B**)	2	6	4
BIO 151	Anatomy and Physiology 1 (**B**)	3	2	4
MLT 121	Hematology and Hemostasis 1 (**T**)	3	3	4
ENG 101	English Composition 1 (**G**)	3	0	3
Semester 3				
MLT 140	Clinical Chemistry (**T**)	3	3	4
MLT 170	Instrumentation for Medical Laboratory Technicians (**T**)	0	3	1
BIO 152	Anatomy and Physiology 2 (**B**)	3	2	4
ENG 10X English Composition Elective (**G**)		3	0	3
MLT 122	Hematology and Hemostasis 2 (**T**)	2	3	3
Semester 4				
MLT 187	Clinical Chemistry and Urinalysis Applications (**T**)	0	3	1
MLT 294	MLT Internship: Specimen Collection (**T**)	0	4	1
MLT 181	Phlebotomy Techniques for MLT (**T**)	0	3	1
MLT 186	Hematology and Hemostasis Applications (**T**)	0	3	1
MLT 295	MLT Clinical Internship (**T**)	0	20	1
Semester 5				
MLT 262	Clinical Microbiology Applications (**T**)	0	1	1
MLT 210	Clinical Immunology and Serology (**T**)	2	3	3
MLT 191	Part-Time Cooperative Education 1: Medical Laboratory Technology (**T**)	1	20	1
PSY 110	Introduction to Psychology (**G**)	3	0	3
MLT 261	Clinical Microbiology (**T**)	2	9	5
Semester 6				
MLT 251	Immunohematology (**T**)	2	5	4
MLT 252	Immunohematology Applications (**T**)	0	3	1
MLT 270	Medical Laboratory Seminar (**T**)	0	3	1
MLT 192	Part-Time Cooperative Education 2: Medical Laboratory Technology (**T**)	1	20	1
Total Credits:		40	124	64

Electives

First Year Experience Elective		
FYE 100	College Survival Skills	1
FYE 105	College Success Strategies	2
FYE 110	Community College Experience	3
English Composition Elective		
ENG 102	English Composition 2: Contemporary Issues	3
ENG 103	English Composition 2: Writing about Literature	3
ENG 104	English Composition 2: Technical Communication	3
ENG 105	English Composition 2: Business Communication	3

The letters G, B, and T (displayed after course titles or elective descriptions) identify types of courses required by the Ohio Department of Higher Education as part of an associate's degree curriculum.

G = General Education course in this curriculum

B = Basic Skills course in this curriculum

T = Technical course in this curriculum

Medical Laboratory Technology (MLT)

- Collect and process biological specimens using correct technique and safety precautions.
- Recognize pre-analytical, analytical, and post-analytical factors that affect results and take appropriate action within predetermined limits.
- Analyze biological specimens following established procedures with reproducibility consistent with entry level expectations.
- Monitor quality control and take appropriate action within predetermined limits.
- Perform preventative and corrective maintenance of instruments under supervision or refer to appropriate source for repairs.
- Communicate with patients, co-workers, and supervisors and other members of the health care team in a respectful and professional manner.
- Relate laboratory results to common disease processes.
- Apply basic scientific principles to new procedures and techniques.
- Value participation in continuing education to maintain professional competence.
- Recognize and report critical values to physician or nursing staff according to hospital policy.
- Prepare to earn a passing score on the ASCP certification exam.
- Prepare to work in an entry level position with above-average performance.

Faculty

Program Chair/Advisor

Kellee M. Fields, Ed.D., MLS (ASCP)
kellee.fields@cincinnatistate.edu

Courses

MLT 100 Introduction to Medical Laboratory Analy
4 Credits. 2 Lecture Hours. 6 Lab Hours.
A course on equipment and processes of the clinical laboratory and the responsibilities of the Medical Laboratory Technician. Topics include pipetting, spectrophotometry, safety, point of care testing, and the chemical, physical and microscopic analysis of urine.
Prerequisites: CHE 115 and MAT 151 and MLT Program Chair consent
Instructor Consent Required

MLT 121 Hematology and Hemostasis 1
4 Credits. 3 Lecture Hours. 3 Lab Hours.
A course on theory and practice of normal hematology and hemostasis. Topics include: hematopoiesis, cell and platelet counts, cell identification, and prothrombin and partial prothrombin times.
Prerequisites: CHE 115 and MAT 151 and MLT Program Chair consent
Instructor Consent Required

MLT 122 Hematology and Hemostasis 2
3 Credits. 2 Lecture Hours. 3 Lab Hours.
A continuation of MLT 121. Topics include: hematopoiesis and abnormal cell identification, red cell abnormalities, anemias, leukemias, and coagulopathies.
Prerequisites: MLT 121

MLT 140 Clinical Chemistry
4 Credits. 3 Lecture Hours. 3 Lab Hours.
A course on principles and procedures used in the chemical analysis of clinical specimens. Topics include: manual and automated chemical testing, quality control, and clinical correlations.
Prerequisites: MLT 100 and MLT 121

MLT 170 Instrumentation for Medical Laboratory Technicians
1 Credit. 0 Lecture Hour. 3 Lab Hours.
A course on principles and procedures for instrumentation used in hematology, hemostasis, urinalysis and clinical chemistry. Topics include: set-up, operation, routine maintenance and quality control procedures for spectrophotometers, particle counters, electrodes, and other automated analyzers.
Prerequisites: MLT 100 and MLT 121

MLT 180 Phlebotomy Techniques and Practice for Medical Laboratory Technicians
2 Credits. 0 Lecture Hour. 6 Lab Hours.
A course on theory and practice of blood collection used by medical laboratory technicians. Topics include: devices and methods, specimen integrity, communication, and professionalism. Students who develop the necessary skills also practice supervised blood collection at a clinical site.
Prerequisites: MLT 100 and MLT 121

MLT 181 Phlebotomy Techniques for MLT
1 Credit. 0 Lecture Hour. 3 Lab Hours.
A two-week course on the equipment and techniques used to collect quality specimens for analysis. Topics include: communication with patients and staff, professional conduct, and daily practice of techniques using a model arm.
Prerequisites: MLT 122 and MLT 140

MLT 185 Clinical Laboratory Practice
6 Credits. 0 Lecture Hour. 30 Lab Hours.
Students apply skills in clinical chemistry, hematology, hemostasis, and urinalysis through on-campus laboratory practice. Students who develop the necessary skills also participate in an internship in these departments at a clinical site.
Prerequisites: MLT 140 and MLT 180

MLT 186 Hematology and Hemostasis Applications
1 Credit. 0 Lecture Hour. 3 Lab Hours.
Students apply skills in hematology and hemostasis in an on-campus laboratory, performing tasks independently as part of a simulated lab setting. Students must adhere to HPS and MLT Clinical Practice Standards.
Prerequisites: MLT 122 and MLT 170

MLT 187 Clinical Chemistry and Urinalysis Applic
1 Credit. 0 Lecture Hour. 3 Lab Hours.
Students apply skills in clinical chemistry and urinalysis in an on-campus laboratory, performing tasks independently in a simulated lab setting. Students must adhere to HPS and MLT Clinical Practice Standards.
Prerequisites: MLT 122 and MLT 170

MLT 191 Part-Time Cooperative Education 1: Medical Laboratory Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their first part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures in order to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: MLT 185 (minimum grade C)

MLT 192 Part-Time Cooperative Education 2: Medical Laboratory Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their second part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures in order to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: MLT 191 (minimum grade C)

MLT 198 First Year Special Topics in Medical Laboratory Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A course on selected topics related to Medical Laboratory Technology, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.
Prerequisites: None

MLT 199 First Year Independent Project in Medical Laboratory Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A project related to Medical Laboratory Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Medical Laboratory Technology faculty. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: Vary by section

MLT 210 Clinical Immunology and Serology
3 Credits. 2 Lecture Hours. 3 Lab Hours.
A course on the function of the immune system, and immunological and serological testing methods performed in clinical laboratories. Topics include: humoral and cell mediated immunity, hypersensitivity, infectious agents, enzyme immunoassay, immunoelectrophoresis, and basic molecular testing.
Prerequisites: MLT 295
Corequisites: MLT 261 : Clinical Microbiology

MLT 250 Immunohematology
5 Credits. 3 Lecture Hours. 6 Lab Hours.
A course on theory and application of immunohematology procedures used in the clinical laboratory. Topics include: ABO and Rh, antibody screens and antibody identification, compatibility, enhancement techniques, and automated procedures.
Prerequisites: MLT 185

MLT 251 Immunohematology
4 Credits. 2 Lecture Hours. 6 Lab Hours.
A course on the theory of immunohematology, emphazing laboratory techniques. Topics include: ABO and Rh, antibody screens and identification, compatibility, enhancement techniques, and donor requirements.
Prerequisites: MLT 210

MLT 252 Immunohematology Applications
1 Credit. 0 Lecture Hour. 3 Lab Hours.
A four-week course with students completing immunohematology procedures in an on-campus simulated laboratory setting. Students must adhere to HPS and MLT Clinical Practice Standards.
Prerequisites: MLT 251

MLT 260 Clinical Microbiology
6 Credits. 3 Lecture Hours. 9 Lab Hours.
A course on theory and application of procedures for clinical microbiology. Topics include: identification, antimicrobial susceptibility and clinical significance of bacteria; basic mycobacteriology; mycology; parasitology; and virology.
Prerequisites: MLT 250

MLT 261 Clinical Microbiology
5 Credits. 2 Lecture Hours. 9 Lab Hours.
A course on the theory and practice of clinical microbiology. Topics include: clinical significance, identification and antimicrobial susceptibility of pathogenic bacteria with introduction to other microorganisms.
Prerequisites: MLT 295
Corequisites: MLT 210: Clinical Immunology and Serology

MLT 262 Clinical Microbiology Applications
1 Credit. 0 Lecture Hour. 1 Lab Hour.
A two-week course with students completing clinical bacteriology procedures in an on-campus simulated laboratory setting. Students must adhere to HPS and MLT Clinical Practice Standards.
Prerequisites: MLT 261

MLT 270 Medical Laboratory Seminar
1 Credit. 0 Lecture Hour. 3 Lab Hours.
Students review theories and procedures of medical laboratory technology to prepare for the certification exam. Topics include: laboratory operations, hematology, hemostasis, clinical chemistry, immunology, immunohematology, clinical microbiology, and test-taking strategies.
Prerequisites: MLT 210 and MLT 250 (minimum grade C for both)

MLT 294 MLT Internship: Specimen Collection
1 Credit. 0 Lecture Hour. 4 Lab Hours.
Students participate in specimen collection at an area laboratory or collection site, with emphasis on phlebotomy. Activities may include specimen processing. Students must adhere to HPS and MLT Clinical Practice Standards.
Prerequisites: MLT 181

MLT 295 MLT Clinical Internship
1 Credit. 0 Lecture Hour. 20 Lab Hours.
Students are assigned to a medical laboratory for full-time experience in hematology, hemostasis, clinical chemistry and urinalysis. Students must adhere to HPS and MLT Clinical Practice Standards.
Prerequisites: MLT 186 and MLT 187

MLT 298 Second Year Special Topics in Medical Laboratory Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A course on selected topics related to Medical Laboratory Technology, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.
Prerequisites: None

MLT 299 Second Year Independent Project in Medical Laboratory Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A project related to Medical Laboratory Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Medical Laboratory Technology faculty. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: Vary by section