Medical Laboratory Technology (MLT)

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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 granting of the Medical Laboratory Technology degree is not contingent on passing an external certification or licensure exam.

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.

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Semester 1		**Lec**	**Lab**	**Credits**
CHE 115	General, Organic, and Biological Chemistry (**B**)	3	3	4
MAT 151	College Algebra (**G**)	3	2	4
FYE 1XX First Year Experience Elective (**B**)		1	0	1
Semester 2				
MLT 100	Introduction to Medical Laboratory Analysis (**B**)	3	6	5
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 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 255	Clinical Microbiology with Applications (**T**)	3	9	6
Semester 6				
MLT 270	Medical Laboratory Seminar (**T**)	0	3	1
MLT 192	Part-Time Cooperative Education 2: Medical Laboratory Technology (**T**)	1	20	1
MLT 265	Immunohematology with Applications (**T**)	2	9	5
Total Credits:		**42**	**124**	**65**

Electives

First Year Experience Elective		
FYE 100	Essentials for College Success	1
FYE 105	Skills for College and Personal Success	2
FYE 110	Intensive College Success Strategies	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

Some courses are offered in alternative versions identified with a letter after the course number-- for example, ENG 101 and ENG 101A.

- This curriculum displays only course numbers without the added letter.
- The alternative version, when available, meets the requirements of the course version without the added letter.

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

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- Collect and process biological specimens using correct technique and following all 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.
- Be prepared to earn a passing score on the ASCP certification exam.
- Be prepared to work in an entry level position with above average performance.

Courses

MLT 100 Introduction to Medical Laboratory Analysis
5 Credits. 3 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
Corequisites: MLT 100 : Introduction to Medical Laboratory Analysis
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 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 295

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

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 255: Clinical Microbiology with Applications

MLT 255 Clinical Microbiology with Applications
6 Credits. 3 Lecture Hours. 9 Lab Hours.
A course on the theory and practice of clinical microbiology. Topics include: clinical significance and identification and antimicrobial susceptibility of pathogenic bacteria with introduction to other microorganisms. The course includes a two-week applications component performing clinical bacteriology procedures in an on-campus simulated laboratory setting. Students must successfully complete the theory course component in order to continue with the applications component.
Prerequisites: MLT 295
Corequisites: MLT 210: Clinical Immunology and Serology

MLT 265 Immunohematology with Applications
5 Credits. 2 Lecture Hours. 9 Lab Hours.
A course on the theory and practice of immunohematology, focusing on ABO/Rh typing procedures, antibody detection and identification techniques, and compatibility testing. Other topics include: hemolytic disease of the newborn, blood donor program regulations component therapy, transfusion reaction investigation, quality control, and problem solving. The course includes a two-week applications component performing immunohematology procedures in an on-campus simulated laboratory setting. Students must successfully complete the theory course component in order to continue with the applications component.
Prerequisites: MLT 210
Corequisites: MLT 270: Medical Laboratory Seminar

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 255 (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