

# MEDICAL LABORATORY TECHNOLOGY (MLT)

## MLT-1000 Introduction to Medical Laboratory Technology 3 Credits

This introduction to Medical Laboratory Technology provides an overview of the profession, safety, blood collection and processing, code of ethics, basic clinical laboratory equipment and instrumentation, basic lab math, quality control and assurance.

*Lecture: 2 hours. Laboratory: 3 hours*

*Prerequisite(s): MATH-0955 Beginning Algebra, or qualified Math placement, and departmental approval.*

*OAN Approved: Transfer Assurance Guide OHL008. CTAN Approved: CTMLT001.*

## MLT-1351 Problem Solving Techniques for the Medical Laboratory 2 Credits

Review of basic algebra and measurement systems. Study of formula evaluation, unit analysis and conversions, dilutions, concentrations, calculations specific to clinical analytes and Beer's Law. Construction of standard curves, calculation and application of quality control parameters related to clinical laboratory medicine. Application and activities to build skills in problem solving.

*Lecture: 2 hours*

*Prerequisite(s): MATH-1410 Elementary Probability and Statistics I, and departmental approval.*

## MLT-1491 Urinalysis and Body Fluids 3 Credits

Theory and application of urine and body fluid analysis. Includes the anatomy and physiology of the kidney, physical, chemical and microscopic examination of the urine, cerebrospinal and other body fluids. Also includes diagnostic significance of test results and correlation with disease states, quality control, quality assurance and safety.

*Lecture: 2 hours. Laboratory: 3 hours*

*Prerequisite(s): MLT-1000 Introduction to Medical Laboratory Technology or departmental approval: related work experience.*

*OAN Approved: Transfer Assurance Guide OHL010.*

## MLT-1820 Independent Study/Research in Medical Laboratory Technology 1-3 Credits

Directed individual study. Study/research title and specific content arranged between instructor and student. May be repeated for a maximum of six credits of different topics.

*Lecture: 1-3 hours*

*Prerequisite(s): Departmental approval, and instructor approval, and ENG-0995 Applied College Literacies, or appropriate score on English Placement Test. Note: ENG-0990 Language Fundamentals II taken prior to Fall 2021 will also meet prerequisite requirements.*

## MLT-2461 Hematology 3 Credits

An introduction to the theory, principles and procedures used in hematology and coagulation (hemostasis). Hematopoiesis, enumeration, differentiation and evaluation of blood formed elements and the basic process of coagulation are discussed. Manual and automated techniques are explained, demonstrated, and performed. Anemias, leukemias and other hematological disorders are studied, correlating test results with disease states. Problem solving skills are applied in related case studies and unknowns.

*Lecture: 2 hours. Laboratory: 3 hours*

*Prerequisite(s): MA-1020 Medical Terminology I and departmental approval. OAN Approved: Transfer Assurance Guide OHL009.*

## MLT-2471 Immunohematology & Serology 5 Credits

Study of immunohematologic (blood banking), immunologic and serologic principles and the application of testing procedures. Antigen-antibody reactions for ABO antigens, Rh (Rhesus) and other major blood group systems, compatibility testing, component therapy and production, acceptable donor criteria, transfusion transmitted diseases, diagnostic uses of serological tests. Performance of associated laboratory tests. Analysis of case studies, problem solving and clinical significance of results in diagnosis.

*Lecture: 3 hours. Laboratory: 6 hours*

*Prerequisite(s): MLT-2501 Clinical Chemistry.*

## MLT-2482 Clinical Microbiology 5 Credits

Application of the principles and procedures utilized in clinical microbiology, mycology, parasitology and virology in the collection, identification and serological detection of organisms. Pathogenesis and prevention of disease. Media, methods of culture and isolation, biochemical and susceptibility testing, aseptic and staining techniques, sterilization and safety protocols are studied. Analysis of case studies, problem solving and clinical significance of results in diagnosis.

*Lecture: 3 hours. Laboratory: 6 hours*

*Prerequisite(s): BIO-2500 Microbiology and MLT-1000 Introduction to Medical Laboratory Technology.*

## MLT-2501 Clinical Chemistry 5 Credits

Principles, procedures and application of basic and advanced diagnostic tests in clinical chemistry for all body fluids. Emphasis on correlation of results with clinical significance, interpreting quality control data, and mastering basic lab skills.

*Lecture: 3 hours. Laboratory: 6 hours*

*Prerequisite(s): MLT-1000 Introduction to Medical Laboratory Technology, and MLT-1351 Problem Solving Techniques for the Medical Laboratory, and departmental approval.*

## MLT-2820 Advanced Independent Study/Research in Medical Laboratory Technology 1-3 Credits

Directed individual advanced study. Study/research title and specific content arranged between instructor and student. May be repeated for a maximum of six credits of different topics.

*Lecture: 1-3 hours*

*Prerequisite(s): Departmental approval, and instructor approval, and ENG-0995 Applied College Literacies, or appropriate score on English Placement Test. Note: ENG-0990 Language Fundamentals II taken prior to Fall 2021 will also meet prerequisite requirements.*

**MLT-282H Advanced Honors Independent Study/Research in Medical Laboratory Technology**

**1-3 Credits**

Advanced Honors-level directed individual study. Must meet criteria set forth in the Honors Course Checklist used to approve regular honors courses. Study/research title and specific content arranged between instructor and student. May be repeated for a maximum of six credits of different topics.

*Lecture: 1-3 hours*

*Prerequisite(s): Departmental approval and instructor approval, and ENG-0995 Applied College Literacies, or appropriate score on English Placement Test; and must have earned an A or B in at least 3 honors courses. Note: ENG-0990 Language Fundamentals II taken prior to Fall 2021 will also meet prerequisite requirements.*

**MLT-2940 Medical Laboratory Field Experience**

**3 Credits**

Capstone course in Medical Laboratory Technology. Supervised clinical experience. Students rotate through chemistry, microbiology, serology, immunohematology, hematology/coagulation, body fluids laboratories, and phlebotomy departments for thirty-six (36) hours per week meeting performance objectives of medical laboratory personnel at the MLT level.

*Other Required Hours: Field Experience: 36 hours per week.*

*Prerequisite(s): MLT-2990 Advanced MLT Applications.*

**MLT-2980 Professional Development and Life Skills**

**1 Credit**

Integration of knowledge acquired in basic, technical and non-technical areas in preparation for professional roles and life-long professional growth and development. Seminar discussion of clinical experience.

*Other Required Hours: Seminar: 1 hour per week.*

*Prerequisite(s): MLT-2990 Advanced MLT Applications; and concurrent enrollment in MLT-2940 Medical Laboratory Field Experience.*

**MLT-2990 Advanced MLT Applications**

**6 Credits**

Manual laboratory skills related to clinical chemistry, hematology, coagulation, body fluids, microbiology, parasitology, mycology, immunohematology/serology are refined. The operation and maintenance of laboratory equipment, function verification, analysis of quality control and application of corrective action is studied and performed. Emphasis on organization, increased speed, accuracy, confidence and independent performance. Case studies are analyzed, data interpreted and findings are correlated to clinical significance and differential diagnoses. Advanced concepts in parasitology, mycology, immunohematology/serology, principles of education, molecular diagnostics, point of care, information systems and troubleshooting are introduced.

*Lecture: 1 hour. Laboratory: 15 hours*

*Prerequisite(s): MLT-1000 Introduction to Medical Laboratory Technology, MLT-1491 Urinalysis and Body Fluids, MLT-2461 Hematology, MLT-2471 Immunohematology, MLT-2501 Clinical Chemistry, and concurrent enrollment in MLT-2482 Clinical Microbiology and departmental approval.*