

# MT-Medical Technology Courses

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## Courses

### MT 350. Special Topics: Chemistry. 1-3 Hour.

Designed specifically for individual student to cover topics not covered in MLT curriculum.

### MT 400. Health and Safety Management. 1 Hour.

Review of infection control principles focused on bloodborne, airborne, drug-resistant and opportunistic pathogens, and general health and safety guidelines and standards.

### MT 403. Body Fluids. 1 Hour.

Diagnosis and monitoring renal and systemic disease through the physical, biochemical, and microscopic analysis of urine and feces. Diagnosis of central nervous system and systemic disease through cerebrospinal fluid analysis. Diagnosis of metabolic and infectious disease through analysis of peritoneal fluid, synovial fluid, transudates, and exudates. Fertility testing using semen analysis.

### MT 404. Body Fluid Lab. 1 Hour.

Diagnosis and monitoring renal and systemic disease through the physical, biochemical, and microscopic analysis of urine and feces. Diagnosis of central nervous system and systemic disease through cerebrospinal fluid analysis. Diagnosis of metabolic and infectious disease through analysis of peritoneal fluid, synovial fluid, transudates, and exudates. Fertility testing using semen analysis. Concurrent enrollment MT 403.

**Prerequisites:** MT 403 [Min Grade: C](Can be taken Concurrently)

### MT 405. Laboratory Management. 3 Hours.

Current catalog description will remain unchanged. Ethics and Civic Responsibility are significant components of this course.

### MT 406. Laboratory Techniques. 2 Hours.

Overview of issues and skills surrounding working in the modern laboratory environment; includes safety, collection of specimens, equipment, mathematics, measurements, microscopy, dilutions, quality assurance, basic spectrophotometry, phlebotomy, automation of laboratory testing and lab computers.

### MT 418. Immunology. 3 Hours.

Physiology of immune responses to infectious agents, tumors, transplant; abnormal responses: hypersensitivity, autoimmunity, immunoproliferative disorders, and immunodeficiencies; antigen-antibody reactions; complement; principles and applications of clinical immunology.

### MT 423. Clinical Microbiology. 3 Hours.

Reservoirs, modes of transmission, disease associations, and morphological and biochemical characteristics of microorganisms commonly isolated in the clinical laboratory; methods used to isolate and identify bacteria, parasites, and fungi.

**Prerequisites:** BY 271 [Min Grade: C] or BY 261 [Min Grade: C]

### MT 424. Clinical Microbiology Laboratory. 1 Hour.

Performance of techniques and tests used in the isolation and identification of bacteria, fungi and parasites commonly seen in a clinical microbiology laboratory. Concurrent enrollment MT 423.

**Prerequisites:** (BY 261 [Min Grade: C] or BY 271 [Min Grade: C]) and MT 423 [Min Grade: C](Can be taken Concurrently)

### MT 426. Instrumentation and Automation. 2 Hours.

This course includes the study of the theory and principles of automation and instrumentation used in laboratories. An emphasis will be placed on quality control, quality assurance, instrumentation principles, basic statistics, and the regulatory, and economic issues encountered in laboratories including, clinical labs, health labs, government labs, private labs and other laboratories.

**Prerequisites:** CH 117 [Min Grade: C] and CH 118 [Min Grade: C]

### MT 427. Instrumentation and Automation Laboratory. 1 Hour.

This course includes the practical application of automation and instrumentation used in laboratories. An emphasis will be placed on quality control, quality assurance, instrumentation principles, basic statistics, and the regulatory, and economic issues encountered in laboratories including, clinical labs, health labs, government labs, private labs and other laboratories.

**Prerequisites:** CH 117 [Min Grade: C] and CH 118 [Min Grade: C] and MT 426 [Min Grade: C](Can be taken Concurrently)

### MT 428. Hematology I. 4 Hours.

Systematic examination of the normal hematologic and hemostatic systems: blood cell production, structure and function; blood cell morphology; performance, evaluation and interpretation of routine and special tests; primary hemostasis, coagulation and fibrinolysis. The course includes a mandatory laboratory component.

### MT 430. Immunohematology. 4 Hours.

Analyze blood group antigen-antibody reactions; donor blood collection and testing serological characteristics and immunogenetics of the major blood group systems; pretransfusion testing, basic and advanced techniques of antibody identification and problem-solving; transfusion therapy; laboratory evaluation of hemolytic disease of the newborn; and the investigation of immune coating of red cells in vivo, including autoimmune hemolytic anemia. Application of theory and problem-solving skills is emphasized.

**Prerequisites:** MT 418 [Min Grade: C]

### MT 431. Immunohematology Laboratory. 1 Hour.

Performance and evaluation of: red cell phenotyping, antibody detection and identification, pretransfusion testing, and laboratory investigation to diagnosis and treat hemolytic anemias and adverse effects of transfusion.

**Prerequisites:** MT 418 [Min Grade: C] and MT 430 [Min Grade: C](Can be taken Concurrently)

### MT 432. Hematology II. 4 Hours.

Pathology of the hematologic and hemostatic systems: anemias, leukopenias, myelodysplastic syndromes, myeloproliferative syndromes, chronic leukemias, acute leukemias, primary hemostatic disorders, coagulopathies, thrombophilia, and interpretation and correlation of laboratory data supporting diagnosis and management or treatment. The course includes a mandatory laboratory component.

**Prerequisites:** MT 428 [Min Grade: C]

### MT 438. Infectious Diseases. 3 Hours.

Pathogenic mechanisms of infectious diseases; normal flora and pathogens of various body sites; methods for collection, transport, and culturing different types of clinical specimens; interpretation of cultures.

**Prerequisites:** MT 423 [Min Grade: C] and MT 424 [Min Grade: C]

**MT 439. Infectious Diseases Laboratory. 1 Hour.**

Performance and interpretation of direct Gram stains; culturing various types of clinical specimens for isolation of bacteria; performing and interpreting tests used in the identification of potential pathogens; reporting culture results; antimicrobial susceptibility and resistance testing.

**Prerequisites:** MT 423 [Min Grade: C] and MT 424 [Min Grade: C] and MT 438 [Min Grade: C](Can be taken Concurrently)

**MT 442. Molecular Diagnostics. 3 Hours.**

The course will focus on the development of knowledge in and the fundamental principles of: molecular biochemistry, medical genetics, molecular pathology, performance, evaluation and interpretation of molecular tests.

**Prerequisites:** BY 210 [Min Grade: C]

**MT 443. Molecular Diagnostics Laboratory. 1 Hour.**

The course will focus on applications and analysis, and the development of competencies in: nucleic acid isolation, analysis of nucleic acids and protein, cytogenetics, PCR and others.

**Prerequisites:** MT 442 [Min Grade: C](Can be taken Concurrently)

**MT 451. Clinical Chemistry. 4 Hours.**

Theory of clinical laboratory techniques to identify and quantitate chemical analytes in body fluids and the correlation of these analytes to human disease.

**Prerequisites:** MT 426 [Min Grade: C] and MT 427 [Min Grade: C]

**MT 452. Clinical Chemistry Laboratory. 1 Hour.**

Performance of laboratory techniques used to identify and quantitate chemical analytes in body fluids and the correlation of these analytes to human disease.

**Prerequisites:** MT 451 [Min Grade: C]

**MT 455. Research Principles. 2 Hours.**

Clinical research principles and methods relevant to laboratory medicine assays; applications of descriptive and inferential statistics with diagnostic assay accuracy studies; development of competencies for critical analyses of empirical research papers to determine quality of empirical evidence and the operating characteristics of the diagnostic assays studied and the planning process for verification studies of diagnostic assays. Quantitative Literacy is a significant component of this course.

**MT 460. Clinical Correlations. 3 Hours.**

Analyze and interpret laboratory case studies; correlate clinical and technical information obtained from various topics covered throughout the curriculum; work with groups to present case studies with an emphasis on application and interpretation of laboratory protocols, competence in grammar usage and mechanics, and writing conventions required for laboratory professionals. Writing is a significant component of this course.

**Prerequisites:** MT 430 [Min Grade: C](Can be taken Concurrently) and MT 432 [Min Grade: C](Can be taken Concurrently) and MT 451 [Min Grade: C](Can be taken Concurrently) and MT 438 [Min Grade: C](Can be taken Concurrently)

**MT 470. Certification Review. 1 Hour.**

Review of medical technology/ clinical laboratory science body of knowledge with required comprehensive final certification examination using self-directed online materials. Experience with the development of a personal certification maintenance plan to meet requirements defined by national certification agencies in Clinical Laboratory Sciences. Medical Technology students only.

**Prerequisites:** MT 495 [Min Grade: C](Can be taken Concurrently)

**MT 495. Clinical Practices. 1-12 Hour.**

This CLS program capstone course involves directed clinical practice in hematology, chemistry, microbiology, immunology and immunohematology with focused activities to reinforce, integrate and apply knowledge obtained throughout the curriculum. Students will organize, build on, and reflect on previous assignments/experiences to demonstrate attainment of discipline-specific writing, quantitative literacy, ethical issues, and civic engagement.