

Clinical Laboratory Science Program (CLI)

College of Science and Health
 Department of Microbiology
 Program Director: Michael Lazzari
 3003 Cowley Hall, 608.785.6479
 Email: mlazzari@uwlax.edu

www.uwlax.edu/academics/department/microbiology/clinical-laboratory-science/what-is-a-clinical-laboratory-scientist (<https://www.uwlax.edu/academics/department/microbiology/clinical-laboratory-science/what-is-a-clinical-laboratory-scientist/>)

Clinical laboratory scientists perform complex biological, microbiological, and chemical tests on patient samples. They also use, maintain, and troubleshoot sophisticated laboratory equipment that is used to perform diagnostic tests. Clinical laboratory scientists analyze these test results and discuss them with the medical staff. They also possess the skills required for molecular diagnostic tests based on DNA and RNA technologies. In addition, they find opportunities in test development, experimental design, administration, and education.

The curriculum requires a minimum of six semesters and a summer session on campus to complete the pre-professional and pre-clinical courses. Students spend an additional nine months of clinical education in a hospital-sponsored, accredited program during their senior year. A Bachelor of Science degree is awarded at the satisfactory completion of all required course work.

General education writing emphasis

This department incorporates a significant amount of writing through the required courses instead of identifying particular courses as writing emphasis courses. Students who complete a major in this department will fulfill the general education writing emphasis requirement (<http://catalog.uwlax.edu/undergraduate/generaleducation/#generaleducationrequirements#text>).

Majors

- Clinical laboratory science - BS (<http://catalog.uwlax.edu/undergraduate/clinicallaboratoryscience/clinicallaboratoryscience/>)

Dual degree program

- Dual degree program in clinical laboratory science and clinical microbiology (<http://catalog.uwlax.edu/undergraduate/clinicallaboratoryscience/dual-degree-clinical-lab-science-clinical-microbiology/>)
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Courses

CLI 120 Cr.1

Introduction to Clinical Laboratory Science

An introductory course designed for students who are interested in a profession in clinical laboratory science. The course will introduce the students to the technical and clinical functions of the profession as well as to the professional aspects of clinical laboratory science. An introduction to the profession, basic laboratory math, medical terminology, and diagnostic tests evaluated in the clinical laboratory will be discussed. Students will develop an understanding for the critical role clinical laboratory scientists play in the health care arena. Offered Spring.

CLI 395 Cr.2

Urinalysis and Body Fluids

This course introduces the formation, distribution, and function of urine and other nonblood body fluids. Instruction in the handling and analysis of these fluids will be given based on their chemical, physical, and cellular composition in health and disease. The laboratory focuses on performing and interpreting results from the clinical laboratory procedures performed in the lab. Lect. 1, Lab 2. Prerequisite: admission to Clinical Lab Science Program. Offered Spring, Summer.

CLI 410 Cr.3

Clinical Hematology

Introductory course in hematology which examines normal hematologic physiology, cellular development, and hemostasis in the human. Introduction to pathophysiology, with emphasis on clinical and laboratory evaluation of hematologic status. Theory and background of laboratory procedures used in the diagnosis and treatment of hematologic and other diseases are included. Emphasis is on peripheral blood cell morphology, hematopoiesis, maturation, and kinetics. Pathophysiology of hematologic disorders, including anemias and hematologic malignancies are explored. Manual laboratory techniques as well as instrumentation will be included in the laboratory portion. Complete blood counts, correlation of automated and manual differentials and routine coagulation testing also will be performed. Lect. 2, Lab 2. Prerequisite: admission to Clinical Lab Science Program. Offered Fall.

CLI 420 Cr.3

Immunohematology

Course covers the general aspects of the Blood Group System, red cell types and group systems, antibody screening, compatibility testing, blood donor service, selection of donors, blood drawing, storage, and preservation, components, records, and regulations for blood banks. The laboratory section includes performance of blood bank procedures, donor processing, compatibility testing, component preparation, antibody screening, and antibody identification. Lect. 4, Lab 6. Prerequisite: admission to Clinical Lab Science Program. Offered Summer.

CLI 440/540 Cr.1

Clinical Parasitology

Course covers important parasites of humans including zoonoses and emerging parasitic diseases. Life cycles, clinical features and infective diagnostic stages will be included in the lecture component. The laboratory will include demonstrations and diagnostic procedures. This course will provide the necessary pre-clinical competencies required for advancement to the clinical education component of the Clinical Laboratory Science Program. This course is taught largely at an undergraduate level. Graduate students will have additional course requirements/expectations. Lect. 1, Lab 2. Prerequisite: MIC 230; admission to Clinical Lab Science B.S. Program or the Clinical Microbiology M.S. Program or consent of the instructor. Not open to students who have earned credit in BIO 406/506. Offered Spring.

CLI 450 Cr.6

Clinical Chemistry

This course focuses on chemical analysis performed in the clinical laboratory. The correlation between the organ systems, the clinical laboratory procedures, and human disease states is presented. Discussion of areas unique to clinical chemistry laboratory related to evaluation and validity of test results is emphasized. Laboratory rotation applies the principles of clinical chemistry and their relationship to the performance of analytical procedures and management of the clinical chemistry laboratory. Six-week rotation. Prerequisite: admission to Clinical Lab Science Program; acceptance to a NAACLS accredited clinical lab science program. Offered Fall.

CLI 455 Cr.6

Clinical Hematology/Hemostasis

Course extends concepts and skills learned in CLI 395 and CLI 410. Advanced theory in hematology to include abnormal and malignant processes, applications of flow cytometry and special stains, the diagnosis of classification of leukemias, troubleshooting instrumentation and interpretation of scatterplots. Hemostasis concepts, selection of appropriate tests and interpretation of results and diagnosis of coagulation disorder as well as advanced body fluid morphology will be covered. Students will gain experience processing and analyzing patient specimens with a wide variety of complex procedures as well as instrumentation. Students will also expand their identification and diagnostic skills on microscopic analysis of hematology and body fluid specimens. Six-week rotation. Prerequisite: CLI 395 and CLI 410; admission to Clinical Lab Science Program; acceptance to a NAACLS accredited clinical lab science program. Offered Fall.

CLI 460 Cr.6

Clinical Immunohematology

Course extends concepts and skills acquired in CLI 420. Performance and interpretative skills in ABO and Rh typing, antibody detection and identification techniques, hemolytic disease problems, quality assurance management, solving patient's blood compatibility problems, histocompatibility techniques and selection of appropriate blood products for various bleeding disorders will be expanded. Six-week rotation. Prerequisite: CLI 420; admission to Clinical Lab Science Program; acceptance into a NAACLS accredited clinical lab science program. Offered Spring.

CLI 461 Cr.1

Capstone in Clinical Laboratory Science

The course covers topics of current interest in the field such as emerging infectious diseases and testing, new concepts in instrumentation, and evolution of new tests from basic research to clinical application. Students also will learn and practice basic skills such as resume and cover letter writing. Students will participate in curriculum selection for part of this class to help them prepare for pre-clinical competency exams at their hospital sites. Prerequisite: acceptance to an internship site; senior standing; clinical lab science major. Offered Summer.

CLI 465 Cr.2

Clinical Immunology

Course in the application of immunologic and serologic techniques used for the specific diagnosis of immunodeficiency diseases, malignancies of the immune system, autoimmune disorders, hypersensitivity states and infection by specific microbial pathogens. Laboratory rotation applies concepts from lecture. Experience is gained in clinical immunological techniques, methods, and management of antigen-antibody reactions and identification of the relationship to disease states. The rotation also includes the fundamentals of HLA testing and Flow Cytometry techniques with interpretation of results. Two-week rotation. Prerequisite: admission to Clinical Lab Science Program; acceptance into a NAACLS accredited clinical lab science program. Offered Fall, Summer.

CLI 470/570 Cr.8

Diagnostic Microbiology

This course provides an in depth study of the major groups of pathogenic bacteria, fungi, parasites, and viruses and their relationship to human disease. Topics include clinical signs and symptoms of these diseases, proper method of collecting, transporting, and processing appropriate clinical specimens, modes of transmission, and state-of-the-art laboratory methods used for the identification of these pathogens and diagnosis of the diseases they cause. Principles of theory will be applied in rotation. Rotation provides students with opportunities to process a variety of patient specimens and gain experience with a wide variety of state-of-the-art procedures and equipment for the isolation and identification of pathogenic bacteria, fungi, protozoa, helminths, and viruses. Molecular diagnostic procedures will also be employed. Eight-week rotation. This course is taught largely at an undergraduate level. Graduate students will have additional course requirements/expectations. Prerequisite: CLI 440; admission to Clinical Lab Science Program; acceptance into a NAACLS accredited clinical lab science program. Offered Spring.

CLI 480/580 Cr.3

Laboratory Management and Education

A course designed to introduce senior students to skills and knowledge required to manage a clinical laboratory and educate future clinical laboratory scientists. Students will participate with lab managers in activities such as ordering supplies, quality control, quality management and quality improvement. They will be introduced to human resource management, financial management, scheduling issues, instrument selection for profitability and the processes involved in preparing for laboratory inspections and maintaining JCAHO and CAP laboratory accreditation. This course is taught largely at an undergraduate level. Graduate students will have additional course requirements/expectations. Prerequisite: admission to Clinical Lab Science Program; acceptance to a NAACLS accredited internship site. Offered Fall.

CLI 484/584 Cr.2

Laboratory Management

This course will discuss laboratory management issues along with theory, practical application, and evaluation of principles/models. Development of critical thinking, problem solving, teamwork, communication, professionalism, research, management, and leadership skills will be emphasized. This course is taught largely at an undergraduate level. Graduate students will have additional course requirements/expectations. Prerequisite: CSH major; junior standing. Offered Spring.

CLI 495 Cr.1-3

Independent Study in Medical Laboratory Science

Individual reading or research under the guidance of a clinical laboratory science instructor. Repeatable for credit - maximum six. Prerequisite: admission to Clinical Lab Science Program; approval of program director and instructor. Consent of instructor. Offered Occasionally.

CLI 496 Cr.1-3

Special Topics in Clinical Laboratory Science

Workshop or seminar on selected topics in the practice of clinical laboratory science. Student may select seminar based upon objectives and needs. Repeatable for credit - maximum six. Prerequisite: admission to clinical lab science program; approval of program director. Consent of instructor. Offered Occasionally.

CLI 499 Cr.1-3

Independent Research in Clinical Lab Science

An opportunity to pursue individual research topics under the direction of a faculty member. Depending on the nature of the research project, study is expected to involve substantial laboratory or theoretical work in addition to literature review and instruction. Students are expected to develop research skills related to clinical laboratory science. In addition to a written report to the supervising faculty member, expected outcomes may include: laboratory notebooks, experimental devices, software, papers and presentations to department and regional meetings. Repeatable for credit - maximum six. Consent of instructor. Offered Occasionally.