CLINICAL LABORATORY
SCIENCE (CLSC)

CLSC 150. Current Topics in Clinical Laboratory Medicine. 1 Credit.
A survey of topics in laboratory medicine including transfusions, forensic
science, infectious diseases, and hematologic diseases.
Grading status: Letter grade.

CLSC 410. Laboratory Mathematics. 1 Credit.
Permission of the instructor for nonmajors. Basic mathematical
principles, calculations, quality assurance, and method validation relevant
to the clinical laboratory.
Grading status: Letter grade.

CLSC 410L. Basic and Molecular Laboratory Methods. 2 Credits.
Majors only. Basic skills associated with the clinical laboratory
including pipetting, spectrophotometry, standard curves, dilutions, and
immunoassays. Molecular methods include small volume pipetting,
microwell plating, nucleic acid extraction, and PCR techniques.
Grading status: Letter grade.

CLSC 420. Urinalysis and Body Fluids. 1 Credit.
Permission of the instructor for nonmajors. The physical, chemical, and
microscopic analysis of body fluids in the clinical laboratory with an
emphasis on correlation of laboratory data.
Grading status: Letter grade.

CLSC 420L. Urinalysis Laboratory. 1 Credit.
For clinical laboratory science majors only. The physical, chemical, and
microscopic examination of urine with an emphasis on the correlation of
laboratory data.
Grading status: Letter grade.

CLSC 430. Biochemistry. 3 Credits.
Permission of the instructor for nonmajors. Physiological biochemistry of
the metabolic pathways and alterations in selected diseases. Also
includes principles and applications of molecular techniques in the
clinical laboratory.
Grading status: Letter grade.

CLSC 440. Hematology I. 2 Credits.
Permission of the instructor for nonmajors. Introduction to normal
hematopoiesis, blood cell function and identification, hematologic tests,
principles of hemostasis, and hemostasis disorders.
Grading status: Letter grade.

CLSC 440L. Hematology I Laboratory. 1 Credit.
Permission of the instructor for nonmajors. Basic clinical assays for
identification and evaluation of erythrocytes, leukocytes, and platelets
with an emphasis on microscopy. Also includes coagulation testing.
Grading status: Letter grade.

CLSC 442. Hematology II. 3 Credits.
Majors only. Hematologic disorders involving erythrocytes and
leukocytes, with an emphasis on the analysis and interpretation of
laboratory data.
Grading status: Letter grade.

CLSC 442L. Hematology II Laboratory. 1 Credit.
Majors only. Microscopic identification and evaluation of abnormal
erythrocyte and leukocyte morphology, correlation with other laboratory
data, and clinical interpretation.
Grading status: Letter grade.

CLSC 450. Immunology. 3 Credits.
Permission of the instructor for nonmajors. Basic immunology and
serology. Innate and immune body defenses. The development and
properties of cellular and humoral elements and their alterations in
pathological and other conditions.
Grading status: Letter grade.

CLSC 460. Special Pathogens. 2 Credits.
Permission of the instructor for nonmajors. Study of clinically significant
fungi, parasites, and atypical or unusual bacteria. Correlation of disease,
disease transmission, mechanisms of pathogenicity, and diagnostic
testing.
Grading status: Letter grade.

CLSC 460L. Parasitology and Mycology Laboratory. 1 Credit.
Permission of the instructor for nonmajors. Clinical laboratory diagnostic
methods for human parasitic and fungal infections. Microscopic
morphology of fungal organisms and parasites, including their various life
cycle forms.
Grading status: Letter grade.

CLSC 462. Clinical Bacteriology. 3 Credits.
Majors only. Principles and practice of clinical bacteriology. Study
of medically significant bacteria with correlation of human disease,
mechanisms of bacterial pathogenicity, and laboratory diagnostics.
Grading status: Letter grade.

CLSC 462L. Clinical Bacteriology Laboratory. 2 Credits.
Majors only. A comprehensive course describing bacteria that infect
humans. Correlation of diseases and pathological mechanisms of
bacteria.
Grading status: Letter grade.

CLSC 470. Clinical Chemistry. 3 Credits.
Majors only. An introduction to the methods of analysis used in the
clinical chemistry laboratory. Emphasis on the correlation of chemistry
laboratory values with disease states.
Grading status: Letter grade.

CLSC 470L. Clinical Chemistry Laboratory. 2 Credits.
Majors only. Performance of clinical laboratory assays for significant
biochemical molecules. Principles of analysis, quality control, method
evaluation, and basic laboratory instrumentation are presented.
Grading status: Letter grade.

CLSC 480. Immunohematology. 3 Credits.
Majors only. Introduction to blood group serology with an emphasis on
the major blood group systems, pretransfusion testing, and antibody
identification.
Grading status: Letter grade.

CLSC 480L. Immunohematology Laboratory. 2 Credits.
Majors only. Laboratory techniques for red cell typing, antibody
identification, and pretransfusion testing.
Grading status: Letter grade.

CLSC 540L. Clinical Hematology Laboratory. 4 Credits.
Majors only. Laboratory rotation in clinical hematology.
Requisites: Prerequisite, CLSC 440.
Gen Ed: EE- Field Work.
Grading status: Letter grade.

CLSC 542L. Clinical Hemostasis Laboratory. 2 Credits.
Majors only. Laboratory rotation in clinical coagulation.
Requisites: Prerequisite, CLSC 440.
Grading status: Letter grade.
CLSC 550L. Clinical Immunology Laboratory. 1 Credit.
Majors only. Laboratory rotation in clinical immunology.
**Requisites:** Prerequisite, CLSC 450.
**Grading status:** Letter grade.

CLSC 560L. Clinical Microbiology Laboratory. 4 Credits.
Majors only. Laboratory rotation in clinical microbiology.
**Requisites:** Prerequisite, CLSC 462.
**Grading status:** Letter grade.

CLSC 570L. Clinical Chemistry Laboratory Rotation. 4 Credits.
Majors only. Laboratory rotation in clinical chemistry.
**Requisites:** Prerequisite, CLSC 470.
**Grading status:** Letter grade.

CLSC 580L. Clinical Immunohematology Laboratory. 4 Credits.
Majors only. Laboratory rotation in clinical immunohematology.
**Requisites:** Prerequisite, CLSC 480.
**Grading status:** Letter grade.

CLSC 582L. Clinical Transplantation Medicine Laboratory. 1 Credit.
Majors only. Clinical rotation in histocompatibility, flow cytometry, and hematopoietic progenitor cell laboratories.
**Requisites:** Prerequisite, CLSC 480.
**Grading status:** Letter grade.

CLSC 620. Clinical Laboratory Management. 2 Credits.
Majors only. Foundation in the technical and nontechnical aspects of supervision and management of clinical laboratory testing.
**Grading status:** Letter grade.

CLSC 630. Research Methods in Clinical Laboratory Science. 2 Credits.
Majors only. An overview of the knowledge of research design and methods commonly used in the clinical laboratory research arena, providing the basis for the critical examination of professional literature.
**Gen Ed:** CI.
**Grading status:** Letter grade.

CLSC 650. Clinical Laboratory Science Laboratory Administration. 3 Credits.
Foundation in the technical and nontechnical aspects of supervision and management of clinical laboratory testing.
**Grading status:** Letter grade.

CLSC 670. Clinical Laboratory Science Educational Methods. 2 Credits.
Majors only. Introduction to the basic principles of clinical laboratory education, including objectives, learning formats, test development, and clinical teaching.
**Repeat rules:** May be repeated for credit. 2 total credits. 1 total completions.
**Grading status:** Letter grade.

CLSC 695. Undergraduate Research in Clinical Laboratory Science. 3 Credits.
This mentored and self-directed course provides students with research experience in the clinical laboratory field. Students will apply knowledge of research methods to generate results and communicate results to others. This is a clinical laboratory science elective course. Seniors only.
**Requisites:** Prerequisite, CLSC 630 or CLSC 730.
**Grading status:** Pass/Fail.

CLSC 705L. Clinical Laboratory Methods. 2 Credits.
This course consists of online laboratory mathematics and one week of an on-campus laboratory experience. This course covers topics in laboratory mathematics such as dilutions, conversions, and calibration. The laboratory sessions cover basic skills required in the clinical laboratory such as pipetting, spectrophotometry, calibration, and preparation of solutions.
**Grading status:** Letter grade.

CLSC 710. MDS PRINCIPLES. 3 Credits.
CLSC 720. MDS APPLICATIONS. 3 Credits.
CLSC 720L. MDS APPL LAB. 3 Credits.

CLSC 730. Research Methods. 3 Credits.
An overview of research design and methods used in clinical laboratory research. The course covers methodological and ethical considerations influencing research design and prepares student to critically examine professional literature.
**Grading status:** Letter grade.

CLSC 735. Method Evaluation. 3 Credits.
This course covers the knowledge and skills needed to determine the clinical value, diagnostic accuracy, and cost of establishing a new assay in a molecular diagnostic laboratory.
**Grading status:** Letter grade.

CLSC 740L. Molecular Diagnostic Science Clinical Laboratory Rotation. 7 Credits.
Majors only. Rotation in a clinical molecular laboratory in which the student will perform molecular assays, apply quality control, interpret results, and correlate results with the clinical condition.
**Grading status:** Letter grade.

CLSC 741L. Clinical Molecular Diagnostic Techniques I. 2 Credits.
Clinical rotation in a molecular oncology, molecular genetics, or molecular infectious disease laboratory.
**Grading status:** Letter grade.

CLSC 742L. Clinical Molecular Diagnostic Techniques II. 2 Credits.
Second clinical rotation in a molecular oncology, molecular genetics, or molecular infectious disease laboratory.
**Grading status:** Letter grade.

CLSC 743L. Clinical Molecular Diagnostic Techniques III. 3 Credits.
Third clinical rotation in a molecular oncology, molecular genetics, or molecular infectious disease laboratory. Includes a research project.
**Grading status:** Letter grade.

CLSC 740L. Molecular Diagnostic Science Clinical Laboratory Rotation. 7 Credits.
Majors only. Rotation in a clinical molecular laboratory in which the student will perform molecular assays, apply quality control, interpret results, and correlate results with the clinical condition.
**Grading status:** Letter grade.

CLSC 760. Molecular Diagnostics in the Corporate Setting. 3 Credits.
This course covers the development of in vitro diagnostic molecular methods with clinical applications. Topics include the research and development process, technical documentation, product commercialization, and IVD regulatory issues.
**Grading status:** Letter grade.

CLSC 770. Educational Methods and Applications. 3 Credits.
This course provides an overview of educational methods to prepare students for future roles as educators in clinical laboratories, educational programs and in corporate settings. Topics include continuing education, competency assurance, certification and accreditation.
**Grading status:** Letter grade.
CLSC 780. Capstone Seminar. 3 Credits.
Majors only. Application of knowledge and clinical skills acquired in MMDS courses to prepare a written manuscript suitable for publication. The manuscript will describe the method validation study performed in the clinical setting and include relevant literature review and abstract, introduction, methods and materials, statistics, results, discussion, conclusion, and references.

Grading status: Letter grade.