The Clinical Laboratory Science programs (Bachelor of Science in Clinical Laboratory Science and Bachelor of Health Science with a concentration in Laboratory Science) encompass health professions dedicated to providing accurate diagnostic information to medical practitioners. The field offers challenging opportunities for people with aptitudes in the basic sciences and interest in a health care career. The programs at Wayne State University provide students with the technical knowledge and specialized skills necessary for entry-level work as laboratory professionals. Graduates of the BS in CLS program are eligible to take a national certification examination, which is required for most hospital-based clinical laboratory science positions. The Bachelor of Health Science with a concentration in Laboratory Science degree is a good choice for students interested in entering a subsequent graduate program.

Both programs have pre-professional and professional curriculum components. The pre-professional component consists of science and non-science prerequisite courses and the general education curriculum. The professional program begins with the junior year and is taught by the faculty of the Department of Applied Health Sciences. Didactic course work continues in the senior year and students in the BS in CLS program also complete a clinical experience in an affiliated clinical laboratory.

APOLLONI, KAREN K.: M.S.A, Central Michigan University; B.S., Wayne State University; Assistant Professor (Clinical)
BROWN, JANET M.: M.S., Ohio State University; B.S., Michigan Technological University; Clinical Assistant Professor
KRISHER, KAREN K.: Ph.D., B.S., University of Oklahoma; Clinical Associate Professor
STEWARD, MARYANNE: Ed.D, Walden University; M.B.A., University of Phoenix; B.S., University of Windsor; Assistant Professor (Clinical)

- Clinical Laboratory Science (B.S.) (http://bulletins.wayne.edu/undergraduate/college-pharmacy-health-sciences/applied-health-sciences/clinical-laboratory-science/clinical-laboratory-science-bs)
- Laboratory Science Concentration (B.H.S.) (http://bulletins.wayne.edu/undergraduate/college-pharmacy-health-sciences/applied-health-sciences/clinical-laboratory-science/laboratory-science-concentration-bs)

**CLS 2080 Clinical Laboratory Science Seminar Cr. 1**
Introduction to clinical laboratory sciences. Opportunities and responsibilities. Offered Fall, Winter.

**CLS 2990 Pre-professional Directed Study Cr. 1-3**
Independent study under faculty supervision. Offered Fall, Spring/Summer.
Restric(tion(s): Enrollment limited to students in the Pharmacy and Health Sciences.

**CLS 3020 Hematology Lecture and Laboratory Cr. 4**
Basic study of blood-forming organs and components of blood; explanation of basic hematological procedures. Offered Yearly.
Restric(tion(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $75

**CLS 3040 Immunohematology Lecture and Laboratory Cr. 4**
Restric(tion(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $130

**CLS 3080 Instrumentation Lecture and Laboratory Cr. 4**
Introduction to fundamental laws of electronics, the theoretical basis of instrument design, and quality control in laboratory testing. Application of instrumental methods, including spectrophotometric, fluorometric, electroanalytical, and chromatographic methods to the clinical laboratory. Offered Fall.
Restric(tion(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $85

**CLS 3090 Introduction to Professional Practice Cr. 1**
Introduction to pre-professional and professional practice, education methodologies for the lab, intro to research in the field, ethics, and critical thinking in the lab. Offered Fall.
Restric(tion(s): Enrollment limited to students with a class of Junior or Senior; enrollment limited to students in the Pharmacy and Health Sciences; enrollment limited to students in the BS in Clinical Lab Sciences or Bachelor of Health Science programs.

**CLS 3100 Basic Techniques: Microscopy Cr. 3**
Specimen collection, preparation, and examination of urine and other body fluids such as spinal fluid, semen, and synovial fluid. Offered Yearly.
Restric(tion(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $85

**CLS 3280 Clinical Chemistry Lecture and Laboratory Cr. 4**
Methodologies and interpretations of results of clinical chemistry diagnostic tests. Offered Yearly.
Restric(tion(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $85

**CLS 3330 Medical Terminology Cr. 1**
Study of medical terms in a body system approach. Review of anatomy and physiology. Offered Every Term.

**CLS 4000 Clinical Hematology Cr. 5**
Theory and principles for evaluation of the quantity, morphology and function of cellular components of blood. Offered Every Term.
Restric(tion(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $14

**CLS 4010 Clinical Chemistry Cr. 3**
Biochemical analysis of blood and other body fluids to determine values of various chemical substances, using routine methods and automation. Offered Every Term.
Restric(tion(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $14

**CLS 4020 Clinical Blood Bank Cr. 2**
Theory and principles involving antigen-antibody reactions of blood. Obtaining, storage and preparation of whole blood or blood components for infusion. Offered Every Term.
Restric(tion(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $14
CLS 4030 Clinical Microbiology Cr. 5-6
Obtaining, culturing, identification and antibiotic sensitivity of microorganisms causing infection or infestation. Offered Every Term.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $140

CLS 4040 Laboratory Operations Cr. 3
Laboratory management issues and problems, with emphasis on the hospital setting. Includes management theory, interpersonal and technical skills, legal and regulatory issues, computers in laboratories, quality assessment and improvement, and healthcare marketing. Offered Yearly.
Restriction(s): Enrollment limited to students with a class of Junior or Senior; enrollment limited to students in the Pharmacy and Health Sciences; enrollment limited to students in the BS in Clinical Lab Sciences or Bachelor of Health Science programs.

CLS 4050 Clinical Immunology Cr. 1
Study of diseases related to diagnostic immunology. Offered Every Term.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $140

CLS 4210 Hemostasis Lecture and Laboratory Cr. 2
Lecture and laboratory course covering principles of hemostasis and assessment of hemostasis status. Performance and interpretation of diagnostic tests, along with problem solving and correlation of laboratory findings with disease states. Offered Fall.
Course Material Fees: $75

CLS 4230 Hematology II Cr. 3
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $85

CLS 4990 Professional Directed Study Cr. 1-8
Independent study under faculty supervision. Offered Every Term.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.

CLS 5020 Pathophysiology for the Clinical Laboratory Cr. 3
Advanced pathophysiologic concepts including etiology, pathogenesis, and clinical manifestations, of commonly encountered altered health states in the adult human. Offered Fall.
Restriction(s): Enrollment limited to students in a BS in Clinical Lab Science or Bachelor of Health Science degrees.

CLS 5070 Clinical Pathology Correlation Cr. 2
Correlation of laboratory data and clinical history through the analysis of case studies. Offered Every Term.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.

CLS 5500 Immunology and Serology Cr. 3
Lectures and studies; applications of immunology and serology in a lab setting, including relevance to human medicine. Offered Yearly.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $140

CLS 5510 Diagnostic Microbiology I Cr. 4
Lectures and laboratory course in diagnostic microbiology, with a focus on the fundamentals of clinical bacteriology, and human infectious diseases. Offered Winter.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences; enrollment limited to students in the BS in Clinical Lab Sciences or Bachelor of Health Science programs.
Course Material Fees: $140

CLS 5520 Diagnostic Microbiology II Cr. 4
Lecture and laboratory course in diagnostic microbiology with a focus on clinical virology, mycology, and parasitology. Offered Fall.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences; enrollment limited to students in the BS in Clinical Lab Sciences or Bachelor of Health Science programs.
Course Material Fees: $140

CLS 5530 Microbiology Simulation Laboratory Cr. 3
Application of previously acquired theory and techniques in a simulated clinical microbiology laboratory, with emphasis on work organization, correlation of results, management, decision-making, and quality assurance. Offered Fall, Spring/Summer.
Prerequisites: CLS 5510 with a minimum grade of C and CLS 5520 with a minimum grade of C
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences; enrollment limited to students in the BS in Clinical Lab Sciences or Bachelor of Health Science programs.
Course Material Fees: $100

CLS 5550 Molecular Diagnostics Cr. 2
Review of molecular biology applicable to current testing systems. Laboratory techniques to elucidate molecular structure and disease states; DNA hybridization, agarose gel electrophoresis; southern and western blot techniques; DNA sequencing; PCR. Offered Yearly.
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $140

CLS 5993 Writing Intensive Course in Clinical Laboratory Science Cr. 0
Satisfies General Education Requirement: Writing Intensive Competency
Disciplinary writing assignments under the direction of a faculty member. Course must be elected in conjunction with designated corequisite; see Schedule of Classes for corequisites available each term. Satisfies University General Education Writing Intensive Course in the Major requirement. Required for all majors. Offered Every Term.
Prerequisites: AFS 2390 with a minimum grade of C or ENG 2390 with a minimum grade of C and CLS 5520 with a minimum grade of C
Restriction(s): Enrollment limited to students in the Pharmacy and Health Sciences.
Course Material Fees: $140