CLINICAL LABORATORY SCIENCE

Clinical Laboratory Sciences Program
University of Mississippi Medical Center

ABOUT THE PROFESSION

Clinical laboratory science is a dynamic profession that is ever changing in terms of technology and professional expertise. The clinical laboratory scientist is a highly skilled scientist who functions in multiple roles. Some of these roles include performing and evaluating diagnostic laboratory procedures on body fluids, developing new diagnostic procedures, supervising biomedical research projects, providing technical expertise, consulting, managing clinical and research laboratory departments, and analyzing and implementing laboratory information systems. The major areas of interest in laboratory science are hematology, immunohematology (transfusion medicine), clinical microbiology, clinical chemistry, clinical immunology, body fluid analysis, and molecular diagnostics. Career opportunities for the clinical laboratory scientist are readily available and include technical and management positions in hospitals and reference laboratories, research in biomedical companies, forensic medicine, public health, sales and marketing, private consulting, health care administration, and education.

As one of the fastest growing industries of the 21st century, biotechnology is developing new diagnostic tests for clinical laboratories, research laboratories, forensic laboratories and the pharmaceutical industry. The skills of the molecular scientist are in great demand in the biotechnology industry. There is an exponential growth in opportunities in this field of study.

PROGRAM OF STUDY

The clinical laboratory science program is a two-year, upper division curriculum that includes lecture and laboratory study followed by clinical rotations in selected hospitals in the Jackson metropolitan area and throughout the state.

ACCREDITATION STATUS

The clinical laboratory science program is accredited by the National Accrediting Agency for Clinical Laboratory Science, 8410 West Bryn Mawr Avenue, Suite 670, Chicago, IL 60631-3415, Phone (773)-714-8880. The NAACLS web site is at http://www.naacls.org.

ADMISSION REQUIREMENTS

To be eligible for admission, candidates must:

1. have a minimum of 58 semester hours of academic credit (exclusive of physical education, military science, dogmatic religion and vocation courses) from an accredited institution of higher learning;
2. complete a total of 12 hours in required science courses before the application is submitted;
3. have a minimum 2.50 grade point average on a 4.00 scale, and
4. complete the following minimum prerequisite requirements:

REQUIRED COURSES*	Number of Courses**
Zoology with Laboratory or Biology with Laboratory	1
Anatomy and Physiology	1
Microbiology with Laboratory	1
General Chemistry with Laboratory	2
Organic or Biochemistry with Laboratory	1
College Algebra	1
English Composition	2
Humanities	2
Fine Arts	1
Social/Behavioral Science	1

PREMED OPTION

Students who plan to apply to medical school upon completion of their undergraduate education should complete the following prerequisite courses before entering the clinical laboratory science programs:

REQUIRED COURSES*	Number of Courses**
Biological Science with Laboratory	2
Anatomy and Physiology	1
Microbiology with Laboratory	1
General Chemistry with Laboratory	2
Organic Chemistry with Laboratory	2
Physics with Laboratory	2
Advanced Science	1
College Algebra	1
Trigonometry	1
English Composition	2
Humanities	2
Fine Arts	1
Social/Behavioral Science	1

ELECTIVES**

Remaining credit hours should be selected from a broad range of academic courses which may include anatomy and physiology, cell biology, genetics, embryology, calculus, management, or computer applications

*Science survey courses and science courses designed for non-majors are not acceptable for transfer credit.

**Students enrolled in a quarter academic calendar must complete the required sequence of courses which are equivalent to University of Mississippi courses.

An optional Advanced Standing Program is available for certified clinical laboratory technicians. Contact the program director for more information.

EXPENSES

In addition to tuition, students should be prepared to spend approximately $800 per year for textbooks, instrumentation, supplies, and uniforms. Students are responsible for living expenses.

DEGREE AND CERTIFICATION

Following satisfactory completion of all requirements, the student will be awarded the bachelor of science degree in clinical laboratory science from the University of Mississippi and is eligible to apply to take a national certification examination to become certified as a clinical laboratory scientist, medical technologist, or molecular biologist.

CURRICULUM

Required semester hours and course descriptions are summarized below:

JUNIOR	
Summer	
CLS 310 Body Fluid Analysis	3
CLS 311 Basic and Clinical Immunology	3
CLS 327 Laboratory Operations	3
CLS 405 Introduction to Molecular Diagnostics	3
	12
Fall	
CLS 312 Hematology I	3
CLS 313 Clinical Microbiology I	4
CLS 314 Clinical Chemistry I	3
CT 323 Medical Genetics	2
	12
Spring	
CLS 322 Hematology II	3
CLS 323 Clinical Microbiology II	4
CLS 324 Clinical Chemistry II	3
CLS 325 Immunohematology I	4
	14
Senior	
Summer (optional)	
CLS 427 Molecular Techniques I	7
CLS 428 Molecular Techniques II	5
	12

Fall	
CLS 417 Principles of Management and Education in CLS	2
CLS 429 Clinical Correlations	3
CLS 430 Research in Clinical Laboratory Science	3
CLS 426 Clinical Seminar II	1
Elective	3
	12
Spring	
CLS 422 Hematology III	4
CLS 423 Clinical Microbiology IV	4
CLS 424 Clinical Chemistry III	4
CLS 425 Immunohematology II	4
	16
Total	**66**

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COURSE DESCRIPTIONS

CLS 310. BODY FLUID ANALYSIS. A lecture and laboratory study of the qualitative and quantitative changes in the renal system based on anatomical and physiological alteration. (3 semester hours.) (2-1-0)

CLS 311. BASIC AND CLINICAL IMMUNOLOGY. A lecture and laboratory study of the principles of in vivo and in vitro immunological responses and immunologic testing, theory, and practice in relation to disease in man. (3 semester hours.) (3-0-0)

CLS 312. HEMATOLOGY I. A lecture and laboratory study of blood and blood forming organs and basic diagnostic procedures. (3 semester hours.) (2-1-0)

CLS 313. CLINICAL MICROBIOLOGY I. A lecture and laboratory study of pathological bacteria with an emphasis on techniques of isolation and identification. (4 semester hours.) (2-2-0)

CLS 314. CLINICAL CHEMISTRY I. A lecture and laboratory study of biological compounds and elements found in body fluids. Emphasis is placed on methods of determination and clinical interpretation relating to pathological states in man. (3 semester hours.) (2-1-0)

CLS 322. HEMATOLOGY II. A lecture and laboratory study of blood cells and their abnormalities with emphasis on disease processes. (3 semester hours.) (2-1-0) Prerequisite: CLS 312.

CLS 323. CLINICAL MICROBIOLOGY II. A lecture and laboratory study of pathological microorganisms with an emphasis on techniques of isolation and identification of fungi and viruses, medically significant protozoan and helminth parasites and their vectors, and various culturing techniques. (4 semester hours.) (2-2-0) Prerequisite: CLS 313.

CLS 324. CLINICAL CHEMISTRY II. A lecture and laboratory study of biological compounds and elements found in body fluids. Emphasis is placed on methods of determination and clinical interpretation relating to pathological states in man. (3 semester hours.) (2-1-0) Prerequisite: CLS 314.

CLS 325. IMMUNOHEMATOLOGY I. A lecture and laboratory study of principles, techniques, and applications of blood transfusion practices. (4 semester hours.) (2-2-0)

CLS 327. LABORATORY OPERATIONS. A lecture study of laboratory math, basic statistics, and quality assurance programs in the clinical laboratory.. (3 semester hours) (3-0-0)

CLS 405. INTRODUCTION TO MOLECULAR DIAGNOSTICS. An introductory course in molecular terminology, the basic anatomy of a gene, the components of DNA and RNA, and the role of DNA and RNA in a cell. Principles of basic molecular techniques used in research and clinical laboratories will be introduced.. (3 semester hours) (3-0-0)

CLS 417. PRINCIPLES OF MANAGEMENT AND EDUCATION IN CLINICAL LABORATORY SCIENCES. An introduction to the principles of management and education as applied to the profession of clinical laboratory science. (2 semester hours.) (2-0-0)

CLS 422. HEMATOLOGY III. Clinical education practicum in affiliated laboratories. (4 semester hours.) (0-0-4) Prerequisite: CLS 322.

CLS 423. CLINICAL MICROBIOLOGY IV. Clinical education practicum in affiliated laboratories. (4 semester hours.) (0-0-4) Prerequisite: CLS 323.

CLS 424. CLINICAL CHEMISTRY III. Clinical education practicum in affiliated laboratories. (4 semester hours.) (0-0-4) Prerequisite: CLS 324.

CLS 425. IMMUNOHEMATOLOGY II. Clinical education practicum in affiliated laboratories. (4 semester hours.) (0-0-4) Prerequisite: CLS 325.

CLS 426. CLINICAL SEMINAR II. Student presentations of case studies, new laboratory techniques, innovative management techniques, computer applications, new instrumentation, etc. (1 semester hour.) (1-0-0)

CLS 427. MOLECULAR TECHNIQUES I. Molecular clinical practicum in affiliated laboratories. (7 semester hours.) (0-0-10)

CLS 428. MOLECULAR TECHNIQUES II. Molecular clinical practicum in affiliated laboratories. (5 semester hours.) (0-0-5)

CLS 429. CLINICAL CORRELATIONS. A capstone course of clinical laboratory sciences focusing on clinical diagnosis. (3 semester hours) (3-0-0)

CLS 430. RESEARCH IN CLINICAL LABORATORY SCIENCES. A research project addressing issues in clinical laboratory sciences. (TBA)

Contact:

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