

# Clinical Laboratory Science Program

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## DEGREE PROGRAM OFFERED

Bachelor of Science in Clinical Laboratory Science (BSCLS),  
major in Clinical Laboratory Science

The Bachelor of Science in Clinical Laboratory Science with a major in Clinical Laboratory Science prepares students to function as clinical laboratory scientists or medical technologists in a wide variety of settings from physician office laboratories to modern tertiary care hospital laboratories. The clinical laboratory scientist can become an indispensable top-level laboratory worker, a supervisor, a specialist, a researcher, or an educator.

The requirements during the first two years of study include courses in biology, chemistry, and mathematics, along with courses in the humanities and social and behavioral sciences. The junior and senior years combine clinical experiences in the affiliated clinical laboratories with advanced academic study in the CLS disciplines.

The program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). Graduates of the program are eligible to take the national certification examination for the Medical Laboratory Scientist (MLS) given by the Board of Certification of the American Society for Clinical Pathology (ASCP).

## Admission Process

Any student entering Texas State may declare Pre-Clinical Laboratory Science as their major. It is recommended that students arrange academic advising at least once prior to making application, and, if possible, arrange to learn about the profession through clinical laboratory tours, personal research, and interviewing a practicing CLS professional. Admission and acceptance to Texas State and declaration as a clinical laboratory science major does not guarantee admission to the program. Admission to the program is competitive and selective. The academic sequence begins during the fall semester of the junior year. Students are selected in the spring semester of their sophomore year. Enrollment is limited by student/faculty ratios and clinical placement availability. The deadline for submission of applications is February 15. A typical cohort size of 20 students will be admitted. Applicants will be notified of their status by April 30th or sooner. The criteria for student selection for the junior class includes scholastic ability, particularly in the sciences, essays, and a personal interview, and not on the basis of gender, race, color, religion, veteran status or condition of disability, or national origin. Due to performance standards of the profession, students must meet specific ADA standards in accordance with physical and emotional requirements of the academic program to qualify for admission.

## General Admission Requirements:

1. Admission to Texas State University. University application deadlines are different than the CLS Program deadline. Potential applicants are encouraged to complete the University process early to facilitate review of transcripts during the CLS Program application process.
2. A minimum overall GPA and science GPA of 2.50; however, an overall GPA and a science GPA of 3.0 is recommended in order to be competitive in the application process.
3. Science courses require a minimum grade of "C" or higher.
4. Students may only have a maximum of 12 remaining prerequisite hours, with only eight of these credit hours in prerequisite science courses. Students are encouraged to complete all prerequisite courses prior to admission.
5. Completion of the CLS application packet for admission by the deadline (February 15th).
6. Successful interview of selected candidate with admission committee.
7. Other requirements as necessary by clinical placements (e.g. immunization, background check, and drug testing).

## Program Progression

Successful program progression requires students to complete each semester in a lock-step sequence with a grade of "C" or higher in all major courses. Each course is offered only once each academic year; therefore, progress in the program is affected should a student fall out of the sequence due to failure to successfully complete a course. A student who falls out of sequence (whether due to illness, course failure, or other reasons) will be delayed one year to repeat the course. According to CLS program policy, students with a grade of less than a "C" in a CLS course will be stepped out of the program and individuals must reapply to the program the following year. To be considered for program readmission, all original program admission criteria and an approved schedule for retaking courses must be met. In addition, a student may repeat a CLS course only once. If the student does not earn a grade of at least "C" upon repeating the course, the student cannot continue in the program.

## Graduation

To graduate with a Bachelor of Science in Clinical Laboratory Science, students must successfully complete all CLS courses with a "C" or higher. Requirements for BSCLS completion and graduation include a Texas State GPA of 2.0 with a CLS major GPA of 2.25. During the second semester (spring) and final semester (summer) of the senior year, students are required to successfully complete five clinical laboratory rotations/experiences in CLS Clinical Practice courses. These courses require that the students spend clinical time in other facilities, primarily hospitals and reference laboratories, away from campus. Students must furnish their own transportation, and if necessary, housing. Because of the time and distances involved, typically no courses other than those listed in the CLS Program can be taken in the final two semesters of the senior year.

## Liability Insurance

1. Students who participate in the internship portions of the Clinical Laboratory Science program are required to purchase liability insurance, or demonstrate proof that they are insured.
2. Students may obtain information on liability insurance from the program office.

## Background Check and Drug Screening

As a condition for placement in professional practice sites, students will be required to have a background check and drug screening and meet other requirements set by individual sites. Information on the drug screening process will be provided by the CLS Program.

## Immunization Requirements

It is a policy of the College of Health Professions that each student must provide a Health Report completed by a physician, and must take certain immunizations before the student can be placed in a clinical or internship assignment. Information on these requirements and forms to be supplied may be obtained through the program office.

Bachelor of Science in Clinical Laboratory Science (BSCLS) Major in Clinical Laboratory Science Minimum required: 120 semester hours							
General Requirements:							
1. Any student who did not complete at least two years of the same foreign language in high school is required to take 6-8 hours of the same foreign language.							
2. *See Academic Services section of the catalog for course options that satisfy literature and social and behavioral science components.							
3. If US1100 is waived, the student must have a minimum of 120 hours to graduate. See the College Advising Center.							
Freshman Year - 1st Semester		Freshman Year - 2nd Semester		Sophomore Year - 1st Semester		Sophomore Year - 2nd Semester	
Course	Hr	Course	Hr	Course	Hr	Course	Hr
BIO 1330, 1130	4	BIO 1331, 1131	4	CHEM 2330/2130, or		HIST 1320	3
CHEM 1341, 1141	4	CHEM 1342, 1142	4	CHEM 2341/2141, or		Statistics - HP 3302, SOCI 3307, MATH 2328,	
ENG 1310	3	ENG 1320	3	CHEM 2342/2142	4	QMST 2333, CJ 3347, or PSY 2301	3
POSI 2310	3	MATH 1315, 1319, 1329,		BIO 2440 or BIO 2400	4	POSI 2320	3
US 1100	1	2321, 2331, 2417, or 2471	3	COMM 1310	3	ENG literature*	3
				HIST 1310	3	PHIL 1320 or 1305	3
<b>Total</b>	<b>15</b>	<b>Total</b>	<b>14</b>	<b>Total</b>	<b>14</b>	<b>Total</b>	<b>15</b>

Junior Year - 1st Semester		Junior Year - 2nd Semester		Senior Year - 1st Semester		Senior Year - 2nd Semester	
Course	Hr	Course	Hr	Course	Hr	Course	Hr
CLS 3305	3	CLS 3323	3	CLS 4227	2	CLS 4340	3
CLS 3410	4	CLS 3424	4	CLS 4318	3	CLS 4341	3
CLS 4326	3	CLS 3412	4	CLS 4440	4	CLS 4370	3
Social and Behavioral Science Component*	3	ART, DAN, MU or TH 2313	3	CLS 4460	4	CLS 4463	4
<b>Total</b>	<b>13</b>	<b>Total</b>	<b>14</b>	<b>Total</b>	<b>13</b>	<b>Total</b>	<b>13</b>

Senior Year - Summer	
Course	Hr
CLS 4225	2
CLS 4361	3
CLS 4464	4
<b>Total</b>	<b>9</b>

## Courses in Clinical Laboratory Science (CLS)

- 3305 Introduction to Clinical Laboratory Techniques. (2-3) Clinical Laboratory Science students will be introduced to techniques, procedures, and instrumentation commonly used in clinical laboratories.
- 3323 Clinical Microscopy and Analysis of Body Fluids. (2-3) Study of body fluids present in the various anatomical compartments of the body as they differ in health and disease. Physical and chemical tests, and microscopic examination of select body fluids are performed.
- 3410 Clinical Chemistry I. (3-4) Designed to acquaint the clinical laboratory science student with some of the concepts, techniques, procedures, and instrumentation used in clinical chemistry.
- 3412 Hematology/Coagulation I. (3-4) Qualitative and quantitative evaluation of formed elements of the blood and studies in coagulation abnormalities.
- 3424 Clinical Immunology. (3-3) Principles of immune response and underlying immunologic procedures of diagnostic value are discussed. Lectures and laboratory emphasize detection, identification, nature of antigens and antibodies, and the antigen-antibody reactions encountered.
- 4225 Laboratory Management and Supervision. (2-0) Lectures and discussions of general principles of management and supervision of the clinical laboratory and its personnel. (WI)
- 4227 Introduction to Clinical Practice. (2-0) Discussion of professional and technical requirements for clinical laboratory science students and their role and responsibilities as a unit of the health care team. (WI)
- 4318 Hematology II. (2-3) In-depth study of theoretical and practical aspects of clinical hematology and hemostasis with emphasis on principles, methodology, problems encountered, and clinical applications.
- 4321 Directed Study in Clinical Laboratory Science. (2-6) An in-depth study of a narrow range of topics or a related problem in the clinical laboratory sciences. Topics to be announced; may be repeated for credit when topics vary.
- 4326 Medical Parasitology. (2-3) Lecture and laboratory instruction in medically important parasites producing disease in humans with emphasis on epidemiology, life cycles, identifying characteristics, and pathology of these parasites.
- 4340 Clinical Microbiology II. (2-3) Study of medically important fungi, viruses, chlamydiae, rickettsiae, and advanced topics in clinical microbiology. Automated identification of microorganisms, database management, and epidemiologic techniques will be discussed.
- 4341 Molecular Diagnostics. (2-3) This course consists of an introduction to the principles, methodologies and applications of molecular diagnostic procedures used in clinical laboratories. Emphasis is placed on the procedures used in the identification of infectious agents that cause human disease, in the diagnosis of inherited diseases, and the diagnosis of cancer.
- 4361 Research Methods in Clinical Laboratory Science. (2-3) Directed independent research covering the principles of research and development of clinical laboratory methodology. (WI)
- 4370 Clinical Chemistry II. (2-3) A study of the theoretical and practical aspects of clinical chemistry. Manual and automated laboratory procedures for quantitative analysis of various body fluids.
- 4440 Clinical Microbiology I. (3-6) Study of pathogenic and non-pathogenic bacteria, fungi, and viruses with special emphasis on methods of isolation from body fluids, cultural and differential biochemical characteristics of body pathogens.
- 4460 Immunohematology. (3-4) Study of theoretical and practical consideration of major blood groups with emphasis on grouping and typing, antibody detection and identification, compatibility testing and component therapy in blood transfusion service.
- 4463 CLS Clinical Practice I. (0-16) Structured clinical experience assigned on an individual basis for observation, study, and practical application of techniques and methodology in the clinical laboratory.
- 4464 CLS Clinical Practice II. (0-16) Continuation of Clinical Laboratory Science Practice I; structured clinical experience assigned on an individual basis for observation, study and practical application of techniques and methodology in the clinical laboratory.