

BS in Clinical Laboratory Science

The Clinical Laboratory Science Program (CLS), formerly Medical Technology, is designed to prepare graduates to function as professional members of the health care team. Their services are utilized in hospitals, clinics, and private laboratories, as well as in business and industry. Clinical Laboratory Scientists perform a variety of immunological, biochemical, molecular, and microbiological procedures that aid in the diagnosis, treatment, and prevention of disease. Computerized databases, electronic charting, and sophisticated laboratory techniques such as flow cytometry, DNA, fingerprinting, PCR, and two-dimensional electrophoresis help ensure the accuracy and precision of their work. The University of Texas at El Paso's Clinical Laboratory Science Program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (5600 N. River Rd., Suite 720, Rosemont, IL 60018-5119).

Marketable Skills

- Students will gain skills to perform diagnostic laboratory testing competently and ethically with the purpose contributing to the improvement of the population's health and wellness.
- Students will have the opportunity to gain the necessary knowledge and experience to qualify for national MLS certification examinations.
- Students will be able to demonstrate and apply their knowledge, skills, and abilities to perform, interpret, and report-out patient clinical laboratory test results as a clinical laboratory scientist.
- Students will gain experience through professional development offered through the program and UTEP EDGE experiences.

Learning Outcomes

- Students will demonstrate entry-level medical laboratory science skills at or before the completion of didactic coursework prior to entering clinical rotations by achieving a minimum of 75% final grade on all classes.
- Second year professional phase students will demonstrate entry-level skills at or before completion of their preceptorship in all three NAACLS enforced learning domains in 4 major areas (microbiology, clinical chemistry, hematology, immunohematology) and 3 minors (serology, body fluids, coagulation) CLS core competency areas by achieving a minimum of 75% final grade on all preceptorship classes.
- Students will be able to demonstrate knowledge, skills, and abilities to perform, interpret, and report-out patient clinical laboratory test results as a clinical laboratory scientist by utilizing their skills and knowledge in community-based health fair capstone projects.

Students completing core and pre-professional courses must apply for the professional phase of the program in the spring semester. The application and application deadlines can be found on the Clinical Laboratory Science department webpage (<http://www.utep.edu/chs/cls/>). All prerequisite courses must be completed before entering the professional phase of the program in the fall semester. Students are not allowed to take other courses concurrently with upper division, professional-phase CLS courses. Applicants must have a minimum CGPA of 2.5 and a 2.75 GPA in math and sciences and must pass a drug screen and background check. University and clinical faculty may interview all applicants.

A limited number of clinical sites are available; therefore, students are selected in the spring semester to enter the professional phase once a year beginning in the Summer semester. Depending on the number of clinical affiliates available in any one year, a student might be required to attend clinical preceptorships outside the El Paso area at the student's expense.

Students must complete all lower-division course work prior to enrolling in the professional Clinical Laboratory Science courses. Before enrolling in the clinical practicum, all students must show evidence of professional liability insurance, health insurance, current CPR certification, a recent physical examination, and current immunizations (titers), including hepatitis and influenza vaccinations. Some clinical affiliates may require students to provide proof of immunizations/titers for varicella, hepatitis B, measles, rubella, and rubeola, and two-step TB proof of medical insurance. To engage in clinical practicums, which are crucial to the curriculum, CLS students must undergo and pass a background check and drug screening. In addition, some clinical practicums require finger printing.

A grade of C (75%) or higher must be earned in each CLS class. If a student earns less than a C (75%), the student must withdraw from the program and reapply the following year.

All students must perform within limits of safe practice. Students who are deemed unsafe by faculty will be dropped and will receive an F in the clinical course. All work performed by students during the clinical practicum is under the direct supervision of clinical faculty and countersigned by them.

As a professional, the student must exhibit a commitment to the welfare of patients. The faculty in the program reserves the right to refuse the opportunity of a student to perform tests or procedures on patients if the student gives evidence of unsafe and/or ineffective laboratory techniques.

Students graduating from The University of Texas at El Paso are eligible to take the national certification exam from the American Society for Clinical Pathology Board of Certification (BOC). Students passing the exam can use the initials *MLS* after their names.

Degree Plan

Required Credits: 133

Code	Title	Hours
University Core Curriculum		
Complete the University Core Curriculum requirements. (p. 3)		42
Clinical Lab Science Prerequisites		
All CLSC courses require a C or better		
Designated Core Courses: ^C		
CHEM 1305 & CHEM 1105	General Chemistry and Laboratory for CHEM 1305	4
CHEM 1306 & CHEM 1106	General Chemistry and Laboratory for CHEM 1306	4
MATH 1411	Calculus I	4
Recommended Core:		
PHIL 2306	Ethics	3
PSYC 1301	Introduction to Psychology	3
Program Prerequisites:		
The courses below are also prerequisite courses requiring a C or better for other courses in the CLS degree plan		
BIOL 1305 & BIOL 1107	General Biology and Topics in Study of Life I	4
BIOL 2313 & BIOL 2113	Human Anat/Physiology II and Human Anat/Physio Lab II	4
BIOL 3320	Genetics	3
CHEM 2324 & CHEM 2124	Organic Chemistry and Lab for Organic Chemistry 2324	4
CLSC 2210	Intro to the Clinical Lab	2
CLSC 2212	Clinical Laboratory Statistics	2
CLSC 3357	Opportunist & Parasitic Infect	3
MICR 2340 & MICR 2141	General Microbiology and Gen Microbiology Laboratory	4
Clinical Lab Science Core (Courses require a grade of C or better.)		
Junior Year-Summer:		
CLSC 3351	Concepts in Immunodiagnostics	3
Junior Year-Fall Semester:		
CLSC 3153	Body Fluids Lab	1
CLSC 3155	Clinical Chemistry I Lab	1
CLSC 3161	Serology Lab	1
CLSC 3252	Body Fluids	2
CLSC 3257	Hematology I Lab	2
CLSC 3260	Serology	2
CLSC 3354	Clinical Chemistry I	3
CLSC 3356	Hematology I	3
Junior Year-Spring Semester:		
CLSC 3164	Clinical Chemistry II Lab	1
CLSC 3167	Infectious Dis Lab:Pre-Anal Op	1
CLSC 3168	Infec Dis Lab:Anal/Post-Ana Op	1
CLSC 3269	Immunohematology Lab	2
CLSC 3364	Hematology II	3
CLSC 3365	Clinical Chemistry II	3
CLSC 3366	Infectious Diseases	3
CLSC 3368	Immunohematology	3
Senior Year - Summer		
CLSC 4111	Molecular Diagnosis Laboratory	1
Senior Year-Fall Semester:		
CLSC 4210	Molecular Diagnostics	2

CLSC 4471	Preceptorship I	4
CLSC 4472	Preceptorship II	4
CLSC 4273	Clinical Education	2
CLSC 4274	Clinical Investigation	2
Senior Year-Spring Semester:		
CLSC 4100	Ethics	1
CLSC 4180	Seminar	1
CLSC 4275	Clinical Lab Mgmt/Supervision	2
CLSC 4476	Preceptorship III	4
CLSC 4478	Preceptorship IV	4
Total Hours		133

C

Courses require a grade of C or better.

University Core Curriculum

The department may make specific suggestions for courses which are most applicable towards your major.

All courses require a C or better

I. Communication (six hours)

Code	Title	Hours
The objective of the communication component is to enable the student to communicate effectively in clear and correct prose or orally in a style appropriate to the subject, occasion, and audience.		
Select six hours of the following:		6
For students whose secondary education was in English:		
COMM 1611	Written and Oral Communication	
ENGL 1313	Writing About Literature	
RWS 1301	Rhetoric & Composition I	
RWS 1302	Rhetoric & Composition 2	
RWS 1601	Rhetoric, Composition & Comm	
For students whose secondary education was not in English:		
ESOL 1311	Expos Engl Compos-Spkr Esl	
ESOL 1312	Res & Crit Writng Spkr Esl	
Total Hours		6

II. American History (six hours)

Code	Title	Hours
The objectives of the history component are to expand students' knowledge of the origin and history of the U.S., their comprehension of the past and current role of the U.S. in the world, and their ability to critically evaluate and analyze historical evidence. U.S. history courses (three hours must be Texas history) include:		
HIST 1301	History of U.S. to 1865	3
HIST 1302	History of U.S. Since 1865	3
Total Hours		6

III. Language, Philosophy & Culture (three hours)

Code	Title	Hours
The objective of the humanities component is to expand students' knowledge of the human condition and human cultures, especially in relation to behaviors, ideas, and values expressed in works of human imagination and thought. Through study in disciplines such as literature and philosophy, students engage in critical analysis and develop an appreciation of the humanities as fundamental to the health and survival of any society.		
Select one of the following:		3
AFST 2300	Intro-African Amer Studies	
CHIC 2302	Latina/o Presence in the U.S.	

ENGL 2311	English Literature
ENGL 2312	English Literature
ENGL 2313	Intro to American Fiction
ENGL 2314	Intro to American Drama
ENGL 2318	Intro to American Poetry
FREN 2322	Making of the "Other" Americas
HIST 2301	World History to 1500
HIST 2302	World History Since 1500
PHIL 1301	Introduction to Philosophy
PHIL 2306	Ethics
RS 1301	Introduct to Religious Studies
SPAN 2340	Seeing & Naming: Conversations
WS 2300	Introduction to Womens Studies
WS 2350	Global Feminisms
Total Hours	3

IV. Mathematics (three hours)

Code	Title	Hours
The objective of the mathematics component is to develop a quantitatively literate college graduate. Every college graduate should be able to apply basic mathematical tools in the solution of real-world problems.		
Select one of the following:		
MATH 1309	College Algebra	3
MATH 1310	Trigonometry and Conics	
MATH 1319	Math in the Modern World	
MATH 1320	Math for Social Sciences I	
MATH 1411	Calculus I	
MATH 1508	Precalculus ^{1,2}	
MATH 2301	Math for Social Sciences II	
STAT 1380	Statistical Literacy	
STAT 2480	Elementary Statistical Methods	
1 A higher-level course in the calculus sequence can be substituted.		
2 TCCN MATH 1314 will also satisfy this requirement.		
Total Hours		3

V. Life & Physical Sciences (six hours)

Code	Title	Hours
The objective of the study of the natural sciences is to enable the student to understand, construct, and evaluate relationships in the natural sciences, and to enable the student to understand the bases for building and testing theories. The courses listed are for non-majors; the major courses in the discipline can be substituted for the non-major sequence. A minimum of two semesters of lecture and one semester of laboratory associated with one of the courses, or two semesters of combined (3 credit) lecture-laboratory courses (Only six hours apply toward the required 42.):		
Select one of the following:		
ASTR 1107	Astronomy Lab I	1-4
ASTR 1307	Elem Astronomy-Solar System	
ASTR 1308	Elem Astr Stars & Galaxies	
BIOL 1103	Introductory Biology Lab	
BIOL 1104	Human Biology Laboratory	
BIOL 1107	Topics in Study of Life I	
BIOL 1108	Organismal Biology Laboratory	
BIOL 1203	Introductory Biology	
BIOL 1304	Human Biology	
BIOL 1305	General Biology	
BIOL 1306	Organismal Biology	

BIOL 2111	Human Anat/Physio Lab I
BIOL 2113	Human Anat/Physio Lab II
BIOL 2311	Human Anat/Physiology I
BIOL 2313	Human Anat/Physiology II
CHEM 1105	Laboratory for CHEM 1305
CHEM 1106	Laboratory for CHEM 1306
CHEM 1107	Intro General Chemistry Lab
CHEM 1108	Intro Organic & Biochem Lab
CHEM 1305	General Chemistry
CHEM 1306	General Chemistry
CHEM 1307	Intro to General Chemistry
CHEM 1308	Intro Organic & Biochemistry
ESCI 1101	Environmental Sci. Lab
ESCI 1102	Non-major Lab for ESCI 1301
ESCI 1202	Intro to Environment Science 2
ESCI 1301	Intro to Environmental Sci
GEOG 1106	Laboratory for GEOG 1306
GEOG 1306	Physical Geography
GEOL 1103	Lab for GEOL 1313
GEOL 1104	Lab for GEOL 1314
GEOL 1111	Principles of Earth Sci - Lab
GEOL 1112	Laboratory for Geology 1212
GEOL 1211	Principles of Earth Sciences
GEOL 1212	Principles of Earth Science
GEOL 1230	The Blue Planet
GEOL 1231	Natural Hazards
GEOL 1313	Intro to Physical Geology
GEOL 1314	Intro to Historical Geol
HSCI 2302	Fundamentals of Nutrition
HSCI 2303	Wellness Dynamics
MICR 2330	Microorganisms and Disease
PHYS 1403	General Physics I
PHYS 1404	General Physics II
PHYS 2120	Laboratory for PHYS 2320
PHYS 2121	Laboratory for PHYS 2321
PHYS 2320	Introductory Mechanics
PHYS 2321	Introductory Electromagnetism

Total Hours**6****VI. Political Science (six hours)**

Code	Title	Hours
The objectives of the political science component are to expand students' knowledge of the origin and evolution of the U.S. and Texas political systems, focusing on the growth of political institutions, and on the constitutions of Texas and the United States; and to enhance their understanding of federalism, states rights, and individual civil liberties, rights, and responsibilities.		
Required Courses:		
POLS 2310	Introduction to Politics	3
POLS 2311	American Gover & Politics	3
Total Hours		6

VII. Social and Behavioral Sciences (three hours)

Code	Title	Hours
The objective of the social and behavioral science component is to increase students' knowledge of how social and behavioral scientists discover, describe, and explain the behaviors and interactions among individuals, groups, institutions, events, and ideas. Such knowledge will better equip students to understand themselves and the roles they play in addressing the issues facing humanity.		
Select one of the following:		3
ANTH 1301	Intro-Phys Anth/Archeolog	
ANTH 1302	Intro-Cultural Anthropology	
ANTH 1310	Cultural Geography	
ANTH 2320	Intro to Linguistics	
CE 2326	Econ for Engrs & Scientists	
ASIA 2300	Asian American Studies	
COMM 2350	Interpersonal Communication	
COMM 2372	Mass Media and Society	
ECON 2303	Principles of Macroeconomics	
ECON 2304	Principles of Microeconomics	
EDPC 1301	Introduction to Ed Psychology	
EDU 1342	Action Research in Classrooms	
ENGL 2320	Introduction to Linguistics	
GEOG 1310	Cultural Geography	
LEAD 2300	Community Service	
LING 2320	An Intro. to Linguistics	
LING 2340	Lang. Inside & Out: Sel Topics	
PSYC 1301	Introduction to Psychology	
SOCI 1301	Introduction to Sociology	
SOCI 1310	Cultural Geography	
Total Hours		3

VIII. Creative Arts (three hours)

Code	Title	Hours
The objective of the visual and performing arts component is to expand students' knowledge and appreciation of the human imagination as expressed through works of visual art, dance, music, theatre and film. Through study in these disciplines, students will form aesthetic judgments and develop an appreciation of the arts as fundamental to the health and survival of any society.		
Select one of the following:		3
ART 1300	Art Appreciation	
ARTH 1305	History of Art I	
ARTH 1306	History of Art II	
CHIC 1311	Chicana/o Fine Arts Appreciat	
DANC 1304	Dance Appreciation	
FILM 1390	Intro-Art of Motion Pict.	
MUSL 1324	Music Appreciation	
MUSL 1327	Jazz to Rock	
MUSL 2321	Music, Culture, and Society	
THEA 1313	Introduction to Theatre	
Total Hours		3

IX. Component Area Option (six hours)

Code	Title	Hours
The objective of the institutionally designated option component is to develop the critical thinking skills and academic tools required to be an effective learner. Special emphasis is placed on the use of technology in problem-solving, communications, and knowledge acquisition.		
Select two of the following:		6
BUSN 1301	Intro to Global Business	
COMM 1301	Public Speaking	

COMM 1302	Business/Profession Comm
CS 1310	Intro-Computational Thinking
CS 1320	Computer Programming Sci/Engr
EL 1301	Eng Innovation and Leadership
LEAD 1300	Introduction to Leadership
SCI 1301	Inquiry in Math & Science
UNIV 1301	Seminar/Critical Inquiry

Total Hours **6**

4-Year Sample Degree Plan

BS Clinical Laboratory Science (Starting with Pre-Calculus)

Code	Title	Hours
BACHELOR OF SCIENCE IN CLINICAL LABORATORY SCIENCE		
(Starting with Pre-Calculus)		
FRESHMAN		
Fall		
CHEM 1305 & CHEM 1105	General Chemistry and Laboratory for CHEM 1305	4
MATH 1508	Precalculus	5
RWS 1301 or ESOL 1311	Rhetoric & Composition I Expos Engl Compos-Spkr Esl	3
UNIV 1301	Seminar/Critical Inquiry	3
Spring		
BIOL 1305 & BIOL 1107	General Biology and Topics in Study of Life I	4
CHEM 1306 & CHEM 1106	General Chemistry and Laboratory for CHEM 1306	4
HIST 1301	History of U.S. to 1865	3
MATH 1411	Calculus I	4
RWS 1302 or ESOL 1312 or ENGL 1313	Rhetoric & Composition 2 Res & Crit Writng Spkr Esl Writing About Literature	3
Summer		
COMM 1301	Public Speaking	3
HIST 1302	History of U.S. Since 1865	3
Social and Behavioral Sciences		3
Visual & Perf. Arts Core		3
SOPHOMORE		
Fall		
BIOL 2313 & BIOL 2113	Human Anat/Physiology II and Human Anat/Physio Lab II	4
CHEM 2324 & CHEM 2124	Organic Chemistry and Lab for Organic Chemistry 2324	4
CLSC 2210	Intro to the Clinical Lab	2
MICR 2340 & MICR 2141	General Microbiology and Gen Microbiology Laboratory	4
POLS 2310	Introduction to Politics	3
Spring		
BIOL 3320	Genetics	3
CLSC 2212	Clinical Laboratory Statistics	2
CLSC 3357	Opportunist & Parasitic Infect	3
POLS 2311	American Gover & Politics	3
Language, Philosophy, and Culture		

Summer

CLSC 3351	Concepts in Immunodiagnostics	3
-----------	-------------------------------	---

JUNIOR**Fall**

CLSC 3252 & CLSC 3153	Body Fluids and Body Fluids Lab	3
CLSC 3260 & CLSC 3161	Serology and Serology Lab	3
CLSC 3354 & CLSC 3155	Clinical Chemistry I and Clinical Chemistry I Lab	4
CLSC 3356 & CLSC 3257	Hematology I and Hematology I Lab	5

Spring

CLSC 3167 & CLSC 3168	Intectious Dis Lab:Pre-Anal Op and Infec Dis Lab:Anal/Post-Ana Op	2
CLSC 3364	Hematology II	3
CLSC 3365 & CLSC 3164	Clinical Chemistry II and Clinical Chemistry II Lab	4
CLSC 3366	Infectious Diseases	3
CLSC 3368 & CLSC 3269	Immunohematology and Immunohematology Lab	5

Summer

CLSC 4111	Molecular Diagnosis Laboratory	1
-----------	--------------------------------	---

SENIOR**Fall**

CLSC 4210	Molecular Diagnostics	2
CLSC 4273	Clinical Education	2
CLSC 4274	Clinical Investigation	2
CLSC 4471	Preceptorship I	4
CLSC 4472	Preceptorship II	4

Spring

CLSC 4100	Ethics	1
CLSC 4180	Seminar	1
CLSC 4275	Clinical Lab Mgmt/Supervision	2
CLSC 4476	Preceptorship III	4
CLSC 4478	Preceptorship IV	4

Total		133
--------------	--	------------

BS Clinical Laboratory Science (Starting with Calculus)

Code	Title	Hours
BACHELOR OF SCIENCE IN CLINICAL LABORATORY SCIENCE		
(Starting with Pre-Calculus)		
FRESHMAN		
Fall		
CHEM 1305 & CHEM 1105	General Chemistry and Laboratory for CHEM 1305	4
MATH 1411	Calculus I	4
RWS 1301 or ESOL 1311	Rhetoric & Composition I Expos Engl Compos-Spkr Esl	3
UNIV 1301	Seminar/Critical Inquiry	3
Spring		
BIOL 1305 & BIOL 1107	General Biology and Topics in Study of Life I	4

CHEM 1306 & CHEM 1106	General Chemistry and Laboratory for CHEM 1306	4
HIST 1301	History of U.S. to 1865	3
RWS 1302 or ESOL 1312 or ENGL 1313	Rhetoric & Composition 2 Res & Crit Writng Spkr Esl Writing About Literature	3
Summer		
COMM 1301	Public Speaking	3
HIST 1302	History of U.S. Since 1865	3
Social and Behavioral Sciences		3
Visual & Perf. Arts Core		3
SOPHOMORE		
Fall		
BIOL 2313 & BIOL 2113	Human Anat/Physiology II and Human Anat/Physio Lab II	4
CHEM 2324 & CHEM 2124	Organic Chemistry and Lab for Organic Chemistry 2324	4
CLSC 2210	Intro to the Clinical Lab	2
MICR 2340 & MICR 2141	General Microbiology and Gen Microbiology Laboratory	4
POLS 2310	Introduction to Politics	3
Spring		
BIOL 3320	Genetics	3
CLSC 2212	Clinical Laboratory Statistics	2
CLSC 3357	Opportunist & Parasitic Infect	3
POLS 2311	American Gover & Politics	3
Language, Philosophy, and Culture		
Summer		
CLSC 3351	Concepts in Immunodiagnostics	3
JUNIOR		
Fall		
CLSC 3252 & CLSC 3153	Body Fluids and Body Fluids Lab	3
CLSC 3260 & CLSC 3161	Serology and Serology Lab	3
CLSC 3354 & CLSC 3155	Clinical Chemistry I and Clinical Chemistry I Lab	4
CLSC 3356 & CLSC 3257	Hematology I and Hematology I Lab	5
Spring		
CLSC 3167 & CLSC 3168	Intectious Dis Lab:Pre-Anal Op and Infec Dis Lab:Anal/Post-Ana Op	2
CLSC 3364	Hematology II	3
CLSC 3365 & CLSC 3164	Clinical Chemistry II and Clinical Chemistry II Lab	4
CLSC 3366	Infectious Diseases	3
CLSC 3368 & CLSC 3269	Immunoematology and Immunoematology Lab	5
Summer		
CLSC 4111	Molecular Diagnosis Laboratory	1
SENIOR		
Fall		
CLSC 4210	Molecular Diagnostics	2
CLSC 4273	Clinical Education	2

CLSC 4274	Clinical Investigation	2
CLSC 4471	Preceptorship I	4
CLSC 4472	Preceptorship II	4
Spring		
CLSC 4100	Ethics	1
CLSC 4180	Seminar	1
CLSC 4275	Clinical Lab Mgmt/Supervision	2
CLSC 4476	Preceptorship III	4
CLSC 4478	Preceptorship IV	4
Total		133