

Bachelor of Science in Clinical Laboratory Science

As "illness investigators," medical laboratory scientists use sophisticated instruments to analyze blood and other body tissue and fluids. They provide the essential information used to make diagnoses and plan treatment. The University of Kansas' one-of-a-kind program offers advanced training and technology combined with real-world experience for students interested in clinical laboratory science. Students can learn in an innovative program featuring diagnostic molecular science and medical laboratory science concentrations.

Students interested in clinical laboratory science should contact an advisor (clsed@kumc.edu) early in their college work. This program requires two years of preparatory college course work and two years of professional course work in the CLS program at KU Medical Center in Kansas City, Kan. The program also is open to students with a bachelor's degree and having completed the prerequisites (<https://www.kumc.edu/school-of-health-professions/academics/departments/clinical-laboratory-sciences/academics/bachelors-degree-in-cls-program/eligibility-and-requirements/prerequisites.html>).

This program requires two years of preparatory college study and two years of professional course work in clinical laboratory science. Interested students should contact the department (<http://cls.kumc.edu/>) at KU Medical Center for advising as early as possible in their college careers (advising is also available through Jayhawk Academic Advising on the Lawrence campus).

Applications are available online (<http://cls.kumc.edu/>). The program begins each fall semester. Applications should be submitted by **December 15** of the year before the anticipated start date. Also required: complete college transcript(s) and three letters of recommendation, two of which should be from college science instructors.

Admission Requirements

An applicant to the program must have completed, or be on track to complete, the required college preparatory course work, with a minimum grade of C- in each prerequisite course, before entering the program in the fall. The student must have earned a 2.70 GPA overall and in the following courses: chemistry, biology, and math.

International students, or those for whom English is a second language, may have additional requirements relative to language proficiency, residency, and citizenship status. See: information for international students (<http://www.kumc.edu/school-of-health-professions/information-for-international-applicants.html>)

Good physical and mental health is essential. Minor physical handicaps are not considered deterrents to admission. Physical examinations are required before registration in CLS course work. The admissions committee requires a personal interview with the applicant.

A background check and documentation of a shadowing experience are also required. Prospective students should review the program requirements, including prerequisite course work, and complete list of eligibility requirements (<https://www.kumc.edu/school-of-health-professions/academics/departments/clinical-laboratory-sciences/academics/bachelors-degree-in-cls-program/eligibility-and-requirements.html>).

[sciences/academics/bachelors-degree-in-cls-program/eligibility-and-requirements.html](https://www.kumc.edu/school-of-health-professions/academics/bachelors-degree-in-cls-program/eligibility-and-requirements.html)).

Prerequisites

Code	Title	Hours
English		
ENGL 101	Composition	3
ENGL 102	Critical Reading and Writing	3
	or BUS 305 Business Writing	
Mathematics		
Select one of the following:		3-5
MATH 101	College Algebra: _____	3
MATH 104	Precalculus Mathematics	5
MATH 115	Calculus I	3
Select one of the following:		3
MATH 365	Elementary Statistics	3
BIOL 370	Introduction to Biostatistics	4
PSYC 210	Statistics in Psychological Research	3
Biology		
BIOL 150	Principles of Molecular and Cellular Biology	3
BIOL 350	Principles of Genetics	4
Select one of the following:		3-4
BIOL 246	Principles of Human Physiology	3
BIOL 544	Comparative Animal Physiology	3
BIOL 546	Mammalian Physiology	3
Microbiology		
BIOL 400	Fundamentals of Microbiology	3
BIOL 402	Fundamentals of Microbiology Laboratory	2
Chemistry		
CHEM 130	General Chemistry I	5
CHEM 135	General Chemistry II	5
CHEM 330	Organic Chemistry I	3
CHEM 331	Organic Chemistry I Laboratory	2
Communication Studies		
Communication course		3
Liberal Arts and Sciences		
One humanities course		3
One social sciences course		3
One Global Culture Course		3
One US Culture Course		3
Recommended Elective		
CLS 210	Introduction to Clinical Laboratory Sciences (recommended)	1

The following courses are included during the first year (junior year) of the professional program. Students with credit for equivalent courses do not need to enroll in them if they earned a C- or better in the course:

Code	Title	Hours
CLS 538	Immunology	3
CLS 600	Introductory Biochemistry	3

Following 2 years of preparatory undergraduate study, students enter the program as juniors. A clinical concentration and molecular biotechnology concentration are available. Until the second semester of the senior year,

students in both concentrations take the same course work. Also during the senior year, students rotate through 14 to 16 weeks of practicum experience at collaborating affiliates.

A new course of study, categorical concentration, has been developed for science majors who already hold a baccalaureate degree from an accredited institution and are currently working in a clinical laboratory in hematology, chemistry, or microbiology.

Clinical Concentration Curriculum

Code	Title	Hours
CLS 520	Phlebotomy	1
CLS 530	Clinical Chemistry I	3
CLS 531	Clinical Chemistry, Urinalysis, and Body Fluids Laboratory	2
CLS 532	Clinical Microbiology I	3
CLS 533	Clinical Microbiology I Laboratory	2
CLS 536	Hematology I	3
CLS 537	Hematology I Laboratory	2
CLS 538	Immunology	3
or BIOL 503	Immunology	
CLS 539	Fundamental Techniques and Clinical Immunology Laboratory	3
CLS 540	Clinical Chemistry II	2
CLS 541	Professional Development	2
CLS 542	Clinical Microbiology II	2
CLS 543	Clinical Microbiology II Laboratory	2
CLS 544	Immunohematology I	3
CLS 545	Immunohematology I Laboratory	2
CLS 546	Hematology II	3
CLS 547	Hematology II Laboratory	2
CLS 600	Introductory Biochemistry	3
or BIOL 600	Introductory Biochemistry, Lectures	
CLS 605	Introduction to Molecular Diagnostics I	1
CLS 607	Introduction to Molecular Diagnostics I Laboratory	1
CLS 638	Clinical Competency Review	0
CLS 639	Urinalysis	1
CLS 640	Clinical Chemistry III and Immunology II	2
CLS 641	Clinical Chemistry and Immunology Practicum	3
CLS 642	Clinical Microbiology III	2
CLS 643	Clinical Microbiology Practicum	3
CLS 646	Hematology III	2
CLS 644	Immunohematology II	1
CLS 645	Immunohematology Practicum	2
CLS 647	Hematology Practicum	3
CLS 650	Clinical Laboratory Science Review	0
CLS 661	Management Principles in Health Care	2

Molecular Biotechnology Concentration Curriculum

Code	Title	Hours
CLS 520	Phlebotomy	1
CLS 530	Clinical Chemistry I	3

CLS 531	Clinical Chemistry, Urinalysis, and Body Fluids Laboratory	2
CLS 532	Clinical Microbiology I	3
CLS 533	Clinical Microbiology I Laboratory	2
CLS 536	Hematology I	3
CLS 537	Hematology I Laboratory	2
CLS 538	Immunology	3
or BIOL 503	Immunology	
CLS 539	Fundamental Techniques and Clinical Immunology Laboratory	3
CLS 540	Clinical Chemistry II	2
CLS 541	Professional Development	2
CLS 542	Clinical Microbiology II	2
CLS 543	Clinical Microbiology II Laboratory	2
CLS 544	Immunohematology I	3
CLS 545	Immunohematology I Laboratory	2
CLS 546	Hematology II	3
CLS 547	Hematology II Laboratory	2
CLS 600	Introductory Biochemistry	3
or BIOL 600	Introductory Biochemistry, Lectures	
CLS 605	Introduction to Molecular Diagnostics I	1
CLS 607	Introduction to Molecular Diagnostics I Laboratory	1
CLS 608	Introduction to Advanced Biotechniques	0
CLS 609	Introduction to Advanced Biotechniques Laboratory	0
CLS 610	Advanced Biotechniques Lecture	3
CLS 611	Advanced Biotechniques Laboratory	2
CLS 621	Biotechnology Methodologies Practicum	4
CLS 622	Problems in Molecular Diagnostics	2
CLS 623	Molecular Genetics Practicum	4
CLS 633	Special Topics Practicum	4
CLS 655	Molecular Biotechnology Review	0
CLS 661	Management Principles in Health Care	2

This is a sample plan of student for students completing the Clinical Concentration. For information about the plan of study for the bachelors of science in clinical laboratory science, please contact a CLS advisor. Advising and campus visits are available Monday-Friday by appointment. Please email clsed@kumc.edu for information.

Freshman

Fall	Hours Spring	Hours
ENGL 101 (Core 34: English)	3 ENGL 102 (Core 34: English)	3
CHEM 130 (Core 34: Natural and Physical Sciences))	5 BIOL 150	3
MATH 101, 115, or 104 (Core 34: Math and Statistics)	3 CHEM 135	5

Social Science elective (Core 34: Social and Behavioral Sciences)	3 Humanities elective (Core 34: Arts and Humanities)	3
CLS 210 (Elective - Can be taken once during any of the first 4 semesters)	1	

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Sophomore

Fall	Hours Spring	Hours
CHEM 330	3 BIOL 350 or BSCI 350	4
CHEM 331	2 Communications Course (Core 34: Communications)	3
BIOL 400 or BSCI 400	3 MATH 365, BIOL 370, or PSYC 210	3
BIOL 402 or BSCI 401	2 Global Culture elective (Core 34: Global Culture)	3
US Culture elective (Core 34: US Culture)	3	
BIOL 246, 544, 546, or BSCI 546	3	

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Junior

Fall	Hours Spring	Hours Summer	Hours
CLS 520	1 CLS 530	3 CLS 605	1
CLS 536	3 CLS 531	2 CLS 607	1
CLS 537	2 CLS 532	3 CLS 661	2
CLS 538, BIOL 503, or BSCI 503	3 CLS 533	2	
CLS 539	3 CLS 546	3	
CLS 600, BIOL 600, or BSCI 600	3 CLS 547	2	

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Senior

Fall	Hours Spring	Hours
CLS 540	2 CLS 639	1
CLS 541	2 CLS 640	2
CLS 542	2 CLS 641	3
CLS 543	2 CLS 642	2
CLS 544	3 CLS 643	3
CLS 545	2 CLS 644	1
CLS 638	0 CLS 645	2

CLS 646	2
CLS 647	3
CLS 650	0
13	19

Total Hours 124

This program is approved by the Kansas Board of Regents to require these specific Core 34: Systemwide General Education courses.

Technical Standards are the abilities and expectations for students admitted to KU's clinical laboratory science program. Graduates of the clinical laboratory science program must have the knowledge and skills to function in a broad variety of clinical, research and industrial laboratory settings. The abilities and expectations that must be met by all students in the program are identified here (<https://www.kumc.edu/school-of-health-professions/academics/departments/clinical-laboratory-sciences/academics/bachelors-degree-in-clinical-laboratory-science/technical-standards.html>).