

BHS in Clinical and Diagnostic Sciences with Emphasis in Medical Laboratory Science

Degree Program Description

Clinical Laboratory Scientists are skilled, certified professionals trained in the theoretical and practical aspects of clinical laboratory medicine – chemistry, hematology, microbiology, immunology, molecular pathology, and blood banking. Clinical Laboratory Scientists have various levels of responsibility – as staff scientists, research scientists, supervisors, managers, or educators – and can work in a variety of settings, including hospitals, clinics, laboratories, and research centers. Approximately 70 percent of all medical decisions regarding a patient's diagnosis and treatment, as well as their hospital admission and discharge, are based upon laboratory test results obtained by Clinical Laboratory Scientists. The Clinical Laboratory Science (CLS) program at MU is a unique collaboration with the University of Nebraska Medical Center in Omaha. The CLS program includes three years of pre-requisite coursework, and 11 months of clinical coursework. The clinical year begins in late May, with 13 weeks of coursework in a dedicated summer student lab facility at the University of Nebraska's Medical Center in Omaha. After the initial 13 weeks in the program, CLS students return the Mid-Missouri area and complete their clinical laboratory rotations at local and regional clinical sites. Students graduate with a Bachelor of Health Science (BHS) degree in Clinical and Diagnostic Sciences with an emphasis in Clinical Laboratory Science from the University of Missouri. Upon completion of the program, students are eligible to challenge the Medical Laboratory Scientist credentialing examination administered by the American Society for Clinical Pathology Board of Certification (ASCP BOC). The CLS program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) via its partnership with the NAACLS-accredited Medical Laboratory Science program of the University of Nebraska Medical Center.

Major Program Requirements

To earn the BHS in Clinical and Diagnostic Sciences with an emphasis in Medical Laboratory Science degree, students must meet degree requirements below as well as University requirements (<https://catalog.missouri.edu/academicdegreerequirements/universityrequirements/>), including University general education (<https://catalog.missouri.edu/academicdegreerequirements/generaleducationrequirements/>). The MLS program requires an application, including an interview, and students are encouraged to work with an advisor in order to best structure the prerequisites and prepare for the program application. The application process is competitive, and meeting minimum criteria does not guarantee admission. There are a limited number of clinical positions available. A minimum 2.5 cumulative in addition to a math/science course GPA are required to be considered for acceptance. Students must complete the courses below with a grade of C- or higher to earn the BHS in Clinical and Diagnostic Sciences with an emphasis in Medical Laboratory Science degree.

Program Prerequisites		40
ENGLISH 1000	Writing and Rhetoric	3
or ENGLISH 1000H	Honors Writing and Rhetoric	
MATH 1100	College Algebra	3-5
or MATH 1160	Precalculus Mathematics	
or MATH 1400	Calculus for Social and Life Sciences I	
or MATH 1500	Analytic Geometry and Calculus I	
STAT 1200	Introductory Statistical Reasoning	3
or STAT 1300	Elementary Statistics	
or STAT 2500	Introduction to Probability and Statistics I	
or ESC_PS 4170	Introduction to Applied Statistics	
CDS 4480	Clinical Ethics (Preferred)	3
or PHIL 2440	Medical Ethics	
or PHIL 1150	Introductory Bioethics	
or PHIL 1100	The Difference Between Right and Wrong: An Introduction to Ethics	
1000-level or higher Psychology course		3
CDS 3100W (optional but strongly recommended for MU General Education WI requirement)		3
BIO_SC 1500	Introduction to Biological Systems with Laboratory	5
or BIO_SC 1500H	Introduction to Biological Systems with Laboratory Honors	
or BIO_SC 1010 & BIO_SC 1020	General Principles and Concepts of Biology and General Biology Laboratory	
or BIO_SC 1030	General Principles and Concepts of Biology with Laboratory	
MICROB 3200	Medical Microbiology and Immunology	4
or MICROB 2800	Microbiology for Nursing and Health Professions	
MPP 3202	Elements of Physiology	5
or BIO_SC 3700	Human Physiology	
CL_L_S 3000	Introduction to Immunology for Medical Laboratory Science	3
or V_PBio 3551	Introduction to Immunology I	
or MICROB 4304	Immunology for Health Professions	
CHEM 1400 & CHEM 1401	College Chemistry I and College Chemistry I Laboratory	4
or CHEM 1400H & CHEM 1401H	College Chemistry I - Honors and College Chemistry I Laboratory - Honors	
CHEM 1410 & CHEM 1411	College Chemistry II and College Chemistry II Laboratory	4
or CHEM 1410H & CHEM 1411H	College Chemistry II - Honors and College Chemistry II Laboratory - Honors	
CHEM 2100	Organic Chemistry I	3
BIOCHM 3630	General Biochemistry	3
or BIOCHM 4270	Biochemistry	
Major Core Requirements		43
CL_L_S 4407	Clinical Laboratory Operations	2
CL_L_S 4408	Introduction to Clinical Hematology	2
CL_L_S 4409	Introduction to Clinical Microbiology	2
CL_L_S 4410	Introduction to Clinical Chemistry and Urinalysis	1
CL_L_S 4411	Introduction to Clinical Immunohematology	1
CL_L_S 4412	Clinical Laboratory Science Theory, Application and Correlation	5
CL_L_S 4413	Clinical Endocrinology and Toxicology	1

CL_L_S 4414	Clinical Chemistry and Urinalysis I	2
CL_L_S 4415	Clinical Chemistry and Urinalysis II	2
CL_L_S 4416	Clinical Hematology I	2
CL_L_S 4417	Clinical Hematology II	2
CL_L_S 4418	Clinical Microbiology I	2
CL_L_S 4419	Clinical Microbiology II	2
CL_L_S 4420	Clinical Immunology and Molecular Diagnostics	2
CL_L_S 4422	Immunohematology I	2
CL_L_S 4423	Clinical Immunohematology II	2
CL_L_S 4442	Clinical Immunohematology Laboratory Practicum I	1
CL_L_S 4443	Clinical Immunohematology Laboratory Practicum II	1
CL_L_S 4444	Clinical Core Laboratory Practicum I	1
CL_L_S 4445	Clinical Core Laboratory Practicum II	1
CL_L_S 4448	Clinical Microbiology Laboratory Practicum I	1
CL_L_S 4449	Clinical Microbiology Laboratory Practicum II	1
CL_L_S 4970	Clinical Laboratory Management I	2
CL_L_S 4980W	Clinical Lab Management II - Writing Intensive	3

Semester Plan

Below is a sample plan of study, semester by semester. A student's actual plan may vary based on course choices where options are available.

Note: Beginning Summer 2026, the professional phase curriculum is moving to Medical Laboratory Science (MLS). Therefore, the CL_L_S courses below will be replaced with MLS courses for students beginning the professional undergraduate phase beginning Summer 2026 and later. For specific MLS course information, contact the program.

First Year			
Fall	CR	Spring	CR
MATH 1100	3	ENGLISH 1000	3
BIO_SC 1500	5	CHEM 1400 & CHEM 1401	4
HLTH_SCI 1000 (recommended elective)	3	SOCIOL 1000	3
PSYCH 1000	3	Elective	3
	14		13
Second Year			
Fall	CR	Spring	CR
CHEM 1410 & CHEM 1411	4	MICROB 3200	4
PHIL 1100, 1150, or 2440	3	CHEM 2100	3
CL_L_S 1000	1	HIST 1100, 1200, or POL_SC 1100	3
Elective	4	Elective	2
	12		12

Third Year					
Fall	CR	Spring	CR	Summer	CR
MPP 3202	5	1000-level Writing Intensive course (CDS 3100W recommended)	3	CL_L_S 4407	2
STAT 1200, 1300, or ESC_PS 4170	3	BIOCHM 3630	3	CL_L_S 4408	2
2000+ level Humanities	3	CL_L_S 3000	3	CL_L_S 4409	2
Elective	3	Humanities	3	CL_L_S 4410	1
				CL_L_S 4411	1
	14		12		8

Fourth Year			
Fall	CR	Spring	CR
CL_L_S 4413	1	CL_L_S 4412	5
CL_L_S 4414	2	CL_L_S 4415	2
CL_L_S 4416	2	CL_L_S 4417	2
CL_L_S 4418	2	CL_L_S 4419	2
CL_L_S 4420	2	CL_L_S 4423	2
CL_L_S 4422	2	CL_L_S 4443	1
CL_L_S 4442	1	CL_L_S 4445	1
CL_L_S 4444	1	CL_L_S 4449	1
CL_L_S 4448	1	CL_L_S 4980W	3
CL_L_S 4970	2		
	16		19

Total Credits: 120

NOTE: Third Year - Summer to be completed in Omaha.