

# BHS in Clinical and Diagnostic Sciences with Emphasis in Clinical 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 technologists, research technologists, supervisors, managers, or educators – and can work in a variety of settings, including hospitals, clinics, laboratories, and research centers. Approximately 60 to 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 during the third week of May, with 13 weeks of coursework and clinical lab rotations 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 to Columbia and complete their clinical laboratory rotations at one of three local 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 with a Certificate in Medical Technology from the University of Nebraska Medical Center. Upon completion of the program, students are eligible to challenge the Medical Technology credentialing examination administered by the American Society for Clinical Pathology (ASCP). The CLS program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) via its partnership with the NAACLS-accredited Clinical Laboratory science program of the University of Nebraska Medical Center.

## Major Program Requirements

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 Clinical Laboratory Science degree. In addition, students must meet degree and University requirements (<http://catalog.missouri.edu/academicdegree/requirements/universityrequirements/>), including University general education (<http://catalog.missouri.edu/academicdegree/requirements/generaleducationrequirements/>). In addition to the degree requirements below, the CLS program requires an application, including an interview, and students are encouraged to work with an advisor in order to best structure the pre-requisites 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.

<b>Program Pre-requisites</b>		<b>45</b>
MATH 1100	College Algebra	3
ENGLISH 1000	Writing and Rhetoric	3
or ENGLISH 1000H	Honors Writing and Rhetoric	
PSYCH 1000	General Psychology	3
or PSYCH 1000H	General Psychology - Honors	
STAT 1200	Introductory Statistical Reasoning	3
or STAT 1300	Elementary Statistics	
or ESC_PS 4170	Introduction to Applied Statistics	
HLTH_SCI 3900W	Introduction to The Research Process and Evidence Base - Writing Intensive	3
or HLTH_SCI 3900HW	Introduction to The Research Process and Evidence Base - Honors/Writing Intensive	
<b>Biological sciences elective (at least 16 hours of Biological Science, including the following)</b>		
BIO_SC 1500	Introduction to Biological Systems with Laboratory	5
or BIO_SC 1500H	Introduction to Biological Systems with Laboratory Honors	
BIO_SC 2200	General Genetics	4
or BIO_SC 2200H	General Genetics - Honors	
MICROB 3200	Medical Microbiology and Immunology	4
or BIO_SC 3750	General Microbiology	
V_PBIO 3551	Introduction to Immunology I	3
or MICROB 4304	Immunology for Health Professions	
<b>Physical sciences requirement (at least 14 hours of Chemistry, including the following)</b>		
CHEM 1320	College Chemistry I	4
or CHEM 1320H	College Chemistry I - Honors	
CHEM 1330	College Chemistry II	4
or CHEM 1330H	College Chemistry II- Honors	
CHEM 2100	Organic Chemistry I	3
2000-level or higher Chemistry or Biochemistry course from approved course list		3
<b>Major Core Requirements</b>		<b>51-90</b>
CL_L_S 4407	Clinical Laboratory Operations	1-4
CL_L_S 4408	Introduction to Clinical Hematology	1-4
CL_L_S 4409	Introduction to Clinical Microbiology	1-4
CL_L_S 4410	Introduction to Clinical Chemistry and Urinalysis	1-4
CL_L_S 4411	Introduction to Clinical Immunohematology	1-4
CL_L_S 4412	Clinical Laboratory Science Theory, Application and Correlation	5
CL_L_S 4413	Clinical Endocrinology and Toxicology	1-4
CL_L_S 4414	Clinical Chemistry and Urinalysis I	4
CL_L_S 4415	Clinical Chemistry and Urinalysis II	3
CL_L_S 4416	Clinical Hematology I	4
CL_L_S 4417	Clinical Hematology II	3
CL_L_S 4418	Clinical Microbiology I	4
CL_L_S 4419	Clinical Microbiology II	3
CL_L_S 4420	Clinical Immunology and Molecular Diagnostics	1-4
CL_L_S 4422	Immunohematology I	3
CL_L_S 4423	Clinical Immunohematology II	2
CL_L_S 4442	Clinical Immunohematology Laboratory Practicum I	1-4

CL_L_S 4443	Clinical Immunohematology Laboratory Practicum II	1-4
CL_L_S 4444	Clinical Core Laboratory Practicum	1-4
CL_L_S 4445	Clinical Core Laboratory Practicum II	1-4
CL_L_S 4448	Clinical Microbiology Laboratory Practicum I	1-4
CL_L_S 4449	Clinical Microbiology Laboratory Practicum II	1-4
CL_L_S 4970	Clinical Laboratory Management I	2
CL_L_S 4980W	Clinical Lab Management II - Writing Intensive	3

CL_L_S 4970	2
<b>16</b>	<b>19</b>

**Total Credits: 120**

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

## 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.

First Year			
Fall	CR	Spring	CR
HLTH_SCI 1000 (recommended elective)	3	CHEM 1320	4
MATH 1100	3	ENGLISH 1000	3
PSYCH 1000	3	SOCIOL 1000	3
BIO_SC 1500	5	Elective	3
	<b>14</b>		<b>13</b>

Second Year			
Fall	CR	Spring	CR
CHEM 1330	4	MICROB 3200	4
BIO_SC 2200	4	CHEM 2100	3
Humanities	3	HIST 1100, 1200, or POL_SC 1100	3
Elective	3	Elective	2
	<b>14</b>		<b>12</b>

Third Year					
Fall	CR	Spring	CR	Summer	CR
MICROB 4304	3	HLTH_SCI 3900W	3	CL_L_S 4407	2
STAT 1200, 1300, or ESC_PS 4170	3	2000-level or higher Chemistry or Biochemistry course from approved course list	3	CL_L_S 4408	2
PHIL 2440 (2000+ level Humanities)	3	Humanities	3	CL_L_S 4409	2
Elective	3	Elective	3	CL_L_S 4410 CL_L_S 4411	1 1
	<b>12</b>		<b>12</b>		<b>8</b>

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