

## BS in Biology with MLS Certification

### INTRODUCTION

A medical laboratory scientist (also known as a medical technologist) is a healthcare professional who performs medical laboratory tests using a wide variety of instruments, microscopes, computers, chemicals, or other methods for clinical analysis to detect, diagnose, monitor and treat disease. The Biology Department at Winthrop University is now offering a MLS program through a partnership with the Carolina College of Health Science (CCHS) in Charlotte, NC, where students can complete the MLS program while finishing their BS in Biology. Upon successful completion of the program, students will possess entry-level competencies of a medical laboratory scientist and are eligible to sit for the American Society of Clinical Pathologists (ASCP) national certification exam.

### PROGRAM DETAILS

Students interested in the MLS program complete their first three years at Winthrop taking courses in the biology curriculum that includes their general education requirements and the prerequisites for the MLS program. The students then apply to CCHS showing evidence of satisfactory completion of the prerequisite courses and bulk of their BS degree requirements. Once accepted, students complete the 12-month MLS program at CCHS that includes 44-credit hrs. of coursework. The credits for five of the courses (36 hrs.) will transfer to Winthrop and satisfy the remaining Biology and Math & Science elective requirements for the BS in biology degree.

### WINTHROP – 3 YEARS (\*Courses that satisfy CCHS prerequisites for the MLS program)

FRESHMAN YEAR					
Fall Semester		Hrs.	Spring Semester		Hrs.
ACAD 101	Principals of the Learning Acad.	1	HMXP 102	Human Experience	3
WRIT 101	Composition: Intro. to Acad. Dis.	3	BIOL 221*	Principals in Ecol., Evo. & Biodiv.	3
BIOL 202*	Freshmen Seminar	1	BIOL 223*	Principals in Ecol., Evo. & Biodiv. lab	1
BIOL 220*	Principals of Cell & Mol. Biol.	3	CHEM 202 + 204*	General Chemistry II and Lab	3 + 2
BIOL 222*	Principals of Cell & Mol. Biol. lab	1	MATH 141 or 241*	Statistics	3
CHEM 201*	General Chemistry I	4	PESH		1
Quant. Skills		3			
Total hrs.		16			16

SOPHOMORE YEAR					
Fall Semester		Hrs.	Spring Semester		Hrs.
CRTW 201		3	BIOL 316/317*	Genetics Lecture/with Lab	3 or 4
BIOL 300*	Scientific Process in Biology	4	BIOL – A*	Area A: Ecology and Evolution	3 or 4
CHEM 301/310**	Organic Chemistry I/Essentials of Organic Chemistry (lab offered in spring)	4 or 3	CHEM 311**	Essentials of Organic Chemistry Lab	1
Gen Ed	Social Science/ Constitution Req.	3	Gen Ed	Humanities and Arts	3
F.L.	Foreign Language 101	4	F.L.	Foreign Language 102	4
Total hrs.		17-18			14-16

JUNIOR YEAR					
Fall Semester		Hrs.	Spring Semester		Hrs.
BIOL 320/315*	Cell Biology Lecture/with Lab	3 or 4	BIOL 522*	Immunology	4
BIOL 310*	Microbiology with lab	4	BIOL 480*	Integration of Biological Principles	3
Gen Ed	Global Perspectives	3	CHEM 323**	Introductory Biochemistry	3
BIOL 390	Department Seminar	0.5	Gen Ed	Humanities and Arts	3
Gen Ed	Historical Perspectives	3	BIOL 490	Department Seminar	0.5
			Gen Ed	Social Science	3
Total hrs.		13.5-14.5			16.5

**\*\* Students are required to take 16 hrs. of chemistry coursework that includes organic chemistry or biochemistry for the MLS program. To reach 16hrs. students should take either CHEM 301 or CHEM 310 in the fall, and CHEM 323 (or CHEM 302/304) in the spring. NOTE: CHEM 311, the lab for CHEM 310, is offered in the spring. An alternative 1hr CHEM course can be used to reach the hours required.**

**CCHS MLS – 12 months** (#Courses that will receive Winthrop credit for the BS degree)

MLS FIRST and SECOND SEMESTERS							
Fall Semester			Hrs.	Spring Semester		Hrs.	
MLS 410#	Hematology/Coagulation/ Clinical Microscopy		7	MLS 430#	Clinical Microbiology		9
MLS 420#	Immunohematology		8	MLS 440#	Clinical Chemistry		8
MLS 460	Professional Issues I		1	MLS 461	Professional Issues II		2
Total hrs.			16			19	

MLS THIRD SEMESTER/SUMMER		
Fall Semester		Hrs.
MLS 450#	Clinical Immunology	4
MLS 462	Professional Issues III	1
MLS 470	Practicum	2
Total hrs.		9

**Additional Information:**

- Winthrop Biology Program:
  - Students will complete the requirements of one course each from Areas A, B, and C, and one additional course from A, B, or C
  - Students will complete 33 to 36 hrs. of 44hrs of required BIOL courses
  - Students will have completed 16 hrs. of CHEM
  - Students will complete 7 to 8 hrs. of 11 hrs. required Math and Science electives:
- CCHS MLS Program:
  - Additional 28hrs BIOL credit through C CHS: MLS 410, 420, 430
  - Additional 8hrs Math and Science credit through MLS 440

**For more information, contact:**

Dr. Victoria Frost, biology department, frostv@winthrop.edu

Melissa Jackson, program chair, Clinical Laboratory Science at 704-355-3921   Melissa.D.Jackson@atriumhealth.org

Carolinas College of Health Sciences is a public college focused on educating students who are devoted to a healthcare career. Atrium Health owns the college therefore; enrolled students are given priority to facilities within the healthcare system for clinical rotations. Graduates would then have the credentials needed to work in a clinical laboratory setting where they would be able to detect, diagnose and treat human diseases. Upon completion of their degree and they are offered a job with Atrium Health, the students may be eligible for a generous signing bonus. Medical Laboratory Science students are eligible for the Atrium Health loan forgiveness program. This loan essentially pays for half of tuition cost upon agreeance to remain as a full-time employee for one-year after graduation from the MLS program.