

COURSE REQUIREMENTS FOR BACHELOR OF SCIENCE IN MICROBIOLOGY

effective Fall 2010

A. THE GENERAL EDUCATION AND TOTAL UNIVERSITY CREDIT REQUIREMENTS MUST BE MET. NOTE: See General Education Goals for B.S. degree (ISU Catalog). 128 total minimum credits are required for graduation. 36 of these must be upper division credits.

B. COURSES IN BIOLOGICAL SCIENCES		NUMBER OF CREDITS	Total Credits
BIOL 1101, 1101L	Biology I, and Lab	4	
BIOL 1102, 1102L	Biology II, and Lab	4	
BIOL 2235, 2235L	General Microbiology, and Lab	4	
BIOL 3358	Genetics	3	
BIOL g4432	Biochemistry OR	3	
BIOL g4445	Biochemistry I	3	
BIOL g4433, g4433L	Microbial Physiology, and Lab	4	
BIOL g4434, g4434L	Microbial Diversity, and Lab	4	
BIOL g4437/CHEM g4438	Experimental Biochemistry	1	
BIOL g4444, g4444L	Cell and Molecular Biology, and Lab	5	
BIOL g4451, g4451L	Immunology, and Lab	4	
BIOL 4491 or 4492	Seminar in Biochemistry	1	
BIOL 4494	Seminar in Microbiology	1	
Microbiology Electives*		18	
Microbiology Elective Course List*			
BIOL g4454	Advanced Immunology	3	
BIOL g4455, g4455L	Pathogenic Microbiology, and Lab	5	
BIOL/CHEM g4448	Advanced Experimental Biochemistry	2	
BIOL g4461	Advanced Genetics	3	
BIOL g4466	Medical Mycology	3	
BIOL g4473, g4473L	Applied and Environmental Microbiology, and Lab	4	
BIOL g4475	General Virology	3	
BIOL g4477	Bacterial Virology Lab	1	
BIOL g4478	Animal Virology Lab	1	
BIOL g4481 and/or 4482	Independent Problems	up to 3	

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MICROBIOLOGY TRACK 1: Microbial Biochemistry and Molecular Microbiology for students interested in Molecular Microbiology, Microbial Biochemistry, Industrial Microbiology, or Environmental Microbiology

BIOL/CHEM g4447†	Biochemistry II	3
BIOL/CHEM g4448	Advanced Experimental Biochemistry	2
BIOL g4461	Advanced Genetics	3
BIOL g4473, g4473L	Applied and Environmental Microbiology, and Lab	4
	Additional Microbiology Elective Courses	6

† In order to satisfy the Biochemistry course requirement, students in Track I must take BIOL/CHEM g4445 (Biochemistry I) AND BIOL/CHEM g4447 (Biochemistry II) instead of BIOL g4432. Students will not receive credit for both BIOL g4432 and BIOL/CHEM g4445/4447.

MICROBIOLOGY TRACK 2: Medical Microbiology/Pre-Health Professions for students interested in a career in Medical Microbiology, Immunology, or the Health Professions

BIOL g4454	Advanced Immunology	3
BIOL g4455, g4455L	Pathogenic Microbiology, and Lab	5
BIOL g4475	General Virology	3
BIOL g4477	Bacterial Virology Lab OR	1
BIOL g4478	Animal Virology Lab	1

	Additional Microbiology Elective Courses	6
C. COURSES IN PHYSICS		
PHYS 1111, 1113	General Physics I, and Lab	4
PHYS 1112, 1114	General Physics II, and Lab	4
D. COURSES IN MATHEMATICS**		
MATH 1160	Brief Calculus OR	3
MATH 1170	Calculus I	4

** Additional courses in MATH that are highly recommended for students planning to attend graduate school: MATH 175 (Prerequisite is MATH 170), 275, 330, or 360.

E. COURSES IN CHEMISTRY		
CHEM 1111, 1111L	General Chemistry I, and Lab	5
CHEM 1112, 1112L	General Chemistry II, and Lab	4
CHEM 2232, 2234	Quantitative Analysis, and Lab	4
CHEM 3301, 3303	Organic Chemistry I, and Lab	4
CHEM 3302, 3304	Organic Chemistry II, and lab	4
F. GENERAL EDUCATION COURSES		
Goal 1: ENGL 1101 and 1102		6
Goal 2: COMM 1101		3
Goals 3, 4, and 5: Satisfied by Microbiology Major Mathematics and Science requirements		
2 of Goals 6, 7, and 8:		6
Option 1: 3 of Goals 9, 10A, 11, and 12		9
OR		
Option 2: 10B AND 2 of Goals 9, 11, and 12		14

Example Schedule for Microbiology Track I: Microbial Biochemistry and Molecular Microbiology

Fall Semester		Freshman Year		Spring Semester	
BIOL 1101	Biology I and Lab	4 cr	BIOL 1102	Biology II and Lab	4 cr
CHEM 1111	General Chemistry I and Lab	5 cr	CHEM 1112	General Chemistry II and Lab	4 cr
MATH 1160	Brief Calculus	3 cr	One of Goal 9, 10A, 11, or 12		3 cr
	OR		COMM 1101	Composition	3 cr
MATH 1170	Calculus I	4cr	ENGL 1102	English 1102	3 cr
ENGL 1101	English 1101	3 cr			17 cr
		15 or 16 cr			
Sophomore Year					
BIOL 2235	General Microbiology and Lab	4 cr	One of Goal 9, 10A, 11, or 12		3 cr
CHEM 3301/3302	Organic Chemistry I and Lab	4 cr	CHEM 3302/3304	Organic Chemistry II and Lab	4 cr
PHYS 1111/1113	General Physics I and Lab	4 cr	PHYS 1112/1114	General Physics II and Lab	4 cr
One of Goal 6, 7, or 8		3 cr	CHEM 2232/2234	Quantitative Analysis and Lab	4 cr
		15 cr	Other Electives		3 cr
					18 cr
Junior Year					
BIOL 4445	Biochemistry I	3 cr	BIOL 4447	Biochemistry II	3 cr
BIOL 4437	Experimental Biochemistry	1 cr	BIOL 4448	Advanced Experimental Biochemistry	2 cr
BIOL 4451/4451L	Immunology and Lab	4 cr	BIOL 4461	Advanced Genetics	3 cr
BIOL 4444/4444L	Cell and Molecular Biology and Lab	5 cr	One of Goal 6, 7, or 8		3 cr
BIOL 3358	Genetics	3 cr	One of Goal 9, 10A, 11, or 12		3 cr
		16 cr			14 cr
Senior Year					
BIOL 4433/4433L	Microbial Physiology and Lab	4 cr	BIOL 4473/4473L	Applied and Environmental Microbiology	4 cr
BIOL XXX	Microbiology Elective	3 cr	BIOL 4434	Microbial Diversity and Lab	4 cr
BIOL 4491 or 4492	Seminar in Biochemistry	1 cr	BIOL 4494	Seminar in Microbiology	1 cr
	OR		OR		
BIOL 4494	Seminar in Microbiology	1 cr	BIOL 4491 or 4492	Seminar in Biochemistry	1 cr
Other Electives		9 cr	BIOL XXX	Microbiology Elective	3 cr
		17 cr	Other Electives		4 cr

Example Schedule for Microbiology Track II: Medical Microbiology/Pre-Health Professions

Fall Semester		Freshman Year		Spring Semester	
BIOL 1101	Biology I and Lab	4 cr	BIOL 1102	Biology II and Lab	4 cr
CHEM 1111	General Chemistry I and Lab	5 cr	CHEM 1112	General Chemistry II and Lab	4 cr
MATH 1160	Brief Calculus	3 cr	One of Goal 9, 10A, 11, or 12		3 cr
	OR		COMM 1101	Composition	3 cr
MATH 1170	Calculus I	4cr	ENGL 1102	English 1102	<u>3 cr</u>
ENGL 1101	English 1101	<u>3 cr</u>			17 cr
		15 or 16 cr			
Sophomore Year					
BIOL 2235	General Microbiology and Lab	4 cr	One of Goal 9, 10A, 11, or 12		3 cr
CHEM 3301/3302	Organic Chemistry I and Lab	4 cr	CHEM 3302/3304	Organic Chemistry II and Lab	4 cr
PHYS 1111/1113	General Physics I and Lab	4 cr	PHYS 1112/1114	General Physics II and Lab	4 cr
One of Goal 6, 7, or 8		<u>3 cr</u>	BIOL 4455/4455L	Pathogenic Microbiology and Lab	<u>5 cr</u>
		15 cr			16 cr
Junior Year					
BIOL 4432	Biochemistry	3 cr	One of Goal 6, 7, or 8		3 cr
BIOL 4437	Experimental Biochemistry	1 cr	BIOL XXX	Microbiology Elective	3 cr
BIOL 4451/4451L	Immunology and Lab	4 cr	CHEM 2232/2234	Quantitative Analysis and Lab	4 cr
BIOL 4444/4444L	Cell and Molecular Biology and Lab	5 cr	One of Goal 9, 10A, 11, or 12		3 cr
BIOL 3358	Genetics	<u>3 cr</u>	Other Electives		<u>3 cr</u>
		16 cr			16 cr
Senior Year					
BIOL 4433/4433L	Microbial Physiology and Lab	4 cr	BIOL 4434	Microbial Diversity and Lab	4 cr
BIOL 4454	Advanced Immunology	3 cr	BIOL XXX	Microbiology Elective	4 cr
BIOL 4475	General Virology	3 cr			
BIOL 4491 or 4492	Seminar in Biochemistry	1 cr	BIOL 4494	Seminar in Microbiology	1 cr
	OR			OR	
BIOL 4494	Seminar in Microbiology	1 cr	BIOL 4491 or 4492	Seminar in Biochemistry	1 cr
Other Electives		<u>6 cr</u>	Other Electives		<u>7 cr</u>
		17 cr			16 cr