

COURSE REQUIREMENTS FOR BACHELOR OF SCIENCE IN MICROBIOLOGY

effective May 2009

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 101, 101L	Biology I, and Lab	4
BIOL 102, 102L	Biology II, and Lab	4
BIOL 206	Cell Biology	3
BIOL 235, 235L	General Microbiology, and Lab	4
BIOL 358	Genetics	3
BIOL g432	Biochemistry	3
BIOL g433, g433L	Microbial Physiology, and Lab	4
BIOL g434, g434L	Microbial Diversity, and Lab	4
BIOL g437/CHEM g438	Experimental Biochemistry	1
BIOL g444, g444L	Molecular Biology, and Lab	4
BIOL g451, g451L	Immunology, and Lab	4
BIOL g455, g455L	Pathogenic Microbiology, and Lab	5
BIOL g461	Advanced Genetics	3
BIOL g475	General Virology	3
BIOL g477	Bacterial Virology Lab	1
OR		
BIOL g478	Animal Virology Lab	1
BIOL 491 or 492	Seminar in Biochemistry	1
BIOL 494	Seminar in Microbiology	1
Microbiology Electives*		12
Microbiology Elective Course List*		
BIOL g423	Parasitology	3
BIOL g454	Advanced Immunology	3
BIOL/CHEM g448	Advanced Experimental Biochemistry	2
BIOL g466	Medical Mycology	3
BIOL g473, g473L	Applied and Environmental Microbiology, and Lab	4
BIOL g481 and/or 482	Independent Problems	up to 6

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*Students interested in Molecular Microbiology or Microbial Biochemistry, Industrial Microbiology, or Environmental Microbiology are advised to follow the elective list below.

SUGGESTED ELECTIVES GROUP 1: Molecular, Applied, and Environmental Microbiology

BIOL/CHEM g445†	Biochemistry I	3
BIOL/CHEM g447†	Biochemistry II	3
BIOL/CHEM g448	Advanced Experimental Biochemistry	2
BIOL g473, g473L	Applied and Environmental Microbiology, and Lab	4
	Additional Microbiology Elective Course	3

† In order to satisfy the Biochemistry course requirement, students may take BIOL/CHEM g445 (Biochemistry I) AND BIOL/CHEM g447 (Biochemistry II) instead of BIOL g432. Students interested in Molecular, Applied and/or Environmental Microbiology should take BIOL/CHEM g445 and BIOL/CHEM g447 instead of BIOL g432. Students will not receive credit for both BIOL g432 and the BIOL/CHEM g445/447 sequence. Students electing to take the two semester sequence of Biochemistry lecture in lieu of the one semester Biochemistry lecture course (BIOL g432) must take an additional 3 credit Microbiology elective.

*Students interested in a career in Medical Microbiology, Immunology, or the Health Professions are advised to follow the elective list below

SUGGESTED ELECTIVES GROUP 2: Medical Microbiology/Pre-Health Professions

BIOL g423	Parasitology	3
BIOL g454	Advanced Immunology	3
BIOL g466	Medical Mycology	3
	Additional Microbiology Elective Course	3

C. COURSES IN PHYSICS

PHYS 111, 113	General Physics I, and Lab	4
PHYS 112, 114	General Physics II, and Lab	4

D. COURSES IN MATHEMATICS**

MATH 160	Brief Calculus	3
	OR	
MATH 170	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 111, 111L	General Chemistry I, and Lab	5
CHEM 112, 112L	General Chemistry II, and Lab	4
CHEM 232, 234	Quantitative Analysis, and Lab	4
CHEM 301, 303	Organic Chemistry I, and Lab	4
CHEM 302, 304	Organic Chemistry II, and lab	4

F. GENERAL EDUCATION COURSES

Goal 1: ENGL 101 and 102	6
Goal 2: COMM 101	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

Fall Semester		Freshman Year		Spring Semester	
BIOL 101	Biology I and Lab	4 cr	BIOL 102	Biology II and Lab	4 cr
CHEM 111	General Chemistry I and Lab	5 cr	CHEM 112	General Chemistry II and Lab	4 cr
MATH 160	Brief Calculus	3 cr		One of Goal 9, 10A, 11, or 12	3 cr
	OR		COMM 101	Composition	3 cr
MATH 170	Calculus I	4cr	ENGL 102	English 102	<u>3 cr</u>
ENGL 101	English 101	<u>3 cr</u>			17 cr
		15 or 16 cr			
			Sophomore Year		
BIOL 206	Cell Biology	3 cr	BIOL 235	General Microbiology and Lab	4 cr
CHEM 301/302	Organic Chemistry I and Lab	4 cr	CHEM 302/304	Organic Chemistry II and Lab	4 cr
PHYS 111/113	General Physics I and Lab	4 cr	PHYS 112/114	General Physics II and Lab	4 cr
Two of Goal 6, 7, or 8		<u>6 cr</u>	BIOL 455/455L	Pathogenic Microbiology and Lab	<u>5 cr</u>
		17 cr			17 cr
			Junior Year		
BIOL 432	Biochemistry	3 cr	CHEM 232/234	Quantitative Analysis and Lab	4 cr
BIOL 437	Experimental Biochemistry	1 cr	BIOL 461	Advanced Genetics	3 cr
BIOL 451/451L	Immunology and Lab	4 cr	BIOL XXX	Microbiology Elective	3 cr
BIOL 444/444L	Molecular Biology and Lab	4 cr	Two of Goal 9, 10A, 11, or 12		<u>6 cr</u>
BIOL 358	Genetics	<u>3 cr</u>			16 cr
		15 cr			
			Senior Year		
BIOL 433/433L	Microbial Physiology and Lab	4 cr	BIOL 434	Microbial Diversity and Lab	4 cr
BIOL 475	General Virology	3 cr	BIOL XXX	Microbiology Elective	3 cr
BIOL 478	Animal Virology Lab	1 cr	BIOL 477	Bacterial Virology Lab	1 cr
BIOL XXX	Microbiology Elective	3 cr	BIOL XXX	Microbiology Elective	3 cr
BIOL 491 or 492	Seminar in Biochemistry	1 cr	BIOL 494	Seminar in Microbiology	1 cr
	OR			OR	
BIOL 494	Seminar in Microbiology	1 cr	BIOL 491 or 492	Seminar in Biochemistry	1 cr
Other Electives		<u>6 cr</u>	Other Electives		<u>3 cr</u>
		17 or 18 cr			14 or 15 cr