

MAJOR: BIOLOGY, B.S.

DEPARTMENT OF BIOLOGY

The B.S. in biology offers preparation for graduate school and a sound basis for professional training in the biological and health sciences. Biology is an unusually broad field, and students can tailor their programs to fit their own needs and interests. To provide flexibility in pursuing personal interests or career preparation, the student chooses 18 credits of upper division biology electives. The Department of Biology encourages students to develop as active scholars and to participate in undergraduate research.

TYPICAL PROGRAM OF STUDY			
FIRST YEAR			
FALL SEMESTER		SPRING SEMESTER	
CHEM 1151 General Chemistry I ¹	5 cr	BIOL 1011 General Biology I	5 cr
MATH 1290 Calculus for the Natural Sciences ^{^2}	5 cr	CHEM 1152 General Chemistry II ¹	5 cr
WRIT 1120 College Writing	<u>3 cr</u>	STAT or MATH course ³	<u>3-5 cr</u>
Total: 13 cr		Total: 13 cr	
SECOND YEAR			
BIOL 1012 General Biology II	5 cr	BIOL 2801 Ecology	3 cr
CHEM 2541 Organic Chemistry I	3 cr	BIOL elective ⁴	3-4 cr
CHEM 2543 Organic Chemistry I laboratory	1 cr	Chemistry elective ⁵	3-4
Liberal Education Course or Minor Field Course	<u>4-6 cr</u>	Liberal Education Course or Minor Field Course	3-6 cr
Total: 13-15 cr		Total: 15 cr	
THIRD YEAR			
BIOL 2101 Cell Biology	3 cr	Physical Science Elective ⁸	3-5 cr
BIOL 2201 Genetics	3 cr	WRIT 3150 Advanced Writing: Science	3 cr
BIOL 2XXX Laboratory Course ⁶	2 cr	BIOL 3987 Biology Seminar	1 cr
PHYS 1001 Introduction to Physics I ⁷	5 cr	BIOL elective ⁴	3-4 cr
Liberal Education Course or Minor Field Course	3 cr	Liberal Education Course or Minor Field Course	3-4 cr
Total: 16 cr		Total: 13-17 cr	
FOURTH YEAR			
BIOL 4802 Evolution	3 cr	BIOL elective ⁴	3-4 cr
BIOL elective ⁴	3-4 cr	BIOL elective ⁴	3-4 cr
BIOL elective ⁴	2-4 cr	Liberal Education Course or Minor Field Course	<u>4-6 cr</u>
Liberal Education Course or Minor Field Course	<u>3-4 cr</u>	Biology Department Exit Interview	
Total: 12-16 cr		Total: 13-16 cr	

[^]First math course is determined by ACT math score or math placement exam (MPE). This schedule presupposes placement into Calculus I - MATH 1290, 1296, or 1596.

¹CHEM 1161/1162 Honors General Chemistry I and II may substitute for CHEM 1151/1152

²MATH 1296 Calculus I or MATH 1596 Honors Calculus I may be substituted for MATH 1290.

³**Math elective.** Take one of the following: STAT 2411 or STAT 3611 or MATH 1297

⁴**Biology elective.** Students must complete 18 credits of biology electives 2XXX level or higher. Electives must include at least two lab courses or two courses with lab components. At least one course must be chosen from BIOL 3601, BIOL 3701, (BIOL 4501 or BIOL 4503). BIOL 3993 may be applied to the major for a maximum of 2 cr. SSP 3002 for Supplemental Instruction (SI) in Biology may be substituted for BIOL 3993 only by prior departmental approval. One the following courses may be used: MDBC 5501, MICB 5545, MICB 5555, PHSL 5601, PHSL 5602.

⁵**Chemistry elective.** Take 1 of the following courses or course pairs: CHEM 2212 or [CHEM 2222 & 2223] or [CHEM 2542 & 2544] or GEOL 3710.

⁶**Laboratory course requirement:** Take BIOL 2802 Ecology Laboratory or BIOL 2102 Cell Biology Laboratory or BIOL 2202 Genetics Laboratory

⁷PHYS 1001 may be replaced by PHYS 2011

⁸**Physical science elective.** Take one of the following courses: PHYS 1002, 2012, CS 1121, MATH 1297, STAT 2411. If STAT 2411 or MATH 1297 is used in the Math elective in the core, the course cannot count in this category

FOR ADDITIONAL INFORMATION:

Department of Biology
James I. Swenson Science Building 207
726-6262 or 726-8811 ♦ biol@d.umn.edu ♦ <http://www.d.umn.edu/biology>

BIOLOGY, B.S.

MAJOR REQUIREMENTS	CREDITS	PREREQUISITES	SEMESTER TO BE COMPLETED	GRADE
Biology Core Requirements				
BIOL 1011 General Biology I	5	1 yr of high school or 1 semester of college chemistry		
BIOL 1012 General Biology II	5	BIOL 1011		
BIOL 2101 Cell Biology	3	BIOL 1011, 1012; CHEM 2541		
BIOL 2201 Genetics	3	BIOL 1012		
BIOL 2801 Ecology	3	BIOL 1012		
BIOL 3987 Biology Seminar	1	90 credits		
BIOL 4802 Evolution	3	BIOL 1012, 2201		
Biology Department Exit Interview				
BIOL 2802 Ecology Laboratory	2	BIOL 2801 (concurrent registration OK)		
or BIOL 2102 Cell Biology Laboratory	2	BIOL 2101 (concurrent registration OK)		
or BIOL 2202 Genetics Laboratory	2	BIOL 2201 (concurrent registration OK)		
BIOL 3601 Plant Diversity ¹	3	BIOL 1012		
or BIOL 3701 Animal Diversity ¹	4	BIOL 1012		
or BIOL 4501 General Microbiology ¹	4	BIOL 2101		
or BIOL 4503 General Microbiology in Poland ¹	4	BIOL 2101		
BIOL elective ¹	2-4			
BIOL elective ¹	3-4			
BIOL elective ¹	3-4			
BIOL elective ¹	3-4			
Chemistry Requirements and electives				
CHEM 1151 General Chemistry I ²	5	MATH ACT \geq 21 or MATH 1005 with at least a C-, 1 yr HS chemistry		
CHEM 1152 General Chemistry II ²	5	CHEM 1151		
CHEM 2541 Organic Chemistry I	3	CHEM 1152 or 1162		
CHEM 2543 Organic Chemistry I laboratory	1	CHEM 2541 - concurrent registration OK		
<i>Take one of the following courses or course pairs:</i>				
CHEM 2212 Environmental Chemistry	4	CHEM 1152 or 1162		
or CHEM 2222 Quantitative Analysis and CHEM 2223 Quantitative Analysis lab	3 1	CHEM 1152 or 1162 CHEM 2222 - concurrent registration OK		
or CHEM 2542 Organic Chemistry II and CHEM 2544 Organic Chem. II Lab	3 1	CHEM 2541 CHEM 2542 - concurrent registration OK		
or GEOL 3710 Introduction to Geochemistry	3	MATH 1290 or 1296 and CHEM 1152		
Mathematics requirements and electives				
MATH 1290 Calculus for the Natural Sciences ³	5	Math ACT \geq 25 or MATH 1250 with \geq C- or MPE		
STAT 2411 Statistical Methods ⁴	4	Math ACT \geq 23 or MATH 1250 with at least C- or MPE		
or STAT 3611 Intro. to Probability & Statistics	3	MATH 1290 or 1296 with at least a C-		
or MATH 1297 Calculus II ⁴	5	MATH 1290, 1296 or 1596 with a grade of 'C-' or better		
Physics requirements and electives				
PHYS 1001 Introduction to Physics I ⁵	5	Algebra and Trigonometry		
<i>Take one of the following courses</i>				
PHYS 1002 - Introduction to Physics II	5	PHYS 1001		
or PHYS 2012 General Physics II	4	PHYS 2011		
or STAT 2411 Statistical Methods ⁴	3	Math ACT \geq 23 or MATH 1250 with at least C- or MPE		
or MATH 1297 Calculus II ⁴	5	MATH 1290 or 1296 with at least a C-		
or CS 1121 Intro. to Prog. Visual BASIC	3	1 year High School Algebra		
Composition Requirements				
WRIT 1120 College Writing	3			
WRIT 3150 Advanced Writing: Science	3	WRIT 1120; 60 credits		

[^]First math course is determined by ACT math score or math placement exam (MPE). This schedule presupposes placement into Calculus I - MATH 1290, 1296, or 1596.

¹Students must complete 18 credits of biology electives 2XXX level or higher. Electives must include at least two lab courses or two courses with lab components. At least one course must be chosen from BIOL 3601, BIOL 3701 or BIOL 4501. BIOL 3993 may be applied to the major for a maximum of 2 cr. SSP 3002 for Supplemental Instruction (SI) in Biology may be substituted for BIOL 3993 only by prior departmental approval. Max of two of the following may be used: MDBC 5501, MICB 5545, MICB 5555, PHSL 5601, PHSL 5602.

²CHEM 1161/1162 Honors General Chemistry I and II may substitute for CHEM 1151/1152

³MATH 1296 Calculus I or MATH 1596 Honors Calculus I may be substituted for MATH 1290.

⁴STAT 2411 and MATH 1297 can only be used in once for either Math electives or Physics electives.

⁵PHYS 1001 may be replaced by PHYS 2011

NOTE: In addition to the above requirements, students must complete the liberal education program and a minor (or a second major) to earn a B.S. degree. The Cell and Molecular Biology major may not be used to satisfy this requirement.