

## Biology Degree Requirements 2007-09 University Bulletin www.biology.iastate.edu

Biology majors are required to complete 120 credits to graduate. Included within this are specific University, College and Major requirements, which must also be fulfilled. Students are ultimately responsible for all issues concerning the satisfactory completion of graduation requirements. Information in this document is subject to change. See your advisor or the Student Services (103 Bessey) for the most current version.

### University Requirements:

English 150	3cr	US Diversity*	3cr
English 250	3cr	Inter. Perspective*	3cr
Library 160	0.5cr		

\* LAS Students may use University Requirements to fill College Requirement. See office or advisor for details. Ag students must take one course in US Diversity and one course in International Perspectives, which will not count for the humanities or social science requirements for Ag.

### College Requirements:

	<u>LAS</u>	<u>CALS</u>
Foreign Language	8cr <sup>@</sup>	None
Communications	3cr	3cr
Math	Satisfied or exceeded by Biology Major Requirements	
Natural Science	Satisfied or exceeded by Biology Major Requirements	
Arts/Humanities	12cr*	3cr
Social Science	9cr*	3cr
Ethics	None	3cr

@ LAS Foreign Language requirement waived with 5 years of a single language in high school

### Biology Major Requirements: 40.5 - 43.5cr

#### Core Program: 24cr

Biology 110	Introduction to Biology [F]	0.5cr
Biology 111	Opportunities in Biology [S]	0.5cr
Biology 211/L	Principles of Biology I	4cr
Biology 212/L	Principles of Biology II	4cr
Biology 312	Ecology	4cr
Biology 313/L	Principles of Genetics	4cr
Biology 314/L	Molecular & Cellular Bio	4cr
Biology 315	Biological Evolution	3cr

#### Approved Biology Advanced Courses: 17-20cr (see notes below)

**Biology** courses without specific semester listed are offered both Fall/Spring [F/S]. Summer session is designated [SS].

Biol 328X	Cell Phys. of Human Disease [F]	3cr	Biol 455X	Bryophyte & Lichen Biodiv [S]	3cr
Biol 330	Plant Physiology [S]	4-5cr	Biol 456	Principles of Mycology [F]	3cr
Biol 335	Princ. of Animal Physiology	5cr	Biol 457	Herpetology [F]	3cr
Biol 351	Comp Chordate Anatomy [S]	5cr	Biol 458	Ornithology [S]	3cr
Biol 352	Vertebrate Histology [S]	4cr	Biol 459	Mammalogy [S]	3cr
Biol 353	Introductory Parasitology [F]	4cr	Biol 462	Evolutionary Genetics [S]	3cr
Biol 354	Animal Behavior [F]	3cr	Biol 465	Morphometric Analysis [S]	4cr
Biol 354L	Lab in Animal Behavior [F]	1cr	Biol 472	Community Ecology [S]	3cr
Biol 355	Plants and People [S]	3cr	Biol 474	Plant Ecology [S]	3cr
Biol 356	Dendrology [F]	4cr	Biol 480	Studies in Marine Biol.	1-8cr
Biol 364	Invertebrate Biology [F]	3-4cr	Biol 481	Summer Field Studies	1-8cr
Biol 365	Vertebrate Biology [F]	4cr	Biol 482	Tropical Biology	1-4cr
Biol 366	Plant Systematics [S]	4cr	Biol 483	Environ Biogeochemistry	4cr
Biol 371	Ecological Methods [S]	3cr	Biol 486	Aquatic Ecology	3cr
Biol 381	Environmental Systems [F]	4cr	Biol 486L	Aquatic Ecology Lab	1cr
Biol 393	N. American Field Trips in Biol	1-4cr	Biol 487	Aquatic & Wetland Microbial Ecology [S]	3cr
Biol 394	International Field Trips in Biol	1-4cr	Biol 488	ID of Aquatic Organisms	1cr
Biol 423	Developmental Biology [S]	3cr	Biol 490	Independent Study (I, R)	1-6cr
Biol 423L	Developmental Biol Lab [S]	1cr	Biol 491	Laboratory Teaching Experience	1-2cr
Biol 428	Topics in Cell Biology [S]	3cr	Biol 494	Biology Internship	1-3cr
Biol 434	Gen. Comp. Endocrinology [S]	3-4cr	Biol 495	Undergraduate Seminar	1cr
Biol 436	Neurobiology [F]	3-4cr	Biol 498	Cooperative Education	Rcr
Biol 439	Environmental Physiology	3-4cr			
Biol 454	Plant Anatomy [F]	4cr			

Other courses may apply, including 500 level courses from EEOB and GDCB. Courses not on this list or offered in EEOB or GDCB may be brought for consideration by petition.

Students must take 2 courses with a lab or field component from the advanced biology list. At least 8 credits in advanced coursework must be taken in Biology.

### **Advanced courses from other departments or programs**

Courses without specific semester listed are offered both Fall/Spring [F/S]  
Summer session is designated [SS].

#### **Anthropology**

Anthr 307	Biological Anthropology [S]	3cr
Anthr 319	Skeletal Biology [alt F, 06]	3cr
Anthr 350X	Primate Behavior	3cr
Anthr 424	Forensic Anthropology [alt S, 06]	3cr

#### **Agronomy**

Agron 421	Introduction to Plant Breeding [F]	3cr
Agron 485	Soil Microbiol Ecology [F]	3cr

#### **Animal Science**

An S 331	Animal Reproduction [F,S]	3cr
An S 332	Lab Methods in Animal Repro [F,S]	2cr
An S 333	Embryo Transfer & Rel Technol [F]	2cr
An S 334	Embryo Transfer Laboratory [F]	1cr
An S 337	Lactation [S]	2cr

#### **Biochemistry, Biophysics, Molecular Biology**

BBMB 301	Survey of Biochemistry	
BBMB 404	Biochemistry I [F]	3cr
BBMB 405	Biochemistry II [S]	3cr
BBMB 411	Gen Biochem Res Tech Lab [F]	3cr
BBMB 420	Physiological Chemistry [F]	3cr
BBMB 451	Physical Biochemistry [F]	2cr
BBMB 461	Topics in Biophysics [S]	2cr

#### **BioMedical Science**

BMS 329	Anat and Phys of Domestic Animal [S]	3cr
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#### **Entomology**

Ent 360	Insect Behavior [S]	3cr
Ent 370	Insect Biology [F]	3cr
Ent 374	Insects and Our Health [S]	3cr
Ent 375	Plant Protection ... [alt S, 07]	3cr
Ent 376	Fund of Ento & Pest Mgt [F,S]	3cr
Ent 425	Aquatic Insects [alt S, 07]	3cr

#### **Exercise Sports Science**

Ex Sp 355	Biomechanics [F,S]	3cr
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#### **Genetics**

Gen 340	Human Genetics [alt S, 06]	3cr
Gen 410	Transmission Genetics [F]	3cr
Gen 411	Molecular Genetics [S]	3 cr
Gen 462	Evolutionary Genetics [S]	3cr

#### **Geology**

Geol 412	Paleobiology [alt S, 06]	3cr
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#### **Horticulture**

Hort 321	Horticulture Physiology [F]	2cr
Hort 423	Plant Tissue, Cell and Protoplast Culture [alt F, 05]	2cr

#### **Microbiology**

Micro 302	Biology of Microorganisms [F,S]	3cr
Micro 302L	Microbiology Lab [F,S]	1cr
Micro 310	Medical Microbiology [F]	4cr
Micro 310L	Medical Microbiology Lab [F]	1cr
Micro 320	Microbial Physiol & Gen [S]	4cr
Micro 402	Microbial Genetics [alt F, 06]	3cr
Micro 408	Virology [F]	3cr
Micro 420	Food Microbiology [F]	3cr
Micro 475	Immunology [S]	3cr
Micro 477	Bact-Plant Interactions [alt S, 06]	3cr

#### **NREM - Animal Ecology, Forestry**

A Ecl 321	Fish Biology [S]	3cr
A Ecl 366X	Nat Hist of Iowa Vertebrates [S]	3cr
A Ecl 442	Aquaculture [alt S, 07]	3cr
For 302	Silviculture [S]	3cr
NREM 407	Watershed Management [S]	4cr
NREM 301	Forest Ecology and Soils [F]	3cr

#### **Plant Pathology**

Pl P 408	Principles of Plant Pathology [F,S]	3cr
Pl P 416	Forest Insect and Disease Mgmt [S]	4cr

#### **Psychology**

Psych 310	Brain & Behavior [F,S]	3cr
Psych 315	Drugs & Behavior [F,S]	3cr

**Iowa Lakeside Laboratory** Check 103 Bessey for current offerings.

Other courses may apply including special offerings and experimental courses from these departments. See 103 Bessey for assistance.

## **Supporting Science Options**

### **Chemistry (16-17 credits)**

Option 1 is recommended for most students and required for those who are Pre-professional or are considering graduate school in most areas. Check with the specific Medical, Veterinary or Graduate School for specific entrance requirements.

**Option 1:** Chem 177/L 5cr + Chem 178/L 4cr + Chem 331/L 4cr + Chem 332/L 4cr  
General I                      General II                      Organic I                      Organic II

**Option 2:** Chem 163/L 5cr + Chem 164/L 4cr + Chem 231/L 4cr + Chem 210/211 & 211L 4cr or BBMB 316X 3cr  
General I                      General II                      Organic                      Quantitative Analysis                      Princ of Biochem

### **Math (7-8 credits)**

**Option 1:** Math 165 (General Calculus I) 4cr + Math 166 (General Calculus II) 4cr

**Option 2:** Math 181 (Calc for Life Science I) 4cr + Math 182 (Calc for Life Sciences II) 4cr

**Option 3:** Stat 101 4cr or 104 3cr + Stat 401 4cr

**Option 4:** One of Math 181/165/160 4 cr and one of Stat 101/104 4 or 3cr  
*Ag Students must choose Option 4 to fulfill college requirements*

### **Physical Sciences (8-10 credits)**

Students with skill in calculus and an interest in physics may take phys 221/222 (5cr).

Physics 111 + 112 (General Physics I and II) 4 cr each

### **Written Communication**

Students must earn a C or better.

One course from the following:

English 311x (Biological Communications) or 302-316

Sp CM 212

JL MC 347

*Majors in College of Ag and Life Sciences must take a verbal communications course (SP CM 212).*

### **Important Information:**

Choose your advanced coursework in biology to meet your professional goals.

If you complete a minor, double major or teacher certification you are only required to take 17 credits of advanced courses.

**At least 2 courses in advanced biology must meet lab or field component requirements.**

**At least 8 credits in advanced biology must be taken from the Biol designator.**

Students may use a maximum of 7 credits toward advanced biology requirements from the following list (no more than 6cr in each course may apply): Biol 393, 394, 480, 481, 490, 491, 494, 495, 498.

For information regarding courses in advanced biology available at field stations or other universities see your advisor or the Student Services Office, 103 Bessey.

Credits toward advanced biology may be obtained during a study abroad or exchange. Planning is critical. See your advisor at least 1 semester prior to the experience.

Other 300, 400 and 500 level courses from GDCB, EEOB or the departments listed above may be considered for use in advanced biology. See your advisor or the office for details.

All biological science courses in the Biology major require a grade of C- (C minus) or better.

Students in Biology must have a minimum C average (2.0) in the major (Biological Sciences coursework) to graduate.

The English proficiency requirement for Biology is a C or better in English 150, 250 and either a writing course or verbal communications course.

Minimum graduation requirements for a biology degree from Iowa State University include the following:

Minimum of 120 credits

Cumulative and major GPA above or equal to 2.0

The final 32 credits must be taken at ISU or approved by advisor and or college.

Students admitted with deficiencies in high school preparation may be required to take courses, which do not carry college credit or count toward the graduation requirement of 120 credits.

The LAS College requires 45 credits of 300+ level course work from a 4 yr college.

Courses taken Pass/NotPass (P/NP) cannot be used to meet area requirements or major/ minor requirements and may only be used toward the graduation total credit requirement (120) as electives.  
P/NP courses cannot be repeated for credit or grade.

A minimum of 32 ISU credits (of the 120) are required to graduate from ISU.