

Biology Degree Requirements
College of Agriculture
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Biology majors in the College of Agriculture 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 104	3cr	US Diversity*	3cr
English 105	3cr	Inter. Perspective*	3cr
Library 160	0.5cr		

*See Humanities, Ethics, and Social Science are below. Students may use University Requirements to fill College Requirement. See office or advisor for details.

Ag College Requirements:

Communications	6cr	Verbal and written communication see, Biology requirement below
Computer Studies	R	Satisfied by successfully completing the Biology Core or equivalent
Physical Sciences	25cr	Satisfied or exceeded by Biology Major Requirements
Math	6cr	One course Math, One course Stat—met by Biology Major Requirements
Natural Science	8cr	Satisfied or exceeded by Biology Major Requirements
Humanities, Ethics Social Sciences	15cr	3cr each area from approved course list, plus 3cr US Div and 3cr International Perspectives from approved list, see advisor or office

Biology Major Requirements: 40.5 - 43.5cr

Core Program: 23.5cr

Biology 110	Introduction to Biology	Rcr
Biology 111	Opportunities in Biology	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 & Cell Bio/Biochem	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] SEE OFFICE FOR DETAILS. Summer session is designated [SS].

Biol 308	Plants in the Classroom^ [F]	3cr	Biol 436	Neurobiology [F]	3-4cr
Biol 330	Plant Physiology [S]	4-5cr	Biol 439	Environmental Physiology	3-4cr
Biol 335	Princ of Animal Physiology	5cr	Biol 454	Plant Anatomy [F]	4cr
Biol 351	Comp Chordate Anatomy [S]	5cr	Biol 456	Principles of Mycology [F]	3cr
Biol 352	Vertebrate Histology [S]	4cr	Biol 462	Evolutionary Genetics [S]	3cr
Biol 353	Introductory Parasitology [F]	4cr	Biol 465	Morphometric Analysis [S]	4cr
Biol 354	Animal Behavior [F]	3cr	Biol 472	Community Ecology [S]	3cr
Biol 354L	Lab in Animal Behavior [F]	1cr	Biol 474	Plant Ecology [S]	3cr
Biol 355	Plants and People [S]	3cr	Biol 480	Studies in Marine Biol	1-8cr
Biol 356	Dendrology [F]	4cr	Biol 481	Summer Field Studies	1-8cr
Biol 364	Invertebrate Biology [F]	3-4cr	Biol 482	Tropical Biology	1-4cr
Biol 365	Vertebrate Biology [F]	4cr	Biol 483	Environ Biogeochemistry	4cr
Biol 366	Plant Systematics [S]	4cr	Biol 486	Aquatic Ecology	3cr
Biol 371	Ecological Methods [S]	3cr	Biol 486L	Aquatic Ecology Lab	1cr
Biol 381	Environmental Systems [F]	4cr	Biol 487	Aquatic & Wetland Microbial Ecology [S]	3cr
Biol 393	N. American Field Trips in Biol	1-4cr	Biol 488	ID of Aquatic Organisms	1cr
Biol 394	International Field Trips in Biol	1-4cr	Biol 490	Independent Study (U, R)	1-6cr
Biol 423	Developmental Biology [S]	3cr	Biol 494	Biology Internship	1-3cr
Biol 423L	Developmental Biol Lab [S]	1cr	Biol 495	Undergraduate Seminar	1cr
Biol 428	Cell Biology [S]	3cr	Biol 498	Cooperative Education	Rcr
Biol 434	Gen Comp Endocrinology [S]	3-4cr			

^ recommended for major credit only for those seeking teacher certification

Biology 490 is offered as both research (R) and undergraduate teaching lab (U) experience

Notes:

Choose your advanced coursework in biology to meet your program 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.

Students in Secondary Education have specific requirements for 3 courses in advanced biology.

Students may use up to 7 credits toward advanced biology requirements from the following courses: Biol 393, 394, 480, 481, 490, 494, 495, 498.

Advanced courses from other departments or programs

Courses without specific semester listed are offered both Fall/Spring [F/S]

SEE OFFICE FOR DETAILS. Summer session is designated [SS].

Anthropology*

Anthr 307	Biological Anthropology [S]	3cr
Anthr 319	Skeletal Biology [alt F, 06]	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 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
BMS 415	Anatomy of Lab Animals [alt S, 06]	2cr

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 360	Natural History of Aquatic Biota [F]	1cr
A Ecl 361	Natural History of Fishes [F]	1cr
A Ecl 362	Nat Hist of Reptiles and Amphib [S]	1cr
A Ecl 363	Natural History of Birds [S]	1cr
A Ecl 364	Natural History of Mammals [F,S]	1cr
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]	4cr

Plant Pathology

PI P 408	Principles of Plant Pathology [F,S]	3cr
PI 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 courses are summer session only at Milford, IA. Check 103 Bessey for current offerings.

la LL 301I	Iowa Natural History	4cr	la LL 367I	Plant Taxonomy	4cr
la LL 302I	Plant-animal Interactions	3cr	la LL 371I	Intro to Insect Ecology	3cr
la LL 312I	Ecology	4cr	la LL 403I	Evolution	4cr
la LL 326I	Ornithology	3cr	la LL 404I	Behavioral Ecology	4cr
la LL 364I	Biology of Aquatic Plants	3cr	la LL 415I	Develop Biol of Freshwater Inverts	3cr

la LL 419I	Vertebrate Ecology and Evolution	4cr	la LL 511I	Field Parasitology	3cr
la LL 420I	Amphibians & Reptiles	4cr	la LL 520I	Fish Ecology	3cr
la LL 422I	Prairie Ecology	4cr	la LL 560I	Restoration Ecology	3cr
la LL 484I	Plant Ecology	4cr	la LL 564I	Wetland Ecology	3cr
la LL 490I	Independent Study	1-4cr	la LL 575I	Field Mycology	3cr
la LL 501I	Freshwater Algae	4cr	la LL 580I	Ecology and Systematics of Diatoms	4cr
la LL 508I	Aquatic Ecology	4cr			

Supporting Science Options

The Biology Major requires selection of one of the options listed for each of the supporting science areas as well as the completion of an advanced writing course.

Chemistry (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 actual 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
 General I General II Organic Quantitative Analysis

Math (11-12 credits)

Students must demonstrate competency in algebra and trigonometry either on the ISU Math Placement Exam, the ACT Math subject test or by taking Math 140, 141 or 142. Math 104, 105, 195 and 196 are not accepted by the Biology Program as Math credits.

Option 1: Math 165 (General Calculus I) 4cr + Math 166 (General Calculus II) 4cr + Stat 104/101 3-4cr

Option 2: Math 181 (Calc for Life Science I) 4cr + Math 182 (Calc for Life Sciences II) 4cr + Stat 104/101 3-4cr

Option 3: Stat 101 4cr or 104 3cr + Stat 401 4cr + 1 semester of Calculus 3-4cr (see office for details)

Physics (8-10 credits)

For most students Option 1 is sufficient, those students with skill in Calculus and an interest in Physics may choose Option 2.

Option 1: Physics 111 + 112 (General Physics I and II) 4 cr each

Option 2: Physics 221 + 222 (Classical Physics I and II) 5 cr each

Written Communication

This course also partially satisfies the communication requirement for Ag (Sp CM 212 (or other) is also required. Students must earn a C or better.

Secondary Education students must also take Sp Cm 212.

The following courses are suggested:

English 302-316 -- however 303, 305, 309, 314 recommended
 JL MC 347

Important Information:

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.

*Only 6 credits of Anthropology may be used toward advanced biology.

*Only one of Psych 310/315 may be used for credit toward advanced biology.

Other 300, 400 and 500 level courses from 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 to graduate.

The English proficiency requirement for Biology is a C or better in English 104, 105 and the advanced writing course.

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

- Minimum of 120 credits

- GPA above or equal to 2.0

- The final 32 credits must be taken at ISU or approved.

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.

Courses taken Pass/NotPass (P/NP) cannot be used to meet area requirements or major or minor requirements and will only count toward graduation as electives.

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