

BIOLOGY, BS (CALS)

The biology major is designed for students with broad interests in the biological sciences. It is intended primarily to:

1. prepare undergraduates for graduate studies in diverse areas of biology;
2. prepare certain pre-professional students (e.g., medicine, veterinary medicine, dentistry) for advanced study in the health professions;
3. provide a broad exposure to biology for students who want a general science education as biologists, and
4. serve as initial preparation for students who later choose a more specialized major.

The major is offered by the College of Agricultural and Life Sciences and the College of Letters & Science.

HOW TO GET IN

HOW TO GET IN

To declare this major, students must be admitted to UW–Madison and the College of Agricultural and Life Sciences (CALS). For information about becoming a CALS first-year or transfer student, see Entering the College (<http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#enteringthecollegertext>).

Students who attend Student Orientation, Advising, and Registration (SOAR) with the College of Agricultural and Life Sciences have the option to declare this major at SOAR. Students may otherwise declare after they have begun their undergraduate studies. For more information, contact the advisor listed in the Contact Box for the major.

Students who intend to major in Biology in either the College of Letters and Science (L&S) or the College of Agricultural and Life Sciences (CALS) may not combine this major ("double major") with the Molecular and Cell Biology Major or the Neurobiology Major.

REQUIREMENTS

UNIVERSITY GENERAL EDUCATION REQUIREMENTS

All undergraduate students at the University of Wisconsin–Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (<http://guide.wisc.edu/undergraduate/#requirementsforundergraduatetext>) section of the *Guide*.

General Education

- Breadth–Humanities/Literature/Arts: 6 credits
- Breadth–Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits
- Breadth–Social Studies: 3 credits
- Communication Part A Part B *
- Ethnic Studies *
- Quantitative Reasoning Part A Part B *

* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

COLLEGE OF AGRICULTURAL AND LIFE SCIENCES REQUIREMENTS

In addition to the University General Education Requirements, all undergraduate students in CALS must satisfy a set of college and major requirements. Courses may not double count within university requirements (General Education and Breadth) or within college requirements (First-Year Seminar, International Studies, Science, and Capstone), but courses counted toward university requirements may also be used to satisfy a college and/or a major requirement; similarly, courses counted toward college requirements may also be used to satisfy a university and/or a major requirement.

COLLEGE REQUIREMENTS FOR ALL CALS BS DEGREE PROGRAMS

Code	Title	Credits
Quality of Work: Students must maintain a minimum cumulative grade point average of 2.000 to remain in good standing and be eligible for graduation.		
Residency: Students must complete 30 degree credits in residence at UW–Madison after earning 86 credits toward their undergraduate degree.		
	First year seminar (http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSFIRSTYEARSEMINARCOURSES)	1
	International studies (http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSIINTERNATIONALSTUDIESCOURSES)	3
	Physical science fundamentals	4-5
CHEM 103	General Chemistry I	
or CHEM 108	Chemistry in Our World	
or CHEM 109	Advanced General Chemistry	
	Biological science	5
	Additional science (biological, physical, or natural)	3
	Science breadth (biological, physical, natural, or social)	3
CALS Capstone Learning Experience: included in the requirements for each CALS major (see "major requirements") (http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSCAPSTONEREQUIREMENT)		

REQUIREMENTS FOR THE MAJOR

A minimum of 15 credits must be completed in the major that are not used elsewhere. Students must complete a minimum of 31 credits of biological science courses within the introductory biology, foundation course, upper-level breadth in the major, and capstone requirements. Unless specifically stated otherwise, courses may not be used to meet multiple requirements of the major.

In addition to the standard Biology major, there is a Named Option in Evolutionary Biology. Students may complete only one Biology major/named option and must declare the option they are pursuing.

CORE REQUIREMENTS

Mathematics and Statistics

Code	Title	Credits
Complete one of the following:		4-10
MATH 221	Calculus and Analytic Geometry 1	
MATH 211	Survey of Calculus	
MATH 171 & MATH 217	Calculus with Algebra and Trigonometry I and Calculus with Algebra and Trigonometry II	
Complete one of the following:		3-4
MATH 222	Calculus and Analytic Geometry 2	
STAT 240	Data Science Modeling I	
STAT 301	Introduction to Statistical Methods	
STAT 371	Introductory Applied Statistics for the Life Sciences	
Total Credits		7-14

Chemistry

Code	Title	Credits
General Chemistry (Complete one of the following):		5-10
CHEM 103 & CHEM 104	General Chemistry I and General Chemistry II	
CHEM 109	Advanced General Chemistry	
CHEM 115 & CHEM 116	Chemical Principles I and Chemical Principles II	
Organic Chemistry		
CHEM 343	Organic Chemistry I	3
CHEM 344	Introductory Organic Chemistry Laboratory	2
CHEM 345	Organic Chemistry II	3
Total Credits		13-18

Physics

Code	Title	Credits
First Semester Physics (complete one of the following):		4-5
PHYSICS 103	General Physics	
PHYSICS 201	General Physics	
PHYSICS 207	General Physics	
Second Semester Physics (complete one of the following):		4-5
PHYSICS 104	General Physics	
PHYSICS 202	General Physics	

PHYSICS 208	General Physics	
Total Credits		8-10
Introductory Biology		
Code	Title	Credits
Select one of the following options:		
Option A:		
BIOLOGY/ BOTANY/ ZOOLOGY 151	Introductory Biology	
BIOLOGY/ BOTANY/ ZOOLOGY 152	Introductory Biology	
Option B:		
BIOCORE 381	Evolution, Ecology, and Genetics	
BIOCORE 382	Evolution, Ecology, and Genetics Laboratory	
BIOCORE 383	Cellular Biology	
BIOCORE 384	Cellular Biology Laboratory	
BIOCORE 485	Principles of Physiology	
Option C:		
ZOOLOGY/ BIOLOGY 101	Animal Biology	
ZOOLOGY/ BIOLOGY 102	Animal Biology Laboratory	
BOTANY/ BIOLOGY 130	General Botany	
Total Credits		10-13

Foundation Course (complete one of the following):

Students may use BIOCORE 381 and BIOCORE 383 toward both introductory biology and foundation.

Code	Title	Credits
AGRONOMY/ HORT 338	Plant Breeding and Biotechnology	3
BIOCHEM 501	Introduction to Biochemistry	3
BIOCHEM 508	General Biochemistry II	3-4
BIOCORE 381 & BIOCORE 383	Evolution, Ecology, and Genetics and Cellular Biology	6
GENETICS 466	Principles of Genetics	3
GENETICS 468	General Genetics 2	3
MICROBIO 470	Microbial Genetics & Molecular Machines	3

UPPER-LEVEL BREADTH IN THE MAJOR

Minimum of 13 credits required and must include one approved lab course. Approved lab courses are indicated by footnote. A course taken to meet the foundation requirement may not also count as an upper-level breadth course.

- Complete at least two credits from either category A or B.
- Complete at least two credits from either category C or D.
- Complete at least two credits from an unused category (A, B, C, D, or E).

A. Cellular and Subcellular Biology

Code	Title	Credits
AGRONOMY/ HORT 338	Plant Breeding and Biotechnology	3
AGRONOMY/ BOTANY/HORT 339	Plant Biotechnology: Principles and Techniques I ¹	4
AGRONOMY/ BOTANY/HORT 340	Plant Cell Culture and Genetic Engineering	3
AN SCI 336	Animal Growth and Development	3
AN SCI/DY SCI 362	Veterinary Genetics	2
AN SCI 366	Concepts in Genomics	3
BIOCHEM 501	Introduction to Biochemistry	3
BIOCHEM 507	General Biochemistry I	3
BIOCHEM 508	General Biochemistry II	3-4
BIOCHEM/ NUTR SCI 510	Nutritional Biochemistry and Metabolism	3
BIOCHEM/ NUTR SCI 560	Principles of Human Disease and Biotechnology	2
BIOCHEM 570	Computational Modeling of Biological Systems	3
BIOCHEM/ M M & I 575	Biology of Viruses	2
BIOCHEM 601	Protein and Enzyme Structure and Function	2
BIOCHEM/ GENETICS/ MICROBIO 612	Prokaryotic Molecular Biology	3
BIOCHEM/ GENETICS/ MD GENET 620	Eukaryotic Molecular Biology	3
BIOCHEM/ BOTANY 621	Plant Biochemistry	3
BIOCHEM 625	Mechanisms of Action of Vitamins and Minerals	2
BMOLCHEM/ MICROBIO 668	Microbiology at Atomic Resolution	3
BOTANY/ENTOM/ PL PATH 505	Plant-Microbe Interactions: Molecular and Ecological Aspects	3
CRB 640	Fundamentals of Stem Cell and Regenerative Biology	3
CRB 650	Molecular and Cellular Organogenesis	3
CRB/B M E 670	Biology of Heart Disease and Regeneration	3
DERM 601	Skin Biology and Skin Diseases	3
GENETICS 466	Principles of Genetics	3
GENETICS 467	General Genetics I	3
GENETICS 520	Neurogenetics	3
GENETICS 527	Developmental Genetics for Conservation and Regeneration	3
GENETICS 588	Immunogenetics	3
GENETICS 627	Animal Developmental Genetics	3
GENETICS/ MD GENET 662	Cancer Genetics	3
H ONCOL/ MED PHYS 410	Radiobiology	2-3

MICROBIO 345	Introduction to Disease Biology	3
MICROBIO 470	Microbial Genetics & Molecular Machines	3
MICROBIO/ SOIL SCI 523	Soil Microbiology and Biochemistry	3
MICROBIO 607	Advanced Microbial Genetics	3
MICROBIO 626	Microbial and Cellular Metabolomics	3
M M & I 341	Immunology	3
M M & I/PATH- BIO 528	Immunology	3
NEURODPT/ ZOOLOGY 616	Lab Course in Neurobiology and Behavior ¹	4
NTP/ NEURODPT 610	Cellular and Molecular Neuroscience	4
NTP/ NEURODPT 629	Molecular and Cellular Mechanisms of Memory	3
NTP 675	Special Topics (Stem Cell in Neurobiology)	1-3
NTP 675	Special Topics (Reproductive Neuroendocrinology)	1-3
NTP 675	Special Topics (Molecular Mechanisms of Brain Damage)	1-3
ONCOLOGY/ M M & I/ PL PATH 640	General Virology-Multiplication of Viruses	3
PHM SCI 254	Tiny Earth Genomics - Researching Uncultured Antibiotic-Producing Microbes ¹	3
PHM SCI 558	Laboratory Techniques in Pharmacology and Toxicology ¹	2
ZOOLOGY 370	General Molecular Biology	3
ZOOLOGY 444	Neuronal Cell Biology in Health and Disease	2
ZOOLOGY 470	Introduction to Animal Development	3
ZOOLOGY/ PSYCH 523	Neurobiology	3
ZOOLOGY 555	Laboratory in Developmental Biology ¹	3
ZOOLOGY 570	Cell Biology	3
ZOOLOGY 604	Computer-based Gene and Disease/Disorder Research Lab ¹	2
ZOOLOGY 625	Development of the Nervous System	2
ZOOLOGY 655	Modeling Neurodevelopmental Disease	3

B. Organismal Biology

Code	Title	Credits
AN SCI/DY SCI 373	Animal Physiology	3
AN SCI 377	Integrative Animal Physiology Laboratory ¹	1
AN SCI/DY SCI 434	Reproductive Physiology ¹	3
AN SCI/F&W ECOL/ ZOOLOGY 520	Ornithology	3
AN SCI/F&W ECOL/ ZOOLOGY 521	Birds of Southern Wisconsin ¹	3

ANAT&PHY 335	Physiology ¹	5	PSYCH 454	Behavioral Neuroscience	3
ANAT&PHY 337	Human Anatomy	3	PSYCH 513	Hormones, Brain, and Behavior	4
ANAT&PHY 338	Human Anatomy Laboratory ¹	2	PSYCH 606	Hormones and Behavior	3
ANAT&PHY 435	Fundamentals of Human Physiology ¹	5	ZOOLOGY 303	Aquatic Invertebrate Biology	3
ANTHRO/ NTP/PSYCH/ ZOOLOGY 619	Biology of Mind	3	ZOOLOGY 430	Comparative Anatomy of Vertebrates ¹	5
BIOCORE 486	Principles of Physiology Laboratory ¹	2	ZOOLOGY 603	Endocrinology	3-4
BOTANY 300	Plant Anatomy ¹	4	ZOOLOGY 611	Comparative and Evolutionary Physiology	3
BOTANY 330	Algae ¹	3	ZOOLOGY 612	Comparative Physiology Laboratory ¹	2
BOTANY/ PL PATH 332	Fungi ¹	4	C. Ecology		
BOTANY/ PL PATH 333	Biology of the Fungi	2	Code	Title	Credits
BOTANY/ F&W ECOL 402	Dendrology: Woody Plant Identification and Ecology ¹	3	AGRONOMY/ BOTANY/ SOIL SCI 370	Grassland Ecology	3
BOTANY 500	Plant Physiology ¹	3-4	AGRONOMY/ ENTOM/F&W ECOL/ M&ENVTOX 632	Ecotoxicology: The Chemical Players	1
CS&D 503	Neural Mechanisms of Speech, Hearing and Language	3	AGRONOMY/ ENTOM/F&W ECOL/ M&ENVTOX 633	Ecotoxicology: Impacts on Individuals	1
DY SCI 378	Lactation Physiology ¹	3	AGRONOMY/ ENTOM/F&W ECOL/ M&ENVTOX 634	Ecotoxicology: Impacts on Populations, Communities and Ecosystems	1
ENTOM/ ZOOLOGY 302	Introduction to Entomology ¹	4	AN SCI 420	Microbiomes of Animal Systems	3
ENTOM 321	Physiology of Insects	3	BOTANY/ ZOOLOGY 450	Midwestern Ecological Issues: A Case Study Approach	2
ENTOM 331	Taxonomy of Mature Insects ¹	4	BOTANY/ F&W ECOL 455	The Vegetation of Wisconsin ¹	4
F&W ECOL 401	Physiological Animal Ecology	3	BOTANY/ F&W ECOL/ ZOOLOGY 460	General Ecology ¹	4
GENETICS 545	Genetics Laboratory ¹	2	BOTANY/ENTOM/ ZOOLOGY 473	Plant-Insect Interactions	3
GENETICS/ MD GENET 565	Human Genetics	3	BOTANY/ENVIR ST/ F&W ECOL/ ZOOLOGY 651	Conservation Biology	3
GEOSCI/ ZOOLOGY 542	Invertebrate Paleontology	3	ENTOM 450	Basic and Applied Insect Ecology	3
KINES 314	Physiology of Exercise ¹	4	ENTOM 451	Basic and Applied Insect Ecology Laboratory	1
MICROBIO 303	Biology of Microorganisms	3	ENTOM 490	Biodiversity and Global Change	3
MICROBIO 304	Biology of Microorganisms Laboratory ¹	2	ENVIR ST/ LAND ARC 361	Wetlands Ecology	3
MICROBIO 330	Host-Parasite Interactions	3	F&W ECOL 448	Disturbance Ecology	3
MICROBIO 526	Physiology of Microorganisms	3	F&W ECOL 550	Forest Ecology	3
M M & I 301	Pathogenic Bacteriology	2	F&W ECOL/ LAND ARC/ ZOOLOGY 565	Principles of Landscape Ecology	2
M M & I/ENTOM/ PATH-BIO/ ZOOLOGY 350	Parasitology	3	F&W ECOL/ ZOOLOGY 660	Climate Change Ecology	3
NTP/NEURODPT/ PSYCH 611	Systems Neuroscience	4	GENETICS 528	Banking Animal Biodiversity: International Field Study in Costa Rica	1
NTP/ZOOLOGY 620	Neuroethology Seminar	2	MICROBIO/AN SCI/ BOTANY 335	The Microbiome of Plants, Animals, and Humans	3
NTP 675	Special Topics (Functional Brain Imaging of Cognitive Disorders)	1-3			
NUTR SCI 431	Nutrition in the Life Span	3			
NUTR SCI 631	Clinical Nutrition I	3			
ONCOLOGY 401	Introduction to Experimental Oncology	2			
PATH 404	Pathophysiologic Principles of Human Diseases	3			
PL PATH 558	Biology of Plant Pathogens ¹	3			
PSYCH 406	Psychology of Perception	3-4			
PSYCH 414	Cognitive Psychology	3			

PL PATH 300	Introduction to Plant Pathology ¹	4
PL PATH 315	Plant Microbiomes ¹	4
ZOOLOGY 304	Marine Biology	2
ZOOLOGY/ ENVIR ST 315	Limnology-Conservation of Aquatic Resources	2
ZOOLOGY 316	Laboratory for Limnology- Conservation of Aquatic Resources ¹	2-3
ZOOLOGY 320	Field Marine Biology ¹	3
ZOOLOGY 504	Modeling Animal Landscapes	3-5
ZOOLOGY/ ENVIR ST 510	Ecology of Fishes	3
ZOOLOGY/ ENVIR ST 511	Ecology of Fishes Lab ¹	2

D. Evolution and Systematics

Code	Title	Credits
ANTHRO 302	Hominoid Evolution	3
ANTHRO 304	Heredity, Environment and Human Populations	3
ANTHRO/BOTANY/ ZOOLOGY 410	Evolutionary Biology	3
ANTHRO 411	The Evolution of the Genus, Homo	3
ANTHRO 458	Primate Behavioral Ecology	3
ANTHRO 603	Seminar in Evolutionary Theory	3
BIOLOGY/ GENETICS 522	Communicating Evolutionary Biology	2-3
BOTANY 305	Plant Morphology and Evolution ¹	4
BOTANY 400	Plant Systematics ¹	4
BOTANY 401	Vascular Flora of Wisconsin ¹	4
BOTANY 422	Plant Geography	3
BOTANY/ PL PATH 563	Phylogenetic Analysis of Molecular Data	3
ENTOM 432	Taxonomy and Bionomics of Immature Insects ¹	4
ENTOM/GENETICS/ ZOOLOGY 624	Molecular Ecology	3
ENVIR ST/ F&W ECOL/ ZOOLOGY 360	Extinction of Species	3
GENETICS 468	General Genetics 2	3
GEOSCI/ ZOOLOGY 541	Paleobiology	3
MICROBIO 450	Diversity, Ecology and Evolution of Microorganisms	3
MICROBIO 520	Planetary Microbiology: What Life Here Tells Us About Life Out There	3
MICROBIO 525	Field Studies of Planetary Microbiology and Life in the Universe ¹	3
PSYCH 449	Animal Behavior	3
PSYCH 450	Primate Psychology: Insights into Human Behavior	3
ZOOLOGY 300	Invertebrate Biology and Evolution	3
ZOOLOGY 301	Invertebrate Biology and Evolution Lab ¹	2

ZOOLOGY 415	Genetics of Human History	3
ZOOLOGY 425	Behavioral Ecology	3

E. Applied Biology, Agriculture and Natural Resources

Code	Title	Credits
A A E/AGRONOMY/ NUTR SCI 350	World Hunger and Malnutrition	3
AGRONOMY 300	Cropping Systems	3
AGRONOMY 302	Forage Management and Utilization	3
AGRONOMY/ HORT 360	Genetically Modified Crops: Science, Regulation & Controversy	2
AGRONOMY 377	Global Food Production and Health	3
AGRONOMY/ HORT 501	Principles of Plant Breeding	3
AGRONOMY/ ATM OCN/ SOIL SCI 532	Environmental Biophysics	3
AMER IND/ ANTHRO/ BOTANY 474	Ethnobotany	3-4
AN SCI/DY SCI/ NUTR SCI 311	Comparative Animal Nutrition	3
AN SCI/DY SCI 320	Animal Health and Disease	3
AN SCI/DY SCI 361	Introduction to Animal and Veterinary Genetics	2
AN SCI/DY SCI 363	Principles of Animal Breeding	2
AN SCI 503	Avian Physiology ¹	3
AN SCI 512	Management for Avian Health ¹	3
BIOCORE 587	Biological Interactions	3
BOTANY 403	Field Collections and Identification	1-4
DY SCI/ AGRONOMY 471	Food Production Systems and Sustainability	3
ENTOM 351	Principles of Economic Entomology	3
ENTOM/ ZOOLOGY 371	Medical Entomology ¹	3
ENTOM/ F&W ECOL 500	Insects in Forest Ecosystem Function and Management	2
ENVIR ST/ POP HLTH 471	Introduction to Environmental Health	3
ENVIR ST/ POP HLTH 502	Air Pollution and Human Health	3
ENVIR ST/ LAND ARC 581	Prescribed Fire: Ecology and Implementation ¹	3
F&W ECOL 306	Terrestrial Vertebrates: Life History and Ecology ¹	4
F&W ECOL/ ZOOLOGY 335	Human/Animal Relationships: Biological and Philosophical Issues	3
F&W ECOL 410	Principles of Silviculture	3
F&W ECOL 415	Tree Physiology	3
F&W ECOL 458	Environmental Data Science	3
F&W ECOL/ SURG SCI 548	Diseases of Wildlife	3
F&W ECOL 561	Wildlife Management Techniques ¹	3
FOOD SCI/ MICROBIO 324	Food Microbiology Laboratory ¹	2

FOOD SCI/ MICROBIO 325	Food Microbiology	3	F&W ECOL 599	Wildlife Research Capstone (limited access)	3
FOOD SCI 532	Integrated Food Manufacturing ¹	4	GENETICS 527	Developmental Genetics for Conservation and Regeneration	3
GENETICS 548	The Genomic Revolution	3	PL PATH 315	Plant Microbiomes	4
GENETICS/ HORT 550	Molecular Approaches for Potential Crop Improvement	3	ZOOLOGY 316	Laboratory for Limnology-Conservation of Aquatic Resources	2-3
HORT/ LAND ARC 263	Landscape Plants I ¹	3	ZOOLOGY 555	Laboratory in Developmental Biology	3
HORT 370	World Vegetable Crops	3	ZOOLOGY 612	Comparative Physiology Laboratory	2
HORT/ AGRONOMY 376	Tropical Horticultural Systems	2			
HORT 378	Tropical Horticultural Systems International Field Study	2			
M&ENVTOX/ ONCOLOGY/ PHM SCI/PHMCOL- M/POP HLTH 625	Toxicology I	3			
MED PHYS/ PHYSICS 265	Introduction to Medical Physics	2			
M M & I 554	Emerging Infectious Diseases and Bioterrorism	2			
MICROBIO/ SOIL SCI 425	Environmental Microbiology	3			
MICROBIO 357	General Bioinformatics for Microbiologists	3			
NTP/MED PHYS 651	Methods for Neuroimaging Research	3			
NUTR SCI 332	Human Nutritional Needs	3			
PL PATH/ SOIL SCI 323	Soil Biology	3			
PL PATH 517	Plant Disease Resistance	2-3			
SOIL SCI 321	Soils and Environmental Chemistry	3			

CAPSTONE REQUIREMENT

Code **Title** **Credits**

Two credits minimum required. With advisor approval, directed study or research-based senior thesis in a biological science discipline can also count. The experience must be completed after the first year of an introductory biology sequence above. The capstone experience will normally be completed during the student's final two or three semesters. Also, a subset of laboratory courses has been approved for capstone. The following courses, along with 682s and 692s in biological science departments (taken senior year), can be accepted as fulfilling the capstone experience.

ANAT&PHY 435	Fundamentals of Human Physiology	5
BIOCORE 486	Principles of Physiology Laboratory ²	2
BOTANY/ F&W ECOL 455	The Vegetation of Wisconsin	4
BOTANY/ F&W ECOL/ ZOOLOGY 460	General Ecology	4
ENVIR ST/ ZOOLOGY 511	Ecology of Fishes Lab	2

BIOLOGY NAMED OPTION

Instead of completing the requirements above, students may choose to select the named option below.

View as listView as grid

- **BIOLOGY: EVOLUTIONARY BIOLOGY ([HTTP://GUIDE.WISC.EDU/UNDERGRADUATE/AGRICULTURAL-LIFE-SCIENCES/BACTERIOLOGY/BIOLOGY-BS/BIOLOGY-EVOLUTIONARY-BIOLOGY-BS/](http://guide.wisc.edu/undergraduate/agricultural-life-sciences/bacteriology/biology-bs/biology-evolutionary-biology-bs/))**

HONORS IN THE MAJOR

Students admitted to the university and to the College of Agricultural and Life Sciences are invited to apply to be considered for admission to the CALS Honors Program.

Admission Criteria for New First-Year Students:

- Complete program application including essay questions

Admission Criteria for Transfer and Continuing UW-Madison Students:

- UW-Madison cumulative GPA of at least 3.25
- Complete program application including essay questions

HOW TO APPLY

The application is available on the CALS Honors Program website (<https://cals.wisc.edu/academics/undergraduate/current-students/honors-program/>). Applications are accepted at any time.

New first-year students with accepted applications will automatically be enrolled in Honors in Research. It is possible to switch to Honors in the Major in the student's first semester on campus after receiving approval from the advisor for that major. Transfer and continuing students may apply directly to Honors in Research or Honors in the Major (after approval from the major advisor).

REQUIREMENTS

All CALS Honors programs have the following requirements:

- Earn at least a cumulative 3.25 GPA at UW-Madison (some programs have higher requirements)
- Complete the program-specific requirements listed below
- Submit completed thesis documentation to CALS Academic Affairs

Honors in the Major in Biology: Requirements

To earn Honors in the Major in Biology, students must satisfy the requirements for the major (above) as well as the following requirements:

- Earn a 3.300 overall university GPA
- Complete a two-semester senior honors thesis for 6 credits total and present research in a public forum
- Complete at least 20 credits of honors coursework from the following sections of the Biology curriculum:
 - Introductory biology
 - Foundation courses
 - Upper-level breadth in the major
- At least 6 of the 20 credits of honors coursework must be from the upper-level breadth in the major requirement

FOOTNOTES

¹ Course also approved for lab credit

² To count BIOCORE 486 Principles of Physiology Laboratory for capstone, students must also complete BIOCORE 382 Evolution, Ecology, and Genetics Laboratory and BIOCORE 384 Cellular Biology Laboratory.

UNIVERSITY DEGREE REQUIREMENTS

Total Degree To receive a bachelor's degree from UW–Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.

Residency Degree candidates are required to earn a minimum of 30 credits in residence at UW–Madison. "In residence" means on the UW–Madison campus with an undergraduate degree classification. "In residence" credit also includes UW–Madison courses offered in distance or online formats and credits earned in UW–Madison Study Abroad/Study Away programs.

Quality of Work Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.

LEARNING OUTCOMES

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1. Know and understand core concepts that unify the breadth of biological sciences including: evolution; structure and function; information flow, exchange, and storage; pathways for transformations of energy and matter; and systems.
2. Demonstrate practical skills of a professional biologist including: problem-solving by engaging the process of science; written and verbal proficiency; laboratory skills; quantitative analysis skills; and teamwork skills.

3. Graduates will be able to engage and make broader connections to other scientific disciplines and society.

FOUR-YEAR PLAN

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Four-year plans for the biology major are designed to support biological science major exploration. The four-year plan is a tool to assist you and your advisor in planning your academic career. Use it along with your DARS report and Course Search & Enroll. Your specific program of study could, and probably will, look different. You should customize your own four-year plan to fit your unique path at UW–Madison. Consult with your advisor about the best path for you.

SAMPLE BIOLOGY FOUR-YEAR PLAN

First Year

Fall	Credits Spring	Credits
CHEM 103 or 109	4-5 CHEM 104	5
Math Course ¹	3-5 Math or Statistics	3-4
Communication A or Breadth Courses	6 Communication A or Breadth Courses	5-7
First Year Seminar ²	1	
14-17		13-16

Second Year

Fall	Credits Spring	Credits
CHEM 343	3 CHEM 344	2
Math or Statistics (if needed)	3-4 CHEM 345	3
Intro Biology Courses ³	3-5 Intro Biology Courses ³	3-5
Breadth Course	3 Breadth Courses	4-6
12-15		12-16

Third Year

Fall	Credits Spring	Credits
PHYSICS 103 or 207	4-5 PHYSICS 104 or 208	4-5
Foundational or Biocore	3 Biocore or Upper-Level Breadth in the Major ⁴	3-5
Elective Courses	5-8 Elective Courses	5-8
12-16		12-18

Fourth Year

Fall	Credits Spring	Credits
Upper-Level Breadth in the Major ⁴	3-5 Upper-Level Breadth in the Major ⁴	3-5
Capstone or Research Course	2-3 Capstone or Research Course	2-3
Elective Courses	7-10 Elective Courses	7-10
12-18		12-18

Total Credits 99-134

¹ Math determined by placement scores. Biology majors must complete MATH 171/MATH 217, MATH 211, or MATH 221 plus one additional math/stats course.

² See CALS requirements (<http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#requirementstext>) for a list of approved first-year seminar courses.

³ Students may complete BIOLOGY/BOTANY/ZOOLOGY 151-BIOLOGY/BOTANY/ZOOLOGY 152 & a foundational course or BIOLOGY/ZOOLOGY 101-BIOLOGY/ZOOLOGY 102, BIOLOGY/BOTANY 130 & a foundational course or BIOCORE (three lectures and two labs required).

⁴ See requirements tab for upper-level breadth in the major course lists.

ADVISING AND CAREERS

ADVISING AND CAREERS

ADVISING

Your advisor is here to guide you through the biology major. We can address your questions and concerns, provide advice, help you create a four-year degree plan that meets your major and professional goals, and connect you to resources. It is important to remember that advising is about the process, and some questions do not have a quick and easy answer. Your advisor will challenge you to self-reflect, to critically think about your goals and strategies, and to develop decision-making skills. For more information about what to expect during your advising appointment, visit UW Undergraduate Advising (<https://advising.wisc.edu/soar/advising-101/>).

In the biology major, students are assigned to an advisor according to last name. Please schedule an advising appointment here (<http://biologymajor.wisc.edu/advising/>).

CAREERS

The biology major encourages students to begin working on their career exploration and preparation soon after arriving on campus. We partner with the CALS Career Services office to help you leverage the academic skills learned in your major and liberal arts degree, explore and try out different career paths, participate in internships, prepare for the job search and/or graduate school applications, and network with professionals in the field (alumni and employers).

College of Agricultural and Life Sciences graduates are in high demand by employers and graduate programs. It is important to us that our students are career ready at the time of graduation, and we are committed to your success.

Career Resources:

- Schedule a Career Advising appointment (<https://wisc.starfishsolutions.com/starfish-ops/dl/instructor/serviceCatalog.html?bookmark=service/63821/schedule>)
- Explore CALS Career Services for Students (<https://cals.wisc.edu/academics/undergraduate/current-students/career-services/students/>)

PEOPLE

PEOPLE

ADVISING LEADERSHIP AND STAFF

Brian Asen
Carley Garvens
Sarah Kuba, Program Director
Brittany Magrady
Damien Parks

BIOLOGY MAJOR PROGRAM COMMITTEE

(voting members)

Joseph Dillard
Nazan Gillie, ex officio
Anna Kowalkowski
Sarah Kuba, ex officio
Kate McCulloh, L&S Co-Chair
Timothy Paustian, ex officio
Federico Rey
Nathaniel Sharp, Evolutionary Biology Named Option Representative
Jon Woods
Jae-Hyuk Yu, CALS Co-Chair

WISCONSIN EXPERIENCE

WISCONSIN EXPERIENCE

The following opportunities can help students connect with other students interested in biology, build relationships with faculty and staff, and contribute to out-of-classroom learning:

- Many study abroad programs offer a plethora of excellent upper-level biological science courses. Students often complete courses abroad that meet major requirements while others use this opportunity to focus on non-science coursework and explore other topics that interest them. Students can explore studying abroad as a Biology major utilizing the Biology Major Advising Page (<https://studyabroad.wisc.edu/academics/major-advising-pages-maps/biology/>). Students work with their advisor and the CALS study abroad office (<https://cals.wisc.edu/academics/undergraduate-students/studyabroad/>) to identify appropriate programs.
- Students are encouraged to get involved in research in any life science department. Research can be performed for either course credit or pay, depending on the opportunity. Research opportunities can be identified by inquiring directly (<https://wisconsin.wisc.edu/resources/#ugrad>) with faculty members, reading the Biology Major Newsletter (<https://biologymajor.wisc.edu/newsletters/>), or announcement on the Student Job Center (<https://studentjobs.wisc.edu/>).