BIOLOGY, BA (L&S)

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 preprofessional 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 Letters & Science and the College of Agricultural and Life Sciences.

HOW TO GET IN

HOW TO GET IN

Students interested in declaring the biology major should set up an appointment to speak with biology academic advisor. Information can be found at advising (http://biologymajor.wisc.edu/advising/).

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/#requirementsforundergraduatestudytext) 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 LETTERS & SCIENCE DEGREE REQUIREMENTS: BACHELOR OF ARTS (BA)

Students pursuing a bachelor of arts degree in the College of Letters & Science must complete all of the requirements below. The College of Letters & Science allows this major to be paired with either a bachelor of arts or a bachelor of science curriculum.

BACHELOR OF ARTS DEGREE REQUIREMENTS

Mathematics	Complete the University General Education Requirements for Quantitative Reasoning A (QR-A) and Quantitative Reasoning B (QR-B) coursework.
Language	• Complete the fourth unit of a language other than English; OR • Complete the third unit of a language and the second unit of an additional language other than English.
L&S Breadth	• 12 credits of Humanities, which must include 6 credits of literature; and • 12 credits of Social Science; and • 12 credits of Natural Science, which must include one 3+ credit Biological Science course and one 3+ credit Physical Science course.
Liberal Arts and Science Coursework	Complete at least 108 credits.
Depth of Intermediate/Advanced work	Complete at least 60 credits at the intermediate or advanced level.
Major	Declare and complete at least one major.
Total Credits	Complete at least 120 credits.
UW-Madison Experience	• 30 credits in residence, overall; and • 30 credits in residence after the 86th credit.

Quality of Work	• 2.000 in all coursework at UW–Madison • 2.000 in Intermediate/Advanced level coursework at UW–Madison

NON–L&S STUDENTS PURSUING AN L&S MAJOR

Non–L&S students who have permission from their school/college to pursue an additional major within L&S only need to fulfill the major requirements. They do not need to complete the L&S Degree Requirements above.

REQUIREMENTS FOR THE MAJOR

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 Additional Lab or Field Research 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 named 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:		10-13
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 Upper-Level Breadth in the Major.

- 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 1	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/ NTP 610	Cellular and Molecular Neuroscience	4
NEURODPT/ ZOOLOGY 616	Lab Course in Neurobiology and Behavior [1]	4
NEURODPT/ NTP 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
ANAT&PHY 337	Human Anatomy	3
ANAT&PHY 338	Human Anatomy Laboratory [1]	2
ANAT&PHY 435	Fundamentals of Human Physiology [1]	5
ANTHRO/ NTP/PSYCH/ ZOOLOGY 619	Biology of Mind	3
BIOCORE 486	Principles of Physiology Laboratory [1]	2
BOTANY 300	Plant Anatomy [1]	4
BOTANY 330	Algae [1]	3
BOTANY/ PL PATH 332	Fungi [1]	4
BOTANY/ PL PATH 333	Biology of the Fungi	2
BOTANY/ F&W ECOL 402	Dendrology: Woody Plant Identification and Ecology [1]	3
BOTANY 500	Plant Physiology [1]	3-4
CS&D 503	Neural Mechanisms of Speech, Hearing and Language	3
DY SCI 378	Lactation Physiology [1]	3
ENTOM/ ZOOLOGY 302	Introduction to Entomology [1]	4
ENTOM 321	Physiology of Insects	3
ENTOM 331	Taxonomy of Mature Insects [1]	4
F&W ECOL 401	Physiological Animal Ecology	3
GENETICS 545	Genetics Laboratory [1]	2
GENETICS/ MD GENET 565	Human Genetics	3
GEOSCI/ ZOOLOGY 542	Invertebrate Paleontology	3
KINES 314	Physiology of Exercise [1]	4
MICROBIO 303	Biology of Microorganisms	3
MICROBIO 304	Biology of Microorganisms Laboratory [1]	2
MICROBIO 330	Host-Parasite Interactions	3
MICROBIO 526	Physiology of Microorganisms	3
M M & I 301	Pathogenic Bacteriology	2
M M & I/ENTOM/ PATH-BIO/ ZOOLOGY 350	Parasitology	3
NTP/NEURODPT/ PSYCH 611	Systems Neuroscience	4
NTP/ZOOLOGY 620	Neuroethology Seminar	2
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
PSYCH 454	Behavioral Neuroscience	3
PSYCH 513	Hormones, Brain, and Behavior	4
PSYCH 606	Hormones and Behavior	3
ZOOLOGY 303	Aquatic Invertebrate Biology	3
ZOOLOGY 430	Comparative Anatomy of Vertebrates [1]	5
ZOOLOGY 603	Endocrinology	3-4
ZOOLOGY 611	Comparative and Evolutionary Physiology	3
ZOOLOGY 612	Comparative Physiology Laboratory [1]	2

C. Ecology

Code	Title	Credits
AGRONOMY/ BOTANY/ SOIL SCI 370	Grassland Ecology	3
AGRONOMY/ ENTOM/F&W ECOL/ M&ENVTOX 632	Ecotoxicology: The Chemical Players	1
AGRONOMY/ ENTOM/F&W ECOL/ M&ENVTOX 633	Ecotoxicology: Impacts on Individuals	1
AGRONOMY/ ENTOM/F&W ECOL/ M&ENVTOX 634	Ecotoxicology: Impacts on Populations, Communities and Ecosystems	1
AN SCI 420	Microbiomes of Animal Systems	3
BOTANY/ ZOOLOGY 450	Midwestern Ecological Issues: A Case Study Approach	2
BOTANY/ F&W ECOL 455	The Vegetation of Wisconsin [1]	4
BOTANY/ F&W ECOL/ ZOOLOGY 460	General Ecology [1]	4
BOTANY/ENTOM/ ZOOLOGY 473	Plant-Insect Interactions	3
BOTANY/ENVIR ST/ F&W ECOL/ ZOOLOGY 651	Conservation Biology	3
ENTOM 450	Basic and Applied Insect Ecology	3
ENTOM 451	Basic and Applied Insect Ecology Laboratory	1
ENTOM 490	Biodiversity and Global Change	3
ENVIR ST/ LAND ARC 361	Wetlands Ecology	3

F&W ECOL 448	Disturbance Ecology	3
F&W ECOL 550	Forest Ecology	3
F&W ECOL/ LAND ARC/ ZOOLOGY 565	Principles of Landscape Ecology	2
F&W ECOL/ ZOOLOGY 660	Climate Change Ecology	3
GENETICS 528	Banking Animal Biodiversity: International Field Study in Costa Rica	1
MICROBIO/AN SCI/ BOTANY 335	The Microbiome of Plants, Animals, and Humans	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/ DY SCI 471	Food Production Systems and Sustainability	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
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
FOOD SCI 532	Integrated Food Manufacturing [1]	4
GENETICS 548	The Genomic Revolution	3
GENETICS/ HORT 550	Molecular Approaches for Potential Crop Improvement	3
HORT/ LAND ARC 263	Landscape Plants I [1]	3
HORT 370	World Vegetable Crops	3
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
MED PHYS/NTP 651	Methods for Neuroimaging Research	3
MICROBIO 357	General Bioinformatics for Microbiologists	3
MICROBIO/ SOIL SCI 425	Environmental Microbiology	3
M M & I 554	Emerging Infectious Diseases and Bioterrorism	2
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

ADDITIONAL LAB OR FIELD RESEARCH

In addition to the Lab requirement, complete one of the following requirements:

- Complete one *additional* lab course and at least two credits from categories A–E in the Upper-Level Breadth in the Major course lists, ***or***
- Complete at least two credits of directed study in a biological science discipline, or
- Complete a two-semester thesis in biological science.[2]

Approved Directed Study Courses

To have Directed Study count for the Additional Lab/Field Research requirement, students must first complete an Introductory Biology sequence.

Code	Title	Credits
AGRONOMY 699	Special Problems	
ANATOMY 699	Independent Study	
ANESTHES 699	Independent Study	
AN SCI 699	Special Problems	
BIOCHEM 699	Special Problems	
BIOLOGY 699	Directed Studies	
BOTANY 699	Directed Study	
BMOLCHEM 699	Special Research Problems	
COMP BIO 699	Directed Study	
CRB 699	Independent Study	
DY SCI 699	Special Problems	
ENTOM 699	Special Problems	
FAM MED 699	Directed Study	
FOOD SCI 699	Special Problems	
F&W ECOL 699	Special Problems	
GENETICS 699	Special Problems	
H ONCOL 699	Independent Study in Human Cancer Biology	
HORT 699	Special Problems	
M&ENVTOX 699	Special Problems	
MEDICINE 699	Independent Study	
MED SC-V 699	Directed Study	
MICROBIO 699	Special Problems	
M M & I 699	Directed Study	
MOL BIOL 699	Directed Studies in Molecular Biology	
NEURODPT 699	Directed Study	
NEUROL 699	Directed Research in Neurology	
NEURSURG 699	Neurosurgery: Directed in Study in Research	
NURSING 699	Directed Study in Nursing	
NUTR SCI 699	Special Problems	
OBS&GYN 699	Directed Study	
ONCOLOGY 699	Special Research Problems	
OPHTHALM 699	Directed Study	
PATH 699	Independent Study	
PATH-BIO 699	Directed Study	
PEDIAT 699	Independent Study	
PHM SCI 699	Advanced Independent Study	
PHMCOL-M 699	Independent Study	
PHYSIOL 699	Independent Work	
PL PATH 699	Special Problems	
RHAB MED 699	Independent Study	
SOIL SCI 699	Special Problems	
SURG SCI 699	Directed Study	
SURGERY 699	Independent Study	

Approved Thesis Sequences

Code	Title	Credits
AGRONOMY 681 & AGRONOMY 682	Senior Honors Thesis and Senior Honors Thesis	
AN SCI 681 & AN SCI 682	Senior Honor Thesis and Senior Honors Thesis	
AN SCI 691 & AN SCI 692	Thesis and Thesis	
BIOCHEM 681 & BIOCHEM 682	Senior Honors Thesis and Senior Honors Thesis	
BIOCHEM 691 & BIOCHEM 692	Senior Thesis and Senior Thesis	
BIOLOGY 681 & BIOLOGY 682	Senior Honors Thesis and Senior Honors Thesis	
BIOLOGY 691 & BIOLOGY 692	Senior Thesis and Senior Thesis	
BOTANY 681 & BOTANY 682	Senior Honors Thesis and Senior Honors Thesis	
BOTANY 691 & BOTANY 692	Senior Thesis and Senior Thesis	
DY SCI 681 & DY SCI 682	Senior Honors Thesis and Senior Honors Thesis	
ENTOM 681 & ENTOM 682	Senior Honors Thesis and Senior Honors Thesis	
FOOD SCI 681 & FOOD SCI 682	Senior Honors Thesis and Senior Honors Thesis	
F&W ECOL 681 & F&W ECOL 682	Senior Honors Thesis and Senior Honors Thesis	
F&W ECOL 691 & F&W ECOL 692	Senior Thesis and Senior Thesis	
GENETICS 681 & GENETICS 682	Senior Honors Thesis and Senior Honors Thesis	
H ONCOL 681 & H ONCOL 682	Senior Honors Thesis in Human Oncology 1 and Senior Honors Thesis in Human Oncology 2	
H ONCOL 691 & H ONCOL 692	Senior Thesis in Human Oncology 1 and Senior Thesis in Human Oncology 2	
HORT 681 & HORT 682	Senior Honors Thesis and Senior Honors Thesis	
M M & I 691 & M M & I 692	First Semester Senior Thesis and Second Semester Senior Thesis	
MICROBIO 681 & MICROBIO 682	Senior Honors Thesis and Senior Honors Thesis	
MICROBIO 691 & MICROBIO 692	Senior Thesis and Senior Thesis	
MOL BIOL 681 & MOL BIOL 682	Senior Honors Thesis and Senior Honors Thesis	
MOL BIOL 691 & MOL BIOL 692	Senior Thesis and Senior Thesis	
NUTR SCI 681 & NUTR SCI 682	Senior Honors Thesis and Senior Honors Thesis	
NUTR SCI 691 & NUTR SCI 692	Senior Thesis-Nutrition and Senior Thesis	
PATH-BIO 681 & PATH-BIO 682	Senior Honors Thesis I and Senior Honors Thesis II	
PL PATH 681 & PL PATH 682	Senior Honors Thesis and Senior Honors Thesis	
SOIL SCI 681 & SOIL SCI 682	Senior Honors Thesis and Senior Honors Thesis	
ZOOLOGY 681 & ZOOLOGY 682	Senior Honors Thesis and Senior Honors Thesis	
ZOOLOGY 691 & ZOOLOGY 692	Senior Thesis and Senior Thesis	

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/LETTERS-SCIENCE/INTEGRATIVE-BIOLOGY/BIOLOGY-BS/BIOLOGY-EVOLUTIONARY-BIOLOGY-BS/)**

RESIDENCE & QUALITY OF WORK

- 2.000 GPA in all BIOLOGY and major courses
- 2.000 GPA on at least 15 credits of Upper-Level work in the major, in Residence[2]
- 15 credits in the major, taken on the UW–Madison campus

HONORS IN THE MAJOR

Students may declare Honors in the Biology major with permission of the major advisor.

HONORS IN THE MAJOR REQUIREMENTS

To earn Honors in the Major, students must satisfy both the requirements for the major and the following additional requirements:

- Earn a 3.300 University GPA
- Earn a 3.300 GPA in the major
- Complete 13 credits from Foundation and Upper-Level Breadth in the Major requirements, taken for Honors
- Complete an approved two-semester Senior Honors Thesis for a total of 6 credits

FOOTNOTES

1 Course also approved for lab credit

2 Foundation and Upper-Level Breadth in the Major are considered Upper-Level for purposes of this requirement.

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

LEARNING OUTCOMES

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

SAMPLE FOUR-YEAR PLAN

This Sample Four-Year Plan is a tool to assist students and their advisor(s). Students should use it—along with their DARS report, the Degree Planner, and Course Search & Enroll tools—to make their own four-year plan based on their placement scores, credit for transferred courses and approved examinations, and individual interests. As students become involved in athletics, honors, research, student organizations, study abroad, volunteer experiences, and/or work, they might adjust the order of their courses to accommodate these experiences. Students will likely revise their own four-year plan several times during college.

Four-year Plans for the Biology major are designed to support biological science major exploration and planning your academic career. Your specific program of study could, and probably will, look different. You should customize the Four-Year Plan to fit your unique interests at UW–Madison. Consult with your advisor about the best plan for you.

SAMPLE BIOLOGY MAJOR FOUR-YEAR PLAN

Freshman

Fall	Credits	Spring	Credits
CHEM 103	4	CHEM 104	5
MATH 221[1]	5	STAT 371[1]	3
Communication A	3	Literature Breadth	3
Social Science Breadth	3	Ethnic Studies/Social Science Breadth	4
	15		**15**

Sophomore

Fall	Credits	Spring	Credits
BIOLOGY/BOTANY/ ZOOLOGY 151[2]	5	BIOLOGY/BOTANY/ ZOOLOGY 152[2]	5
CHEM 343	3	CHEM 344	2
Literature Breadth	3	CHEM 345	3
Social Science Breadth	3	Humanities Breadth	3
INTER-LS 210	1	Elective	2
	15		**15**

Junior

Fall	Credits	Spring	Credits
Foundation Course for Major	3	Upper-Level Breadth in the Major	4
PHYSICS 103	4	PHYSICS 104	4
Social Science Breadth	3	Humanities Breadth	3
Electives	5	Electives	4
Declare the Major			
	15		**15**

Senior

Fall	Credits	Spring	Credits
Upper-Level Breadth in the Major	3	Upper-Level Breadth in the Major	6
Upper-Level Breadth in the Major Lab or Field Research	3	Additional Lab or Field Research	2
Electives	9	Electives	7
	15		**15**

Total Credits 120

1 Follow the guidance of Math placement scores when choosing a Mathematics and/or Statistics course.

2 Students may complete one of three Introductory Biology sequences. See the Requirements tab for more information.

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 adviser according to last name. Please visit us here (http://biologymajor.wisc.edu/advising/) to schedule an advising appointment.

CAREERS

The biology major encourages our students to begin working on their career exploration and preparation soon after arriving on campus. We partner with SuccessWorks at the College of Letters & Science. L&S 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.

L&S CAREER RESOURCES

Every L&S major opens a world of possibilities. SuccessWorks (https://successworks.wisc.edu/) at the College of Letters & Science helps students turn the academic skills learned in their major, certificates, and other coursework into fulfilling lives after graduation, whether that means jobs, public service, graduate school or other career pursuits.

In addition to providing basic support like resume reviews and interview practice, SuccessWorks offers ways to explore interests and build career skills from their very first semester/term at UW all the way through graduation and beyond.

Students can explore careers in one-on-one advising, try out different career paths, complete internships, prepare for the job search and/or graduate school applications, and connect with supportive alumni and even employers in the fields that inspire them.

- SuccessWorks (https://careers.ls.wisc.edu/)
- Set up a career advising appointment (https://successworks.wisc.edu/make-an-appointment/)
- Enroll in a Career Course (https://successworks.wisc.edu/career-courses/) - a great idea for first- and second-year students:
  - INTER-LS 210 L&S Career Development: Taking Initiative (1 credit)
  - INTER-LS 215 Communicating About Careers (3 credits, fulfills Comm B General Education Requirement)
- Learn about internships and internship funding (https://successworks.wisc.edu/finding-a-job-or-internship/)
  - INTER-LS 260 Internship in the Liberal Arts and Sciences
- Activate your Handshake account (https://successworks.wisc.edu/handshake/) to apply for jobs and internships from 200,000+ employers recruiting UW-Madison students
- Learn about the impact SuccessWorks has on students' lives (https://successworks.wisc.edu/about/mission/)

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
Stephen Gammie, L&S Co-Chair
Irwin Goldman, Plant Biology Named Option Representative
Anna Kowalkowski
Sarah Kuba, ex officio
Kate McCulloh
Timothy Paustian, ex officio
Federico Rey
Nathaniel Sharp, Evolutionary Biology Named Option Representative
Sharon Thoma, ex officio
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 bioscience courses. Students often complete courses abroad that meet upper-level breadth in the major requirements (categories A-E) while others use this opportunity to focus on non-science coursework and explore other topics that interest them. Review the Biology Major advising page (https://studyabroad.wisc.edu/academics/major-advising-pages-maps/biology/) on the Study Abroad website to explore international academic 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://wiscience.wisc.edu/resources/#ugrad) with faculty members, reading the *Biology Major Newsletter*, or announcement on the Student Job Center (https://studentjobs.wisc.edu/).