

Major Information: Zoology B.A./B.S.

Department of Integrative Biology



About

The zoology major is a gateway to the diverse areas of modern biology. The major can be tailored to prepare students for advanced study and careers in many different areas: health professions and public health; law; life sciences research in university, government, and industrial settings; education including museum, nature center, secondary school, and college teaching; biotechnology; and environmental studies.

Specialized preparation is offered in ecology, systematics, limnology, morphology, molecular biology, cellular biology, developmental biology, genetics, neurobiology, physiology, evolution, and behavior. Several possible areas, emphasizing different interests, are outlined in the courses section. They include ecology, evolution, and behavior; anatomy, physiology, and organismal biology; and cellular, molecular, and developmental biology. The department encourages undergraduate participation in research and offers summer research scholarships to outstanding students.

Goals

The zoology major emphasizes critical thinking and conceptual skills that come from an understanding of how scientific information is obtained and evaluated, and of how this information can be applied to societal issues. The major provides a solid foundation in genetic, cellular, physiological, ecological, and evolutionary principles, and in the related disciplines of chemistry, physics, and mathematics. As a result, the major fosters an understanding of biological complexity including the interrelationships among humans and natural systems.

The unique characteristics of the zoology major include:

- broad-based, yet integrated training in wide-ranging areas of biology;
- solid foundation of basic principles and processes in biology;
- flexibility and advising needed to allow students to tailor the major to their specific goals;
- wide range of opportunities for undergraduate involvement in independent research and senior thesis.

Declaring

All students who are interested in pursuing the zoology major must schedule an appointment with a department advisor. No major declaration forms are required to declare zoology.

Note: Students in the College of Letters & Science (L&S) may be declared by a department advisor immediately. Students who are not currently in L&S need to either transfer into L&S or have permission from their school or college to pursue an additional major in zoology. Instructions for transferring into L&S are available on the [L&S Student Academic Affairs website](#).

Advising

Students are encouraged to consult with a department advisor to construct individual programs appropriate to their own needs. Please use scheduling assistant or call either 608-262-2742 or 608-262-3835 to make an appointment with an advisor. [Kayla Pelland](#) is available to meet with students on Mondays, Wednesdays, and Fridays in B154 Birge Hall, and [India Viola](#) is available on Tuesdays, Wednesdays, and Thursdays in 156 Birge Hall.

Major Requirements

In addition to fulfilling all [University requirements for the College of Letters & Science](#), students must fulfill the following major requirements:

1. Mathematics

- **Math 112:** Algebra (3 cr) and **Math 113:** Trigonometry (3 cr) OR
- **Math 114:** Algebra and Trigonometry (5 cr) OR
- **Math 171:** Calculus with Algebra and Trigonometry I (5 cr) and **Math 217:** Calculus with Algebra and Trigonometry II (5 cr) OR
- Equivalent placement scores

2. Chemistry

- **Chemistry 103:** General Chemistry I (4 cr) and **Chemistry 104:** General Chemistry II (5 cr) OR
- **Chemistry 109:** Advanced General Chemistry (5 cr)

3. Physics

- **Physics 103:** General Physics (4 cr) and **Physics 104:** General Physics (4 cr) OR
- **Physics 201:** General Physics (5 cr) and **Physics 202:** General Physics (5 cr) OR
- **Physics 207:** General Physics (5 cr) and **Physics 208:** General Physics (5 cr)

4. Zoology Coursework (30 credits required)

Foundational Courses:

- **Zoology 151:** Introductory Biology (5 cr) and **Zoology 152:** Introductory Biology (5 cr) OR
- [Biocore curriculum](#) (10-18 cr) OR

- **Zoology 101:** Animal Biology (3 cr) and **Zoology 102:** Animal Biology Laboratory (2 cr) and **Botany 130:** General Botany (5 cr)*

Upper-level Courses (Intermediate/Advanced):

- Choose from any of the following: **Zoology 299-699** (6 cr minimum must come from lecture, lab, or field courses), **Directed Study/Thesis** (up to 10 cr maximum), and **Approved Upper-level Courses Outside of Zoology** (up to 6 cr maximum)

5. Residence and Quality of Work

- 2.000 GPA in all zoology and major courses
- 2.000 GPA on 15 upper-level major credits, taken in residence
- 15 credits in zoology, taken on the UW-Madison campus

**Botany 130 is recommended, but not required for students who take Zoology 101 and 102. Botany 130 counts automatically toward the zoology major if Zoology 101 and 102 are also taken.*

Note: The Department of Integrative Biology recommends that students take math and chemistry during freshman year, introductory biology during sophomore year, and physics during junior year.

Courses in the Department of Integrative Biology

Subject	Number	Title	Credits	Level	Term
Zoology	101	Animal Biology	3	E	F, S, SS
Zoology	102	Animal Biology Laboratory	2	E	F, S, SS
Zoology	151	Introductory Biology	5	E	F, S
Zoology	152	Introductory Biology	5	E	F, S
Zoology	153	Introductory Biology	3	E	F, S
Zoology	199	Directed Study	1-3	E	F, S, SS
Zoology	260	Introductory Ecology	3	E	F, S, SS
Zoology	299	Directed Studies in Zoology	1-3	I	F, S, SS
Zoology	300	Invertebrate Biology and Evolution	3	I	S
Zoology	301	Invertebrate Biology and Evolution Lab	2	I	S
Zoology	302	Introduction to Entomology	4	I	F, S
Zoology	315	Limnology-Conservation of Aquatic Resources	2	I	F
Zoology	316	Laboratory for Limnology-Conservation of Aquatic Resources	3	I	F
Zoology	350	Parasitology	3	I	S
Zoology	360	Extinction of Species	3	I	F, SS
Zoology	371	Medical Entomology	3	I	F
Zoology	400	Topics in Biology	1-3	I	F, S
Zoology	405	Introduction to Museum Studies in the Natural Sciences	2-3	I	F
Zoology	410	Evolutionary Biology	3	I	F, S, SS
Zoology	425	Behavioral Ecology	3	I	S (even yrs)
Zoology	430	Comparative Anatomy of Vertebrates	5	I	F
Zoology	450	Midwestern Ecological Issues: A Case Study Approach	2	I	SS
Zoology	460	General Ecology	4	I	F, S, SS
Genetics*	466	Principles of Genetics	3	I	F, S, SS
Zoology	470	Introduction to Animal Development	3	I	S
Zoology	473	Plant-Insect Interactions	3	I	S (even yrs)
Zoology	500	Undergraduate Neurobiology Seminar	1	I	F, S
Zoology	504	Modeling Animal Landscapes	3-5	A	S (even yrs)
Zoology	510	Ecology of Fishes	3	I	S
Zoology	511	Ecology of Fishes Lab	2	A	S
Zoology	520	Ornithology	3	I	S
Zoology	521	Birds of Southern Wisconsin	3	I	S
Zoology	523	Neurobiology	3	I	F, SS
Zoology	525	Tropical Herpetology	1	I	S
Zoology	540	Theoretical Ecology	3	I	F (even yrs)
Zoology	541	Paleobiology	3	I	S
Zoology	555	Laboratory in Developmental Biology	3	I	F
Zoology	562	Human Cytogenetics	2	I	S
Zoology	565	Principles of Landscape Ecology	2	I	S (odd yrs)
Zoology	570	Cell Biology	3	I	F

Zoology	603	Endocrinology	3	A	F (even yrs)
Zoology	604	Computer-based Gene and Disease/Disorder Research Lab	2	A	S
Zoology	616	Lab Course in Neurobiology and Behavior	4	A	S
Zoology	619	Biology of Mind	3	I/A	F
Zoology	624	Molecular Ecology	3	I	S (odd yrs)
Zoology	625	Development of the Nervous System	2	I/A	S
Zoology	630	Cellular Signal Transduction Mechanisms	3	I/A	F
Zoology	635	Neurobiology of Disease	2	A	S (odd yrs)
Zoology	651	Conservation Biology	3	I	F
Zoology	655	Modeling Neurodevelopmental Disease	3	A	S
Zoology	660	Climate Change Ecology	3	A	F
Zoology	672	Historical Ecology	2	A	S
Zoology	674	Behavioral Neuroendocrinology Seminar	2	A	F (odd yrs)
Zoology	681	Senior Honors Thesis	1-6	A	F, S, SS
Zoology	682	Senior Honors Thesis	1-4	A	F, S, SS
Zoology	691	Senior Thesis	1-6	A	F, S, SS
Zoology	692	Senior Thesis	1-4	A	F, S, SS
Zoology	698	Directed Study	1-6	A	F, S, SS
Zoology	699	Directed Studies in Zoology	1-6	A	F, S, SS

**Previously Zoology 466, but has since been uncross-listed. Genetics 466 is coded in DARS to count toward the zoology major requirements.*

Approved Upper-level Courses Outside of Zoology (6 credits maximum)

Subject	Number	Title	Credits	Level	Term
Anat&Phy*	335	Physiology	5	I	F, S, SS
Anat&Phy	338	Human Anatomy Laboratory	2	I	F, S, SS
Anthropology	458	Primate Behavioral Ecology	3	I	F, S
Biochemistry	501	Introduction to Biochemistry	3	A	F, S, SS
Biochemistry	507	General Biochemistry I	3	A	F
BmolChem	314	Introduction to Human Biochemistry	3	I	SS
BmolChem	504	Human Biochemistry Laboratory	2	A	S, SS
Entomology	450	Basic and Applied Insect Ecology	3	A	F
Environmental Studies	361	Wetlands Ecology	3	I	S
Environmental Studies	375	Field Ecology Workshop	3	I	F, SS
F&WL Ecology	306	Terrestrial Vertebrates: Life History and Ecology	4	I	S
F&WL Ecology	548	Diseases of Wildlife	3	I	F
F&WL Ecology	606	Colloquium in Environmental Toxicology	1	I	F, S
Genetics	545	Genetics Laboratory	2	A	F, S
Genetics	566	Advanced Genetics	3	I	S
MM&I	341	Immunology	3	I	F, S
MM&I	528	Immunology	3	I	F
Microbiology	303	Biology of Microorganisms	3	I	F, S, SS
Microbiology	304	Biology of Microorganisms Laboratory	2	I	F, S, SS
Path-Bio	500	Molecular Biology Techniques	3	I	S
Psychology	449	Animal Behavior	3	I	F
Psychology	450	Primates and Us: Insights into Human Biology and Behavior	3	I	S
Psychology	454	Behavioral Neuroscience	3	I	F, S, SS
Psychology	455	Laboratory in Behavioral Neuroscience	1	I	F, S, SS
Thesis or	699	Considered individually. Not subject to 6 cr rule. Must submit proposal.	1-6	A	F, S, SS

**Only 3 credits of Anat&Phy 335 count toward approved upper-level courses outside of zoology.*

Honors in the Major

Honors in the major in zoology is intended for students who are eager to experience the excitement of original research and who wish to graduate with the best possible undergraduate training in the discipline. Honors in the major is especially appropriate for students who are considering graduate work in the biological sciences or who want an especially rigorous training in research, reasoning, and writing skills useful to a wide range of career choices.

To earn the B.A. or B.S. with honors in the major in zoology, students must satisfy the major requirements and:

- Achieve a GPA of at least 3.500 in all zoology courses at the time of graduation.
- Achieve a cumulative GPA of at least 3.300 in all courses taken at UW-Madison at the time of graduation.
- Enroll in 6 credits of *honors* coursework in the major (these must be taken for official honors credit). Students may choose from the following courses:
 - **Zoology 410**: Evolutionary Biology
 - **Zoology 460**: General Ecology
 - **Genetics 466**: General Genetics
 - **Zoology 470**: Introduction to Animal Development
 - **Zoology 504**: Modeling Animal Landscapes
 - **Zoology 510/511**: Ecology of Fishes/Ecology of Fishes Lab
 - **Zoology 520/521**: Ornithology/Birds of Southern Wisconsin
 - **Zoology 523**: Neurobiology
 - **Zoology 570**: Cell Biology
 - **Zoology 603**: Endocrinology
 - **Zoology 651**: Conservation Biology
- Complete a two-semester senior honors thesis in **Zoology 681** (3 cr) and **Zoology 682** (3 cr). Students completing a senior honors thesis in an additional biological science major should consult a zoology advisor to determine whether the project may also apply toward zoology honors. It is recommended that candidates for the senior honors thesis take **Zoology 699** during second semester junior year to prepare for the thesis.

Students are responsible for arranging a faculty member to supervise the project and are urged to consult a zoology advisor for guidance in finding faculty appropriate to their interests. Thesis mentors are not restricted to faculty in the Department of Integrative Biology. Students are encouraged to explore opportunities that best suit their individual research interests. They may select research mentors from among research faculty in the entire biological research community on campus.

By the beginning of the senior year, each honors student will develop a written thesis proposal that must be approved by the thesis mentor. Two semesters of Senior Honors Thesis research (681 and 682, 6 total credits) must be taken; the first semester can be done during the summer, especially for students doing field research. Completion of Senior Honors Thesis (682) requires a written thesis approved and graded by the thesis mentor.

Honors in the Liberal Arts

The Department of Integrative Biology offers the following courses for honors in the liberal arts:

- **Zoology 101:** Animal Biology
- **Zoology 151/153-152:** Introductory Biology
- **Zoology 504:** Modeling Animal Landscapes

Note: Biocore curriculum courses can also be applied.

For more information on honors requirements, please visit the [L&S Honors Program website](#).

Research (10 credits maximum)

Zoology alumni rate undergraduate research as one of the top academic experiences they had at UW. The Department of Integrative Biology endorses undergraduate research as one of the most potentially rewarding aspects of the undergraduate experience.

Each research project is based on an individual agreement between you and a research mentor. Your research mentor will help you define a research problem, design experiments, and interpret results. Students often work closely with a graduate student, post-doctoral associate, or other member of the lab. You will be expected to work in a team, to adapt to a specific research topic, and to meet deadlines.

UW expects students to put in an average of 45 hours (3hrs/week) to receive one research credit. Students can take 1-6 credits of research each semester, but the typical enrollment is 2-3 credits. Given the amount of training time required to bring you up to speed in the lab, many research mentors look for students who are willing to participate in another semester in their lab.

Faculty campus-wide may sponsor you for undergraduate research. To narrow your search, think about which areas of biology you would be most excited to learn about. Reading journals, science news, and talking to your professors and TA's can help you define your interests.

To approach a potential faculty mentor, you may write a brief email or make a phone call requesting a meeting with the researcher. You will want to include some or all of the following information:

- You are seeking an undergraduate research experience
- Your motivation for working in the particular area (demonstrate that you have read about their research interests)
- Your level of commitment and availability (include hours per week and potential number of semesters)
- If you are considering completing or preparing to complete a senior thesis or senior honors thesis
- One page resume including coursework, grades, work experiences, special interests (or include a brief outline of this info in the email if you're still working on the resume)
- Request a meeting and include a few different blocks of time that you will be available
- If you do not get a response within 3 days, consider following up with an email or phone call

Keep in mind that some faculty may not be able to take a student for whatever reason. Be prepared to repeat the process a few times-tailoring your email slightly for each individual you contact.

Before you meet with a potential mentor, be somewhat knowledgeable about her or his work. You can often find abstracts, or publication lists on the researcher's website. This will help to make your interaction more positive and productive.

Your potential mentor will want to find out more about you before they commit to working with you in the lab. They may ask about your interests, motivations, preparation, and expectations. This is your opportunity to do the same. Ask questions about the projects currently going on, possibilities where you could fit in, who would supervise your work, whether he/she has had undergraduates working in their lab before, and anything else you're curious about. If it seems like a good match, ask if they would agree to be your mentor for one of the projects!

If a faculty mentor accepts you as an undergraduate researcher in their lab, you will need to enroll in a Directed Study (or Thesis, if applicable). To enroll in a Directed Study/Thesis (**Zoology 199, 299, 681, 682, 691, 692, 698, or 699**), you must fill out a [course authorization form](#) and have your faculty mentor sign it. Once signed, turn the form into 152 or 244 Birge Hall and a department advisor will grant you permission to enroll. You must enroll through your Student Center using the section number of the course that will be provided to you via email.

Student Organization

I. Mission

The Undergraduate Zoological Society (UZS) explores the many diverse fields of zoology for undergraduate students interested in careers associated with zoology. UZS provides supplemental education in the field alongside undergraduate coursework and informs students of campus and community events that may enhance their understanding of zoology. UZS also promotes socialization among fellow zoology majors.

II. UZS Membership

- 1) Half-time or greater status as an undergraduate at UW
- 2) Payment of dues (\$5) for each semester
- 3) Attendance of at least two UZS meetings per semester
- 4) Attendance of at least two UZS events per semester

III. Officers

Officer positions are selected by elections spring semester and filled by appointment as needed otherwise. Officers are required to help organize at least one event per semester. Officers are expected to attend all UZS functions if able and must contact the person organizing the event or the president beforehand if unable to attend for any reason.

Resources

Department of Integrative Biology

145 Noland Hall
250 North Mills Street
608-262-1051
<http://integrativebiology.wisc.edu/>

SuccessWorks at L&S

711 State Street
Suite 300
608-262-3921
<https://careers.ls.wisc.edu/>

L&S Honors Program

Washburn Observatory
1401 Observatory Drive
608-262-2984
<http://honors.ls.wisc.edu/>

International Academic Programs

106 Red Gym
716 Langdon Street
608-265-6329
<https://www.studyabroad.wisc.edu/>

Center for Pre-Health Advising

1305 Linden Drive
Suite 205
608-263-6614
<http://prehealth.wisc.edu/>

Greater University Tutoring Service

4413 Student Activity Center
333 East Campus Mall
608-263-5666
<http://www.guts.wisc.edu/>

McBurney Disability Resource Center

702 West Johnson Street
Suite 2104
608-263-2741
<https://mcburney.wisc.edu/>

University Health Services

333 East Campus Mall
Floors 5-8
608-265-5600
<https://www.uhs.wisc.edu/>

L&S Academic Deans' Services

110 Ingraham Hall
1155 Observatory Drive
608-262-0617
<https://saa.ls.wisc.edu/offices/academic-deans-services/>

International Student Services

217 Red Gym
716 Langdon Street
608-262-2044
<https://iss.wisc.edu/>

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