

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN



SCHOOL OF INTEGRATIVE BIOLOGY
DEPARTMENT OF ECOLOGY, EVOLUTION, AND BEHAVIOR

**IB 461 ORNITHOLOGY
SPRING 2020**

Course Information

Instructor

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Course CRN

Lecture: 39285, Lab: 48378

Meeting Times and Locations

Lecture: MWF 11:00-11:50 am; Natural History Building 2083

Lab: W 8:00-10:50 am; Natural History Building 4072

Course Description

Ornithology is the biological study of birds. Here we survey the structure, function, ecology, behavior, and evolution of the birds of the world; the laboratory is devoted to anatomy and identification; and field studies are devoted to identification and tracking of wild birds.

This is a 4 CR course for undergraduates and graduates. Prerequisite: IB 203 or written consent of instructor. This is an optional course for IB undergrad majors under Area 1: Organismal & Evolutionary Biology. *An undergrad IB honors credit project is available upon request.*

Learning Outcomes

The goal of this course is to introduce students to the biology of the Class Aves. Course learning outcomes include (1) understanding the proximate and ultimate patterns and causes of biological diversity, form, and function in birds, (2) identification of Illinois avifauna, and (3) assessment and synthesis of primary avian scientific literature. This course also emphasizes student learning outcomes (SLOs) aligned with program outcomes (1) possess a significant knowledge base in Integrative Biology, including structure and function, ecology, genetics and heredity, evolution, molecular biology, and statistical inference, (3) show curiosity and caring about biology, and an awareness of and appreciation for the diversity of life, (10) read and synthesize primary scientific literature, and (11) critically evaluate science-related news and information.

Course Website

Materials for both the lecture and lab portions of this course will be posted on the course Learn website (<https://learn.illinois.edu>).

Textbooks and Materials

Lecture: The following textbook is required for the lecture portion of the course.

Frank B. Gill and Richard O. Prum. 2019. *Ornithology* (4th edition). W. H. Freeman, New York, NY. ISBN: 978-1-4641-8436-9

Lab: Students will be required to purchase a field guide to the birds of North America. You may choose whichever guide you prefer, but I highly recommend the following:

John L. Dunn and Jonathan Alderfer. 2017. *National Geographic Field Guide to the Birds of North America* (7th edition). National Geographic Society, Washington, D. C.

Other Materials: Students are expected to have access to binoculars for field labs and to maintain a lab notebook that will be turned in for a grade at the end of the semester. Binoculars can be brought by the student or checked out for field labs.

Lecture Information

Students are expected to attend all or nearly all lectures. Lecture slides will be available on the course website, but important discussion will happen around the information on those slides. We will also have in-class discussions, activities, quizzes, and exams. Please see the Missed Assignments/Exams section below for information on making up missed grades.

Required Reading

Lectures will be based on readings from *Ornithology*. Reading assignments are provided on the attached schedule. The expectation is that you will have read this material before coming to class and lab. We will also read several scientific journal articles in preparation for in-class activities. These will be provided on the course website prior to their associated activities.

Required Lecture Assignments

- **In-class Activities (50 pts total)**

There will be a variety of in-class activities to facilitate active learning and student engagement. Some activities will require reading primarily literature articles prior to class and preparing questions for discussion. You will receive a participation grade for in-class activities, totaling a maximum of 50 pts for the semester.

- **Weekly Quizzes (100 pts total)**

There will be weekly quizzes worth 10 pts each. You will be allowed to drop your lowest quiz grades and keep the 10 highest, for a maximum of up to 100 pts.

- **Lecture Exams (300 pts total)**

There will be three non-cumulative lecture exams worth 100 pts each. Questions will be drawn from lecture material and reading assignments. They will be a combination of multiple choice, definition, short answer, and essay. Exams will be given on paper in-class.

- **Literature Review (25 pts)**

You will complete a review of an original, peer-reviewed research article that addresses a topic of your choice in ornithology. The instructor must approve your article selection. We will discuss literature review requirements further in class.

- **In-class Presentation (25 pts)**

You will be required to select and give a 10-minute presentation over a current issue, challenge, or success in conservation or management of avian populations. Your topic must be approved by the instructor. We will discuss presentation requirements further in class.

Lab Information

Students are expected to attend all lab sessions. Missed labs cannot be made up (but see Missed Assignments/Exams section below). Lab handouts/worksheets will be available on the course website prior to lab. Students are responsible for reading and printing materials. Please see the Missed Assignments/Exams section below for information on making up missed grades.

Field Labs

We will spend a number of lab sessions birding and mist netting outdoors. Field labs may extend into lecture time. Bring binoculars and a notebook in which you can record field notes and keep a bird species list. Remember to dress appropriately for the weather. For each field lab, you will be required to complete a field entry in your lab notebook. See below for further details.

Bird Specimen Labs

Much of the lab will be devoted to learning to identify ~150 of the bird species in Illinois by studying museum specimens and listening to vocalizations (songs/calls) of each species. Please handle specimens with care, as they are fragile and irreplaceable. We will discuss care and use of specimens further in lab. You are required to keep species accounts for each species in the specimen labs. See below for further details.

Required Lab Assignments

- **Lab Quizzes (150 pts)**

There will be four practical style lab quizzes. The first will cover internal and external avian anatomy (25 pts). The second and third will cover identification and classification of bird specimens and vocalizations (50 pts each). For the final quiz (25 pts), you will be required to identify a number of bird species that we have previously identified in the field as a group. This will be a field quiz. It will require binoculars and field guides will not be permitted.

- **Lab Notebook (100 pts)**

Students are required to keep a lab notebook and submit it for a grade at the end of the semester. Your lab notebook must be a 3-ring binder and contain each of these sections:

1. Lab handouts, completed worksheets, and daily notes.
2. Species accounts for each museum specimen. Species accounts include: common name, a description of the distribution in Illinois, frequency and seasonality of occurrence in Illinois, and *most importantly*, notes on how to identify that species. These are meant to make you think about each species rather than simply looking at them and leaving.
3. Field notes for field lab. Field notes should include: date, location, description of weather and habitat, description of the lab activities for the day, and a list of bird species seen or captured that day. Include notes on anything surprising or interesting you see.
4. Checklist to the Birds of Illinois with all species we see during field labs marked.

Laboratory and Field Safety

Potentially hazardous reagents and materials are employed in modern biology. As in the case with any tool, these are hazardous only when handled improperly. Ensure your personal safety by reading laboratory instructions carefully before class and follow instructions in the lab.

- Keep coats, backpacks, and personal belongings out of walkways and off bench tops.
- Wear close-toed shoes at all times in the lab.
- Do not store, prepare, or consume food or beverages in the lab.
- Keep drawers and cabinets closed when not in use.
- Keep bottles, reagents, and equipment away from the edges of counters and benches.
- Clean up spills immediately. Seek help if you are unsure how to clean a spill.
- Know the location of safety and first aid equipment and their appropriate use.
- Clean your lab bench after a lab exercise, including the floor if necessary.
- Discard any hazardous or biological material according to instruction.
- Wash your hands before leaving the lab.

Sharps

Some lab exercises may require the use of razor blades or other cutting instruments. A specially designated “sharps” container will be available for disposing of used blades. DO NOT discard these items in the trash can and do not leave them on your bench after you are finished with lab. The “sharps” container is also the appropriate place to dispose of broken glassware.

- Do not use double-edged razors as is out of the package. Carefully break them in half to form two single-edged razors. Cover the broken edge with tape to prevent cuts.
- DO NOT pick up broken glass with your bare hands. Sweep it up with a broom and dust pan, then use a wet paper towel to collect fine pieces of broken glass.

Chemicals

Some potentially hazardous chemicals may be used in laboratory exercises. The teaching assistant will point these out at the beginning of each lab period and instruct you how to safely dispense, use, and dispose of these materials. Never mix organic solvents with strong acids.

- Organic chemicals should be disposed of in specially marked containers. Never pour them down the laboratory sink. If this accidentally occurs, wash them down the drain with large amounts of tap water.
- You may be required to wear safety goggles for some labs.

Evaluation/Grading

Grades will be earned by accumulating points from the following:

In-class Activities	50 pts
Lecture Quizzes	100 pts
Lecture Exams	300 pts
Literature Review	25 pts
In-class Presentation	25 pts
Lab Quizzes	150 pts
<u>Lab Notebook</u>	<u>100 pts</u>
Total Possible Points	750 pts

Points accumulated from lecture account for approximately 65% and lab 35% of the total points possible for the course. Be sure to take both seriously. To calculate your grade at any point during the semester, divide all the points you have earned in lecture and lab by the total number of points possible and then multiply by 100. At the end of the semester, that percentage will be used to assign your grade: A=100-90%, B=89-80%, C=79-70%, D=69-60%, F<60%. Depending on the distribution of points at the end of the semester, I *may* drop the cut-off points slightly (e.g. 88% might become an A), but I will never raise the cut-off.

Opportunities for Extra Credit

There will be several opportunities to earn extra credit during the semester. These may be online opportunities via the course website, extra specimen identification in lab or in the field, and/or birding or mist netting opportunities outside of class.

Contesting Grades

If you feel your assignment or exam has been graded inappropriately, you are welcome to contest grades via a written statement within one week of receiving the graded assignment. Submit your written statement to the instructor via email with a description of what you believe was incorrectly graded and why the grade should be altered. We will not consider oral contesting of grades, nor will we consider any contest of grades submitted after one week.

Missed Assignments/Exams

Assignments and exams can only be made up with proper excuse and documentation. If you are ill, you must contact the instructor prior to or as soon as possible after an exam or assignment due date to ensure that you complete the assignment or exam at a later date. You will not be able to make up missed in-class activities or quizzes. In-class activities require discussion within a group and thus cannot be made up. There are extra quizzes built into the semester, so missed quizzes will automatically be counted as some of your drop options. Specimen labs may be made up during the next specimen lab period, but field labs cannot be for logistical reasons.

Disabilities Statement

If you require special accommodations, please inform the instructor as soon as possible. All accommodations will follow the procedures as stated in Article 1-110 of the Student Code (http://studentcode.illinois.edu/article1_part1_1-110.html). To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES you may visit 1207 S. Oak St., Champaign, call 33304603 (V/TTY), or email disability@illinois.edu.

Academic Integrity

Academic integrity is essential to maintaining a learning environment that promotes excellence. We expect that all students will complete all academic and scholarly assignments with fairness and honesty. We adhere to the academic misconduct guidelines outlined by the Student Code of Conduct and will report any suspected academic misconduct. Please see http://studentcode.illinois.edu/article1_part4_1-402.html for additional details. If you have any questions about the above policy or what constitutes academic misconduct, please contact the instructor.

SPRING 2020 – TENTATIVE LECTURE AND LAB SCHEDULE FOR ORNITHOLOGY

Week	Day	Date	Topic	Reading	Lab
1	W	22 Jan	Introduction to Birds	Ch 1	Anita Purves Nature Center
	F	24 Jan	Conservation	Ch 21	
2	M	27 Jan	Origin and Evolution of Birds	Quiz 1 Ch 2	Miller Park Zoo Visit
	W	29 Jan	Miller Park Zoo		
	F	31 Jan	Origin and Evolution of Birds	Ch 2	
3	M	03 Feb	Phylogenetics and Systematics	Quiz 2 Ch 3	Avian Anatomy
	W	05 Feb	Phylogenetics and Systematics		
	F	07 Feb	Feathers and Flight	Ch 4, 5	
4	M	10 Feb	Feathers and Flight	Quiz 3 Ch 4, 5	Illinois Birds – set 1
	W	12 Feb	Physiology		
	F	14 Feb	Physiology	Ch 6	
5	M	17 Feb	Brain, Intelligence, and Senses	Quiz 4 Ch 7	Avian Anatomy Quiz
	W	19 Feb	Brain, Intelligence, and Senses		
	F	21 Feb	Vocalizations	Ch 8	
6	M	24 Feb	EXAM 1		
	W	26 Feb	Vocalizations	Ch 8	Illinois Birds – set 2
	F	28 Feb	Annual Cycles	Ch 9	
7	M	02 Mar	Migration and Navigation	Quiz 5 Ch 10	Illinois Birds – set 3
	W	04 Mar	Migration and Navigation		
	F	06 Mar	Social Behavior	Ch 11	
8	M	09 Mar	Social Behavior	Quiz 6 Ch 11	Birding/Mist-netting (location TBD)
	W	11 Mar	Birding/Mist-netting		
	F	13 Mar	Bird Sex	Lit Rev Due Ch 12	
9	M	16 Mar	<i>SPRING BREAK – No Class</i>		<i>SPRING BREAK – No lab</i>
	W	18 Mar	<i>SPRING BREAK – No Class</i>		
	F	20 Mar	<i>SPRING BREAK – No Class</i>		
10	M	23 Mar	Sexual Selection	Quiz 7 Ch 13	Specimen Quiz 1
	W	25 Mar	Sexual Selection		
	F	27 Mar	Breeding Systems	Ch 14	
11	M	30 Mar	Breeding Systems	Quiz 8 Ch 14	Birding/Mist-netting (location TBD)
	W	01 Apr	Birding/Mist-netting		
	F	03 Apr	Nests and Incubation	Ch 15	
12	M	06 Apr	EXAM 2		
	W	08 Apr	Nests and Incubation	Ch 15	Illinois Birds – set 4
	F	10 Apr	Parents and Their Offspring	Ch 16	
13	M	13 Apr	Parents and Their Offspring	Quiz 9 Ch 16	Illinois Birds – set 5
	W	15 Apr	Life History		
	F	17 Apr	Life History	Ch 17	
14	M	20 Apr	Populations	Quiz 10 Ch 18	Birding/Mist-netting (Location TBD)
	W	22 Apr	Birding/Mist-netting		
	F	24 Apr	Populations	Ch 18	
15	M	27 Apr	Speciation	Quiz 11 Ch 19	Specimen Quiz 2 and Field Quiz
	W	29 Apr	Speciation		
	F	01 May	Communities	Ch 20	
16	M	04 May	Communities	Quiz 12 Ch 20	Lab Notebooks Due
	W	06 May	Review Day		
	F	08 May	<i>FINALS BEGIN – NO CLASS</i>		
17	M	11 May	FINAL EXAM (8–11:00 am)		