

Biology 376/576, Herpetology, Fall 2018

Course overview

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Office hours	Mon. & Tues. 1-3pm or by appointment

Course description

This course introduces you to the biology of reptiles and amphibians, also called herptiles or just herps. We will explore the diversity of herptiles, their evolutionary history & diversification, as well as unique biological aspects of these organisms.

Course goals

Upon completion of this course you should be able to:

- Explain the evolutionary history of reptiles and amphibians in the context of all major vertebrate groups.
- Compare and contrast the similarities and differences of herps in terms of the morphological, physiological, ecological, and behavioral adaptations that allow them to transfer energy and matter both within an organism and between communities and ecosystems.
- Locate and summarize (i.e., read, evaluate, and discuss) the relevant literature on a biological topic related to reptiles and amphibians in a clear and concise manner.
- Define the levels of biological organization by identifying the herp species of Wisconsin, the genera of the United States, and the major families and higher taxa of the world using proper scientific nomenclature.
- Describe the levels and types of herp diversity in Wisconsin, the United States, and throughout planet Earth.

Course readings

Required texts

- Herpetology: An Introductory Biology of Amphibians and Reptiles 4th Ed. by L. J. Vitt & J. P. Caldwell
- Reptiles & Amphibians of Wisconsin Field Guide by Stan Tekiela

I suggest you read the assigned pages prior to lecture & then review those pages again after class.

Course evaluation:

Your grade in this course will be based on the following components totaling 650 pts:

Class Participation	Literature Summaries (3 papers 3X = 9 papers)	Exams (2 term exams, 1 final = 3 exams)	Lab Quizzes (5)	Lab Practicals (3)
20	75 (25 pts. each)	280 (80, 100, 100 pts.)	50 (10 pts. each)	225 (75 pts. each)

Attendance / Participation

Class attendance is expected (yes, you are required to come to class and the entirety of lab; yes, I will notice if you leave lab early). Participation comprises 3% of your total grade. Your active participation in classes, labs, and field trips is expected, including volunteering answers to questions posed in class, contributing to any ongoing discussion, asking questions (yes, expressing your lack of understanding can be a good thing), and catching animals during field trips. One note on participation: it takes me about 4 weeks to learn everyone's name, so I'm not likely to start assigning participation points right away.

Literature Summaries

Reading and considering the scientific literature is a program learning outcome for Biology and is important since most everything I teach you will be have a basis in the scientific literature. You will delve into the scientific literature on three separate occasions. Starting in week 2 or 3 of the semester (and weekly thereafter), I will pass around a topic sign-up sheet where you will have the opportunity to choose one of 12-13 topics. You will then use that topic information to locate and read relevant papers, and then provide a written summary of that topic in your own words. For each of three occasions the assignment is to provide a 200-word summary for each of three peer-reviewed sources (~600 words for the three papers). Each paper *must* be from the peer-reviewed literature (if you're not sure, ask!). Not included in the word total is the actual paper citation. Literature summaries make up 12% of your total grade.

Lectures/Exams

Reptiles and amphibians have been and continue to be model organisms for many areas of biology including immunology, behavioral ecology, physiology, community organization, etc. They have a long and interesting evolutionary history, which we will attempt to trace and comprehend. Almost all of the diversity component of this course will be presented in lab, which means that lectures will focus on aspects of herps that make them unique and interesting biological entities, while lab will focus on the naming and identifying of herptiles.

Everything presented and discussed in lecture is fair game for exams even if I do not write it on the board. In fact, I may specifically say things that are important without writing them down as a means of improving your ability to distill relevant facts from an oral presentation.

There will be three lecture exams at roughly equal intervals that sum to 43% of your grade. The last of these will be a comprehensive take-home final exam. The in-class exams will not be comprehensive, though the material does build throughout this semester. Exam questions will consist of a few multiple-choice and matching, but will mostly be short-answer and a few longer essay-type questions. Exams are meant to test your comprehension of the material and reasoning ability and not *JUST* your ability to memorize static factoids. Thus, make sure you understand how things work when I explain them, or at very least stop me and ask for clarification.

Labs/Practical Quizzes & Exams

While lectures will focus primarily on the unique aspects of herpetile biology, lab will focus almost exclusively on taxonomy, identification, and techniques. ***You are responsible for the identification of the reptile and amphibian species of Wisconsin, the genera of the United States, and the major families/higher taxa of the world.*** Identification will be through the proper scientific nomenclature as recognized by the Center for North American Herpetology (cna.org). Be sure you know the proper rules for a scientific name (binomial, in Latin [therefore underlined], with capitalized genus [but not specific epithet] name). Failure to follow proper naming rules will result in loss of credit for EACH name not correctly presented (ouch!).

There will be a presentation on the topic of study for each laboratory with a discussion of key recognition characters. These last about an hour. Following this you will use keys and other handouts pertaining to the topics under study to identify specimens in the teaching collection. To facilitate your lab experience, I strongly recommend that you read the chapter(s) in Vitt and Caldwell (part VI) pertaining to the groups to be covered that week PRIOR to lab (see schedule below) with a focus on the traits that distinguish among taxa. That is, pay special attention to the section in each family titled "characteristics". Word of warning: if you do not read ahead the labs are likely to have less meaning and be more difficult for you, which means your grade will suffer. Any material presented in labs (and labs only) may be used in quizzes/practicals in addition to preserved, living, or other specimens. A periodic quiz at the start of labs will consist of 8-9 questions on identification and traits of the group from the previous week and at least one question covering the higher-level taxonomy of the current week's group (i.e., identifying the Order, Sub-Order, etc.). Practical exams are similar to quizzes, but with real animals (not photos) and focus on taxonomic identification and traits, as well as topics covered in lab (i.e., lecture material is not part of practicals). Lab quizzes make up 8% of your grade, while the three practical exams are 35% of your grade.

You are encouraged to review the teaching materials from lab at times outside of scheduled labs. As such, we will try to leave TNR 400 open at times other than during scheduled classes (except Monday evening [see below]) so you can study. See the room schedule placard posted outside the lab for times when the room is reserved. If you find the lab closed you can ask me or one of the TA's to open it for you. Material for the previous week's lab will remain on the back bench in the lab (between the windows) for the following week until Monday afternoon when it will be removed for use in quizzes/practicals. Please treat the specimens with care and do not allow them to dry out.

Field Trips

Prior to the onset of winter we will spend several lab periods out on field trips. These will primarily be local trips (e.g., Mead Park, Patch Street, etc) that will return to TNR by 4:50pm. For field excursions you are expected to dress appropriately for the weather and for the type of work we are doing (I will let you know in lecture on Tuesday what we are planning for that week). For most trips you can expect wet or soggy conditions so don't wear your best shoes and plan on getting wet. We do have some boots available for your use on a first-come first-served basis. Basically field trips are an opportunity to get out to see herps in nature and try to catch/ID them.

Final Grades

Your final grade is based on the percentage of points that you earn.

≥93% = A, ≥90% = A-, ≥87% = B+, ≥83% = B, ≥80% = B-, ≥77% = C+, ≥73% = C, ≥70% = C-, ≥67% = D+, ≥60% = D, <60% = F

In-Class Behavior

You are expected to be respectful & considerate of your fellow students' learning environment. In addition, you are expected to focus on the topics of the day in lectures/labs. Thus, certain electronic devices are considered by me to be distractions & not allowed in the classroom. Primary among these are cell phones & computers. *All cell phones* are to be silenced & put away during class. No texting, no calls, no exceptions (if you violate this you should **expect** participation points to be affected negatively even if I do not say anything at the time). Unless you have a documented learning disability that requires a laptop to take notes, there are to be no computers during lectures as they are potentially distracting to you and to other students. During lectures we may engage in periodic discussions of relevant issues. You are not required to *agree* with every opinion expressed by your peers or me; in fact, healthy skepticism is to be expected of any good scientist. However, you should respect the right of others to hold different opinions & perhaps even learn from their viewpoints. You are expected and encouraged to ask questions & participate in discussions where appropriate (remember part of your grade depends on class participation). In addition, recall that during field excursions you are an ambassador of UWSP. You are to conduct yourselves accordingly. Furthermore, we will be handling vertebrate animals on a regular basis, which require special permissions from this university and from the state of Wisconsin. Thus you are considered my agent for the purposes of collecting and handling animals. **Most importantly**, you are in no way allowed to collect or handle live venomous animals in this class. Specifically, I refer to rattlesnakes (though it extends to any viperid or elapid). Violation of this rule is subject to automatic failure for the course; that is, if you catch a venomous reptile I will give you a grade of "F".

Academic Honesty

Plagiarism and cheating of any form are serious offenses and may result in an F for the assignment, the course, or expulsion from the university. The details of the UWSP Academic Integrity policy are found in the Student Handbook. It is your responsibility to read and understand the contents of that policy before you submit work to be graded. Questions regarding the policies and enforcement of the policies may be addressed to me during office hours.

Notification of Participation in College Sanctioned Events

Individuals who participate in college-sanctioned events must notify me in advance and plan on completing the work, including tests, in advance. It is your responsibility to communicate with me in advance regarding *any* absences.

Concerning Disabilities

UWSP abides by the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973 that stipulates no student shall be denied the benefits of an education "solely by reason of a handicap." Disabilities covered include, but are not limited to, learning disabilities, hearing, sight, mobility or health-related impairments. Please contact me if you have a documented issue that may impact your work for which you require accommodations.

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Class Schedule

(this schedule is tentative)

Wk	Day	Date	Lecture Topic	Chpt	Lab Topic
1	T	Sep. 4	Intro to Herpetology		Field Trip I
1	R	Sep. 6	A Brief History of Herpetology	1	
2	T	Sep. 11	From Fish to Amphibian	3	Field Trip II
2	R	Sep. 13	From Amphibian to Anthracosaur	3	
3	T	Sep. 18	From Reptile to Mammal & Archosaur	3	Herp Anatomy & Morphology
3	R	Sep. 20	Cranial & Post-cranial Anatomy	2	
4	T	Sep. 25	Soft Anatomy	2	O. Crocodylia; O. Testudinata
4	R	Sep. 27	Reproduction	4, 5	
5	T	Oct. 2	Reproductive Modes	5	O. Squamata, S.O. Lacertilia; O. Rhynchocephalia
5	R	Oct. 4	Parental Care	4	
6	T	Oct. 9	EXAM #1		O. Squamata, S.O. Lacertilia, S.F. Iguania
6	R	Oct. 10	Reproductive Life Histories	4, 5	
7	T	Oct. 16	Gas Exchange & Respiration	6	Reptilia Lab Practical I
7	R	Oct. 18	Maintaining Water Balance	6	
8	T	Oct. 23	Temperature Regulation	7	O. Squamata, S.O. Serpentes
8	R	Oct. 25	Locomotor Performance & Energetics	7	
9	T	Oct. 30	Seasonal Thermobiology	7	O. Squamata, S.O. Serpentes, S.F. Colubroidea
9	R	Nov. 1	Social Spacing; Migration & Orientation	8	
10	T	Nov. 6	Mechanisms of Communication	9	Reptilia Lab Practical II
10	R	Nov. 8	Mating Systems	9	
11	T	Nov. 13	EXAM #2		O. Anura
11	R	Nov. 15	Foraging Ecology	10	
12	T	Nov. 20	Dietary Ecology	10	Thanksgiving: No labs
12	R	Nov. 22	THANKSGIVING: NO CLASS		
13	T	Nov. 27	Diet & Food	10	O. Gymnophiona; O. Caudata
13	R	Nov. 29	Defense Strategies	11	
14	T	Dec. 4	Crypsis & Escape Behavior	11	Amphibia Lab Practical
14	R	Dec. 6	Ecological Patterns	12	
15	T	Dec. 11	Community Ecology & Diversity	12	Field Techniques
15	R	Dec. 13	Biogeographic Patterns	13	
	F	Dec. 21	Take-Home Final Due at 16:00		