

BIOLOGY 437 - HERPETOLOGY

Instructor	Peer Facilitator
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Course Website <https://canvas.uw.edu/courses/1038753/>

Lecture 9:30-10:50 Tuesdays and Thursdays, LSB 105

Lab 14:30-17:20 Wednesday, LSB 105

Office Hours By appointment.

Textbook Herpetology (4th edition, 2015), by H. Pough et al. (the one with a frog in the cover)

Field guide Reptiles and Amphibians of Western North America (2nd edition, 2003), by R. Stebbins

Optional Resources

Burke Museum Herpetology	http://www.burkemuseum.org/research-and-collections/herpetology
The Reptile Database	http://www.reptile-database.org/
Gbif	https://www.gbif.org/
iNaturalist	https://www.inaturalist.org/
Amphibian species of the world	http://research.amnh.org/vz/herpetology/amphibia/
AmphibiaWeb	http://amphibiaweb.org/
Global Map of Chytridiomycosis	http://www.bd-maps.net/

Course Description: This class will give you a broad overview of the biology of reptiles and amphibians. During lecture, we will discuss various aspects of their ecology, physiology, evolution and behavior. In lab, we will focus on diversity, systematics, and field identification of amphibians and reptiles in WA. This course will include field trips that are intended to provide a deeper understanding of both field biology and the organisms in their natural environment.

Learning Outcomes:

1. To understand amphibian and reptile biology and evolution
2. The ability to identify Washington reptiles and amphibians in the field
3. To contribute to the scientific community of herpetology with written assignments that will be peer reviewed and published.
4. Be comfortable reading and discussing primary literature
5. To gain experience with data collection and data analysis using amphibians and reptiles as model systems.
6. Promote your independent learning skills, improve your ability to convey ideas and promote teamwork

LECTURE OVERVIEW

Reading assignments. There will be a reading assignment before each lecture. Reading assignments are part of the evaluation. Readings will come from the book and scientific papers. Questions related to the readings will be part of the lecture evaluation (see below)

Class participation. There will be 20 lecture exercises (one per class). Each exercise will consist on 5 poll everywhere questions which will be graded on 80% participation 20% accuracy. The questions will cover the reading assignments and the material covered during the lecture. You are allow to drop your lower score and there are no make up assignments for missing classes.

Lecture Exams (2). There will be two midterm exams given during lecture periods (see schedule below for dates). These exams will be 75 minutes. The test will be a mixture of short answer open-ended questions, short answer questions on graphical data, map traits on phylogenies, and graphing patterns based on main concepts. Questions will come from book readings, lecture, the papers discussed during class, but you will also be required to apply knowledge to solve problems that were not talked during class. The exams won't be cumulative. However, depending on the scores' distribution on the questions of the first exam some of the topics will be included on the second exam. You will be informed of these questions in advance.

LABORATORY OVERVIEW

SECTION 1 The goals of the first section is to 1) become familiar with the anatomy terminology used for amphibians and reptiles; and 2) gain the ability to identify Washington reptiles and amphibians in the field. The first section will be composed of 4 labs (see dates below).

Lab participation. You will be expected to study the material on your own. Then you will be assigned a topic or a group of amphibians and reptiles and explain it to your peers using the specimens.

Laboratory Exam 1. The lab practical will include anatomical and taxonomic terminology, natural history, phylogenetics, and identification of specimens. Lab practical will consist of many stations where you will spend a 2.5 minutes at each station, and extra free time to revisit stations at the end of the rotations.

SECTION 2 Being a scientist! The second section will be focused on learning how to read primary scientific literature and how to implement different methodology to study amphibians and reptiles. You will collect data, analyze data and write half page reflection of what we did in lab to be submitted to canvas.

Paper discussions. We will have a paper discussion every week. You will be required to discuss it with your peers in a jigsaw format. You will be required to complete the canvas assignment for the paper the night before the lab and bring an electronic or printed version to class.

Lab participation. You will work in the lab on a weekly task. You will be expected to contribute to the data collection and the paper discussion.

FINAL PROJECT AND FINAL EXAM

Final project. You will contribute to the scientific community of herpetology with an assignment that will be peer reviewed and published. You will be required to write and submit a species account for amphibia web <https://amphibiaweb.org/search/index.html>. The species will be restricted to the subfamily Hylinae. You will submit a first draft by May 17, peer review of another student by May 24, and submit for final approval on May 31, and submit to amphibian web by June 12.

Final Exam: The final exam will be not cumulative but some section will revisit big questions, cumulative skills, and how to approach analyzing data. Exams will comprehensively cover both lecture and lab material. See the schedule for the date and time of the final.

FIELDTRIPS

Four field trips will be offered to visit a variety of habitats and species found in WA state. Attendance of any TWO field trips is mandatory, however, attending all is recommended. For the camping trips you are required to bring your own camping gear (tent, sleeping bag, etc.), but we can try and make arrangements if you do not have these items.

Woodland Park Zoo. April 14 (Sunday): Time TBD
-Global diversity in your own backyard. <https://www.zoo.org/turtles>

Camp Long, West Seattle. April 27 (Saturday): Evening
-Salamander diversity in local parks. <https://www.seattle.gov/parks/about-us>

Olympic peninsula. May 11-12 (Saturday - Sunday): Overnight.
-Amphibian diversity and habitat restoration

Eastern Washington (Ellensburg). May 25-26 (Saturday - Sunday): Overnight.
-In the rain shadow of the Cascades, we have the opportunity to find a nice variety of lizards and snakes.

Field trips assignment — For each field trip there will be a required short reading and a canvas assignment previous to the trip. After the field trip there will be a required assignment published in Canvas. This is to be turned in by the Thursday following the field trip (one week after). This is only required for two field trips, and you can decide which TWO if you attend more field trips.

*****Important: Each field trip grade is composed of attendance and 2 short assignments***

Handling of live animals — A main objective of field trips is to get you familiar with animals in their native environment, and you will have the opportunity to handle many of the animals we find. Animals must be handled with care and only when the instructor is present. No animals can be removed from the field to keep as pets. Most likely we will find venomous rattlesnakes during our field trip to Eastern Washington. Handling of venomous snakes is not allowed in this course and will result in an automatic drop from the course.

GRADING RUBRIC

All components of the course are required to receive a passing grade. Late assignments WILL NOT be accepted. You are allowed to drop your lower score for participation in lecture but there are no make up assignments for missing classes or laboratory sections. Missed exams/classes can only be made up if accompanied by documentation of a valid excuse (e.g. doctor's note, death certificate, etc.) or arranged prior to the exam at my discretion. Lab practicals are very difficult to set up and absences during these periods should be avoided at all costs. Contact me if you will not be able to attend lecture or lab.

Lecture	Weights
Participation (Poll everywhere for 18 lectures)	5%
Exam 1	10%
Exam 2	10%
Lab	
Section 1 Laboratory participation (Weeks 1-4)	5%
Section 1 Lab practical Exam	15%
Section 2 Paper summary and discussion (Weeks 6-10)	5%
Section 2 In class data collection and lab summary (Weeks 6-10)	5%
Field trips	
Attendance (2 field trips required)	5%
Assignments (pre and post trip)	5%
Final Project (Amphibia web)	20%
Final Exam	15%
Total	100%

Approximate Grading Scale (not all values are shown)							
≥ 95%	90%	85%	80%	75%	70%	65%	60%
4.0	3.5	3.2	3.0	2.5	2.0	1.5	1.0

Students with Disabilities: Every effort will be made to accommodate the needs of students with disabilities. Students should meet with me at the beginning of the quarter to discuss these accommodations.

Academic Conduct: I take all aspects of academic integrity and plagiarism very seriously. Academic dishonesty includes any effort to circumvent the evaluation procedures of the course to improve a grade for yourself or other students ("cheating"). Academic dishonesty includes but is not limited to unauthorized examination of written materials (i.e., notes, neighbor's paper), misrepresentation of the cause of an absence during an exam or lab, submitting the work of another as one's own, alteration of an exam answer to be submitted for regrading, and alteration of data. You are encouraged to report academic dishonesty. Anonymity will be protected if requested. I will pursue all violations of academic integrity to the fullest extent. More information can be found here:

<http://depts.washington.edu/grading/pdf/AcademicResponsibility.pdf>

Date	Day	Topic	Field Trips & Reading (Chapter)
Apr 2	T	Tetrapod origins/invasion of land Evolution of ancient and modern Amphibians and reptiles	Chapter 1-2
Apr 3	W	LAB 1: Amphibian and reptile anatomy and identification	Lab notes
Apr 4	Th	The importance of the study of Herpetology	Paper (to be assigned)
Apr 9	T	Amphibian and Reptile Foraging ecology and diet	Chapters 11, 15.1 and 15.2
Apr 10	W	LAB 2: Washington amphibian diversity	Lab notes
Apr 11	Th	Amphibian phylogeny and diversity	Chapter 3
Apr 14	S	Fieldtrip 1	Woodland Park Zoo
Apr 16	T	Reptile phylogeny and diversity	Chapter 4
Apr 17	W	LAB 3: Washington reptile diversity	Lab notes
Apr 18	Th	Lecture Exam 1	
Apr 23	T	Amphibian reproduction	Chapter 8
Apr 24	W	LAB 4: Amphibian and reptile WA diversity	Lab notes
Apr 25	Th	Reptile Reproduction	Chapter 9
Apr 27	Sa	Fieldtrip 2	Camp Long (7pm -10pm)
Apr 30	T	Water balance and gas exchange	Chapter 6
May 1	W	LAB PRACTICAL 1	
May 2	Th	Thermoregulation, energetics and performance	Chapter 7
May 7	T	Amphibian spacing, movements and orientation	Chapter 10
May 8	W	Lab 5: Functional morphology	Paper (to be assigned)
May 9	Th	Reptile spacing, movements and orientation	Chapter 10
May 11-12	Sa-Sun	Fieldtrip 3	Olympic Peninsula
May 14	T	Lecture Exam 2	
May 15	W	Lab 6: Diet content of Bull frogs	Paper (to be assigned)
May 16	Th	Amphibian and reptile social behavior	Reading to be assigned
May 17	F	First draft of Species account due *****	
May 21	T	Amphibian communication	Chapter 13.1 – 13.5
May 22	W	Lab 7: Amphibian calls	Paper (to be assigned)
May 23	Th	Reptile communication	Chapter 13.6 – 13.8
May 24	F	Peer review of Species account due *****	
May 25-26	Sa-Sun	Fieldtrip 4	Eastern WA
May 28	T	Amphibian defense and escape	Chapter 15.4 and 15.5
May 29	W	Integrative approaches (morphology, diet, phylogeny)	Paper (to be assigned)
May 30	Th	Reptilian defense and escape	Chapter 15.4 and 15.5
May 31	F	Submit final draft for final comments and approval for submission *****	
Jun 4	T	Biogeography and phylogeography	Paper (to be assigned)
Jun 5	W	Lab 9: Molecular systematics	Paper (to be assigned)
Jun 6	TH	Conservation genetics and Conservation policy	Chapter 17
June 12	F	Final day to submit to amphibian web. You need the instructor approval before submission to the website	
Jun 12	W	FINAL EXAM: 10:30-12:20, LSB 105	