HERPETOLOGY

BIOL 5570
Spring, 2020

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(he/his)
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(she/hers)

SYLLABUS

Objectives: The goal of this course is to instill in students an understanding of, and an appreciation for, the biology of amphibians and reptiles. The role of these unique organisms in the contemporary biota reflects both their historical legacy and their subsequent evolutionary innovations. Understanding current research into their biology requires a firm foundation in evolutionary theory and the principles of phylogenetic systematics. Among tetrapod vertebrates, amphibians and reptiles are distinctive in terms of their interactions with the physical and biological environment. These taxa also can be used to illustrate many fundamental principles of biological theory.

Specific learning objectives include: (1) gaining factual knowledge; (2) learning fundamental principles; and (3) learning to evaluate ideas critically.

Lectures: Lectures and lecture exams will be held in LSB 207 on Mondays and Wednesdays, 8:30-9:20 AM. The class will be run informally and on a flexible schedule, to allow for the continued elaboration on, or discussion of, ideas developed during previous class meetings. Lectures will follow the *approximate* order and timing of topics shown below. However, we will maintain sufficient flexibility to allow other topics to be discussed as they arise. Therefore, we will deviate from this schedule when it suits our purposes. *Note that some schedule adjustments may be required to accommodate professional travel by the instructor, and occasional lectures may be delivered by videoconferencing from remote locations.* We may also hear from guest lecturers if they are available.

Note also that the order of lecture topics will *roughly* follow the organization of the text, although we will devote about two-thirds of the semester to discussing the diversity of amphibians and reptiles. Those lectures will include many aspects of the ecology, behavior, and reproduction of each major taxon (and thus we will draw heavily from later chapters of the text, especially Chapters 5, 8, 9, and 11, as reproduction and feeding are best discussed in their phylogenetic context). Students should use the text by Pough et al. (see below) as a reference throughout the course, to reinforce and expand on topics as they are covered in both lectures and labs, including those topics from later chapters that are covered out of sequence.

Please note the following important calendar items:

January 20: No lecture (Martin Luther King Day)
February 17: No lecture (Presidents' Day)
February 19: **Midterm Exam I** (tentative)
March 2 & 4: No lectures or lab (Spring Break)
April 31 **Midterm Exam II** (tentative)
April 27: **Final Exam (7:30-9:20 am)**

Month	Date	Lecture	Text Ch.	Lab
January	6	Introduction to Herpetology	1	
	8	Evolutionary Theory & Systematics I	2	Introduction
	13	Evol. Th. & Syst. II; Orig. of Tetrapods	2.1-2.5	
	15	Caudata I	3.1-3.2	Amphibian Anatomy
	20	NO CLASS (M. L. King, Jr. Day)		
	22	Caudata II	3.2	Salamander Identification
	27	Anura I	3.3	
	29	Anura II	3.3	Frog Identification
February	3	Anura III	3.3	
	5	Gymnophiona	3.4	Amphibian Quiz (tentative)
	10	Origin & Diversification of Amniotes	2.5-2.7	
	12	Rhynchocephalia; Lizards I	4.1-4.4	Reptile Anatomy
	17	NO CLASS (Presidents' Day)		
	19	Midterm Exam I		
	24	Lizards II	4.4	
	26	Lizards III	4.4	Lizard Identification
March	2	NO CLASS (Spring Break)	4.5	
	4	NO CLASS (Spring Break)	4.5	Snake Identification
	9	Serpentes I		
	11	Serpentes II		
	16	Serpentes III	4.5	
	18	Crocodylia	4.6	Croc. & Turtle Identification
	23	Testudines I	4.7	
	25	Testudines II	4.7	Reptile Quiz (tentative)
	30	Physiology I	6	
April	1	Midterm Exam II		Amphibians of Utah
	6	Physiology II	7	
	8	Behavior	12-14	Reptiles of Utah

	13	Ecology I	15	
	15	Ecology II	10-11, 16	Biomech., Locom. & Feeding
	20	Conservation	17	
	27	FINAL EXAM		

Laboratories: The laboratories are scheduled for VSB 219 on Wednesdays, 2:30-5:20 PM. Regular laboratory exercises will be conducted at that time, and additional information will be provided before or during the lab periods. The climate of northern Utah is not very conducive to amphibian and reptile activity during the spring semester, but it may be possible to schedule one or two field trips, most likely outside of regular lab hours. You will be notified in advance and attendance will be optional. Some scheduled laboratory periods will also be used to cover lecture material, as needed.

Laboratory periods will be used to introduce basic features of amphibian and reptilian morphology, introduce global and regional diversity, and learn the use of identification keys and the characters they employ. Several laboratory quizzes will follow sets of laboratory exercises. We will examine feeding and locomotor behavior in selected living specimens, subject to the availability of specimens and contingent upon university policies regarding the use of live animals.

Seminars: The Department of Biology sponsors seminars by professional biologists, usually from other institutions. Seminars usually are held on Wednesdays, 2:30-4:30 pm, in LSB 207, and they provide an opportunity for students to learn about recent advances in many biological fields. If seminars by visiting herpetologists are scheduled, your attendance will be strongly encouraged.

Texts and Other Printed Materials:

Textbooks

Required

Pough, F. Harvey, Robin M. Andrews, Martha L. Crump, Alan H. Savitzky, Kentwood D. Wells, and Matthew C. Brandley. 2016. Herpetology, Fourth Edition. Sunderland, MA: Sinauer Assoc., xvi+719 pp.

Optional

Stebbins, Robert C., and Samuel M. McGinnis. 2018. A Field Guide to Western Reptiles and Amphibians, Fourth Edition. Boston: Houghton Mifflin Harcourt, 576 pp. ISBN 978-1328715500. Paperback. (Used copies of the Third Edition may also be used.)

PowerPoint Slides and Lecture Illustrations

Class lectures will be illustrated with PowerPoint presentations that include graphs, phylogenies, illustrations of animals, and anatomical drawings. Copies of certain essential graphic materials will occasionally be distributed in class. In general, however, copies of the PowerPoint slides will be made available on Canvas. I will attempt to post the PowerPoint handout shortly before the relevant lecture, but last-minute changes to the slides are likely.

Laboratory Syllabus

This series of exercises, figures, and brief descriptions will be the sole reference for the laboratories dealing with the descriptive and functional anatomy of amphibians and reptiles. It will be distributed in class as one or more handouts. Identification keys for use in several labs will be provided for your use; you will not need to purchase those.

Primary Literature

The primary scientific literature consists of reports of original findings by individuals or groups of scientists. You will be asked to read several such papers and to be prepared to discuss them in class. Copies will be distributed electronically through Canvas, and you will be expected to make a copy of each of these papers (or at least download the PDF) for your personal use. You should bring your copy with you to class when we discuss each of the papers.

Internet Sources

You are encouraged to explore the many sources of herpetological information available on the internet. The websites maintained by professional herpetological societies provide a good point of departure, often providing useful links to other reliable resources. Many academic herpetologists also maintain informative and authoritative websites. Remember, however, that anyone can post anything on the Web. Therefore, much of what is available online is unreviewed and of dubious veracity. You should be an informed and skeptical consumer of internet information.

One special source of online information is the website associated with your textbook: http://sites.sinauer.com/herpetology4e/. This site is maintained by the publisher, with frequent updates from the authors. Current news about herpetological subjects is posted, and there are both general and chapter-specific links to additional resources, such as articles, blogs, and videos of animal locomotion, feeding, courtship behavior, etc.

Course Fee: The course fee for BIOL 5570 is $125. This fee is used for the purchase of dissection specimens, skeletal materials, collection supplies (such as specimen jars and preservative), dissecting instruments, nitrile gloves, and other essential supplies.

Attendance: Attendance will be taken early in the semester to establish accurately who is enrolled in the course. The taking of attendance will then be discontinued. **Regular attendance will, of course, be expected, both for lectures and laboratories.** Exams will rely heavily on material presented in class, so failure to attend classes presumably will result in lower scores on lecture exams, lab quizzes, and other required work. **Absence from exams and quizzes is justifiable *only* for reasons of medical or similar emergency or for an approved university function**, and written verification may be required**. Absences from exams, other than for medical emergencies, must be approved *prior* to the exam.**

Mobile Phones, Text Messaging, and E-mail: Mobile phones should be silenced during all classes, and students should *not* engage in text messaging or e-mail exchanges during either lectures or laboratory periods. Even if a student believes they can successfully multitask, such activity is distracting for the instructor and for other students. Students engaged in such activities may be asked to leave and not return for the remainder of that class period. ***If*** you have a *genuine emergency situation* that requires you to be available by phone during a given class period, you should advise the instructor of that before class and sit close to the rear exit, so you can take any call or message outside the classroom.

Lecture Exams: The midterm and final exams will include a variety of question formats, including short-answer, definitions, brief discussions, and essays. For the midterm exams, there will be a short-answer in-class exam *and* a take-home essay section to the exam. Further details will be provided prior to the exams. Unless otherwise stated, the in-class exams will be closed-book; no notes or other materials should be used during those exams. The dates of the midterm exams are subject to change, based on the timing of lectures, but will be confirmed at least one week in advance. The final exam will be cumulative, although it will emphasize material presented since the previous midterm exam.

Lab Quizzes: *Tentative* dates for the laboratory quizzes are included in the course schedule. They may include identification of species or anatomical features, as well as short-answer questions.

Additional Graduate Assignment: Graduate students will be asked to complete a series of abstracts of papers from the primary literature. Additional information on this assignment will be provided to those students.

Grading: There will be three major exams, two midterms and a final, each of which will be worth 100 points. There will also be three laboratory quizzes, the point value of which will be announced in advance, as well as the additional writing assignment for graduate students. All numerical grades will be converted to a percentage of total points for final comparison, and the following scale will used to assign letter grades:

A: 90-100%
B: 80-89%
C: 70-79%
D: 60-69%
F: <60%

Plus/minus grades will also be assigned, as appropriate, depending on a student's proximity to a numerical cut-off and any trend in improvement during the semester.

I reserve the privilege of interjecting a small degree of subjectivity into specific decisions regarding final course grades. This option may be exercised to account for meritorious laboratory performance, a strong trend in improvement on exams, exceptional participation in class discussions, or other relevant circumstances. Such a subjective evaluation may work in favor of a particular student, but it will not be used to lower a grade earned expressly on the basis of points scored.

Academic Honesty: You are reminded that **adherence to the university's Academic Integrity Standard and Honor Pledge is *expected* of every matriculated student.** More importantly, participants in academic life, faculty and students alike, are *de facto* adherents to the precepts of academic honesty that have governed institutions such as this one for generations. Cheating on exams, plagiarism, and similar activities involve the intentional lack of attribution when using the ideas of others, and all are manifestations of academic dishonesty. As such, each constitutes an assault upon the freedom of discourse that is the foundation of academic life. Cheating, plagiarism, and other forms of academic dishonesty degrade the atmosphere of trust upon which the university depends.

Students are encouraged to bring their concerns over possible infractions to the attention of the instructors. **It is my policy to report *all* reasonably documented cases of academic integrity violations for appropriate sanctions.**

A full description of the university's Academic Integrity Standard, policies governing reporting of honor violations, and sanctions can be found in Article VI of the Student Code of Conduct (https://studentconduct.usu.edu/studentcode/article6).

Office Hours: **Dr. Savitzky**'s office hours will be Monday and Wednesday, 9:30-10:20 am, or by appointment, in BNR 301. During that time he will try to be in his office or his adjacent laboratories. However, *please note* that Dr. Savitzky's schedule occasionally interferes with his availability during regular office hours. That said, he is happy to meet with students whenever he is in his office and not otherwise occupied, so do not hesitate to stop by. Appointments can be scheduled by contacting Dr. Savitzky at savitzky@usu.edu.

The Graduate Teaching Assistant and laboratory instructor is **Megen Kepas** (megenkepas@gmail.com). Contact her by e-mail to set up an appointment.

Students With Disabilities: Students with ADA-documented physical, sensory, emotional or medical impairments may be eligible for reasonable accommodations. Veterans may also be eligible for services. All accommodations are coordinated through the Disability Resource Center (DRC) in Room 101 of the University Inn, (435)797-2444. Please contact the DRC as early in the semester as possible.

Sexual Harrassment: Sexual harassment is defined by the Affirmative Action/Equal Employment Opportunity Commission as any "unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature." If you feel you are a victim of sexual harassment, you may talk to or file a complaint with the Affirmative Action/Equal Employment Opportunity Office located in Old Main, Room 161, or call the AA/EEO Office at 797-1266.

Epilogue: In many ways the field of herpetology is a microcosm of the field of biology itself. Herpetologists are concerned with the study of all aspects of the biology of amphibians and reptiles, from the details of their molecular constitution to the roles they play in communities and ecosystems. We will attempt to extract from this broad area of study both the fundamental factual and taxonomic foundation necessary for further discussion and a sampling of specific topics that are of current interest to herpetologists. In all likelihood you will consider yourself to be deluged with facts. Some may appear loosely connected, whereas others will seem to be suspended *in vacuo*. Your challenge will be to weave these factual threads into a fabric of comprehensive understanding regarding these fascinating organisms. In doing so you should not only gain a deeper understanding of the lives of amphibians and reptiles, but also a clearer picture of the workings of organismal biology and its practitioners.