# HERPETOLOGY

BIOL 5570
**Spring, 2017**

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## SYLLABUS

**Objective**s: 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 BNR 314 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 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 instructors, and occasional lectures may be delivered from a remote location.* We may also hear from guest lecturers if they are available.

Introduction to Herpetology
Evolutionary Theory and Systematics
Origin of Tetrapods
Amphibian Biology
    Gymnophiona (Caecilians)
    Caudata (Salamanders)
    Anura (Frogs)
Origin and Radiation of Amniotes
Reptilian Biology
    Testudines (Turtles)
    Crocodylia (Crocodylians)
    Rhynchocephalia (Tuataras)
    Squamata (Lizards and Snakes)
        Lizards
        Serpentes (Snakes)
Conservation of Amphibians and Reptiles

**Note** that the lecture schedule will ***not*** follow the organization of the text. Students should use the text by Pough et al. (see below) as a reference, to reinforce and expand on topics as they are covered in lecture.

**Please note the following important calendar items:**

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|---|---|
| January 16: | No lecture (Martin Luther King Day) |
| February 20: | No lecture or lab (Presidents' Day) |
| February 21: | Lecture ***and*** lab will be held on **Tuesday** (USU follows Monday schedule) |
| March 6 & 8: | No lecture (Spring Break) |
| May 5: | **Final Exam (7:30-9:20 am)** |

**Laboratories**: The laboratories are scheduled for BNR 007 on Mondays, 2:00-4:50 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 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 *may* be used to cover lecture material, if necessary.

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 may examine feeding and locomotor behavior in selected living specimens, contingent upon university policies regarding animal use.

**Seminars**: The Department of Biology sponsors seminars by professional biologists, usually from other institutions. Seminars usually are held on Tuesdays, 3:30-4:30 pm, in BNR 202A, and 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. 2003. A Field Guide to Western Reptiles and Amphibians, Third Edition. Boston: Houghton Mifflin Harcourt, 560 pp. ISBN 978-0395982723. Paperback.

*PowerPoint Slides and Lecture Illustrations*

Class lectures will be illustrated with PowerPoint presentations that include graphs, cladograms, 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 ***after*** the relevant lecture.

*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 a series of handouts.

*Primary Literature*

The primary scientific literature consists of reports of original findings by individuals or groups of scientists. You will occasionally be asked to read such papers and 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 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 $60. This fee is used for the purchase of dissection specimens, skeletal materials, collection supplies (such as specimen jars and preservative), dissecting instruments, 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 exams and other required work. **Absence from exams is justifiable *only* for reasons of medical or similar emergency or for an approved university function. 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 very distracting for the instructor. 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 in advance and sit close to an exit, so you can take any message outside the classroom.

**Lecture Exams**: The midterm and final exams will include a variety of question formats, including short-answer, definitions, and brief discussions. The exams will be closed-book; no notes or other materials should be used during the exams. The date of the midterm exam will be announced at least two weeks in advance. The final exam will be cumulative but will emphasize material presented since the midterm exam.

**Lab Quizzes:** Laboratory quizzes will be announced at least one week in advance. They may include identification of species or anatomical features, as well as short-answer questions.

**Grading**: There will be two major exams, a midterm and a final, each of which will be worth 100 points. There will also be several laboratory quizzes, the point value of which will be announced in advance. All numerical grades will be converted to a percentage 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%

We 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, 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 our 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 Section IV of the Student Code of Conduct (http://www.usu.edu/studentservices/studentcode/article6.cfm).

**Office Hours**: **Dr. Brodie**'s office hours will be Monday and Wednesday, 9:30-11:00 am, or by appointment, in BNR 149. He can be reached via e-mail at e.brodie@usu.edu.

**Dr. Savitzky**'s schedule is not conducive to regular office hours, but he is happy to meet with students whenever he is in his office (BNR 127; enter through BNR 123) and not otherwise occupied. Do not hesitate to stop by. Appointments can be scheduled through Caitlin Robertson (caitlin.robertson@usu.edu) in the Biology office. Dr. Savitzky can be reached directly at savitzky@usu.edu.

The graduate teaching assistant and laboratory instructor is **Geoff Smith** (gdssmith57@yahoo.com). His office is BNR 024.

**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. Alternate format materials (Braille, large print, digital, or audio) are available with advance notice.

**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.