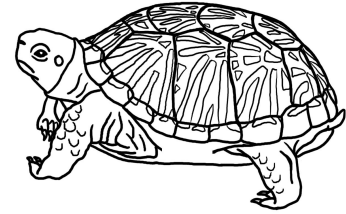


ZOOL 4620/4622 HERPETOLOGY

Spring 2012



Instructor: Dr. Marina M. Gerson

Office: N-272

Office Hours: Wednesdays 1:00-4:00 pm and by appointment

Contact Information: mgerson@csustan.edu or (209) 664-6547

Texts: Required *Herpetology* 3rd edition by Vitt and Caldwell; *Peterson Field Guide to Western Reptiles and Amphibians* 3rd edition by Stebbins; an approved memoir or biography of a herpetologist; Recommended *A Key to Amphibians & Reptiles of the Continental United States* by Powell, Collins, & Hooper.

COURSE DESCRIPTION AND OBJECTIVES

Historically, amphibians and reptiles have been both revered and feared. Most fear of these animals is grounded in lack of knowledge, for in most cases, alertness of one's surroundings is sufficient to avoid unpleasant encounters. Many amphibians and reptiles are in decline throughout their ranges, in great part due to the direct and malicious and also the indirect activities of humans. It is important that we understand the biology of these animals if we are to educate the public as to their value and to conserve them in their natural habitats.

Herpetology is the study of two major groups of ectothermic terrestrial vertebrates: 1) the amphibians, a group of moist-skinned tetrapods including salamanders, frogs, and the little-known caecilians, and 2) the reptiles, a group of scale-covered land-adapted tetrapods including turtles, crocodylians, lizards and snakes, and the nearly-extinct tuatara. This course will cover aspects of the biology of amphibians and reptiles, including classification and taxonomy, evolution, distribution, anatomy, physiology, life histories, behavior, and ecology.

Herpetology is a senior level course. It is a 4-unit lecture and laboratory course comprising two hours of lecture and six hours of laboratory each week. The prerequisite is ZOOL 1050 or BIOL 1150 or consent of the instructor. Both lecture and labs are held in N-206. There will be several required field trips over the course of the semester, usually during class times. You must dress appropriately for outdoor work (jeans, sneakers, and rain gear if stormy) on the field trips.

Course Objectives

Participants gain an understanding of:

- The evolutionary history, diversity and classification of amphibians and reptiles
- Evolutionary history, anatomy, physiology, reproduction, life histories, ecology, behavior, and conservation biology of the taxa
- The modern scientific study of amphibians and reptiles

Participants gain an appreciation for:

- The importance of the roles amphibians and reptiles play in natural systems
- The immense diversity of evolutionary sophistications displayed by the taxa
- The importance of immediate and ongoing conservation efforts to protect these taxa in the wild

Student Learning Outcomes

Participants will be able to:

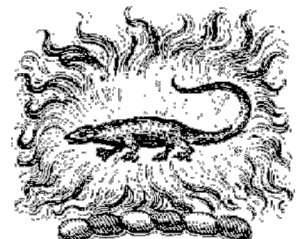
- Identify most amphibians and reptiles to the major taxonomic groups to which they belong.
- Use unique characteristics to identify common species of amphibians and reptiles in California after brief examination.
- Properly and safely handle non-venomous species of frogs, salamanders, lizards, snakes, and turtles.
- Describe the adaptations of amphibians and reptiles and explain how these relate to their life histories and ecology.
- Describe the evolutionary history of amphibians and reptiles and explain how they fit into the vertebrate phylogeny.
- Explain the importance of amphibians and reptiles through the roles they play in natural ecosystems.
- Describe the major anthropogenic-based conservation issues facing amphibians and reptiles today.

Participants will be able to demonstrate the following *scientific* skills:

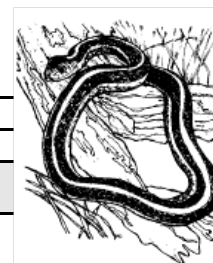
- Use dichotomous keys and field guides to correctly identify amphibians and reptiles to the species level.
- Read and interpret scientific literature.
- Keep a scientific notebook.
- Share scientific information in written and oral formats.
- Prepare formal scientific presentations in the form of both oral and poster presentations.

"To understand the world, we must understand mean and lowly things."

-- Aristotle



Tentative Course Schedule



WEEK	TOPIC(S)	CHAPTERS
Jan 26	Introduction & Syllabus	Ch 1
Jan 26	Introduction to the Taxa	Ch 1
Jan 31, Feb 2	Phylogenetics; Evolutionary History of Tetrapods	Ch 1
Jan 31 Feb 2	<i>Life in Cold Blood 1</i> ; Phylogenetic Tree Exercise Integument; Salamanders	Ch 1 Ch 2, 3, 16
Feb 7, 9	Anatomy	Ch 2
Feb 7 Feb 9	Frogs Locality Exercise; Presentations (3 salamanders)	Ch 3, 17 Handout
Feb 14, 16	Anatomy	Ch 2
Feb 14 Feb 16	<i>Life in Cold Blood 2</i> ; Salamanders & Frogs; Frog Calls Skeletons, Caecilians; Presentations (3 salamanders)	Ch 3, 16, 17; Handouts Ch 2, Handouts, Ch 15
Feb 21	Reproduction & Life Histories	Ch 4
Feb 21 Feb 23	Dissections & Internal Anatomy, presentations (3 frogs) Amphibians Field Trip	Handouts, Ch 2, 3, 15, 16, 17 --
Feb 28, Mar 1	Reproduction & Life Histories; Reproductive Modes	Ch 4, Ch 5; Homework 1 due March 1
Feb 28 Mar 1	Review Amphibians; <i>Life: Amphibians and Reptiles</i> Frog life histories activity; presentations (2 frogs)	--
Mar 6 Mar 8	Catch-up Lecture Exam 1	1-5 Chapters 1-5
Mar 6	TBD	--
Mar 8 -- pm	Frog Calls Night Field Trip (make-up assignment available)	flashlight, boots, cameras
Mar 13, 15	Water Balance & Gas Exchange Thermoregulation, Performance, & Energetics	Ch 6 Ch 7
Mar 13 Mar 15	Study Amphibians Amphibian Practical	-- --
Mar 20, 22	Thermoregulation, Performance, & Energetics Spatial Ecology	Ch 7 Ch 8
Mar 20 Mar 22	Integument, Crocodylians, Turtles, presentations (2 turtles) Lizards, presentations (3 lizards)	Ch 2, 3, 19, 18 Ch 2, 3, 20
Mar 27	Communication & Social Behavior	Ch 9
Mar 27 Mar 29	<i>Life in Cold Blood 5 & 3</i> ; Study Lizards Reptiles Field Trip	Ch 2, 3, 20 --
Apr 3, 5	Foraging Ecology & Diets	Ch 10
Apr 3 Apr 5	Introduce Snakes; Special Presentation by MMG Dissections, Skeletons ; Presentations (3 lizard, 3 snakes)	Ch 2, 3, 21 Ch 2, handouts; FIELD NOTEBOOK DUE
Apr 9, 12	SPRING BREAK – NO CLASSES ALL WEEK	--
Apr 17 Apr 19	Catch up Lecture Exam 2	Homework 2 due Ch 6-10
Apr 17 Apr 19	Life & Times of a Herpetologist Prep; <i>Life in Cold Blood 4</i> Turtle Trapping & Turtle Anatomy Exercise; Biography Prep.	Biography & notes Turtle Anatomy Information
Apr 24	Defense & Escape	Ch 11
Apr 24 Apr 26	Amphibian Declines (FDLT); presentations (2 snakes) Fresno Chaffee Zoo Field Trip (return 8 pm)	
May 1 May 3	Conservation Biology Amphibian Conservation (FDLT)	Ch 14 Ch 14
May 1 May 3	Study for Practical Reptiles Lab Exam ; Finalize Life & Times of a Herpetologist	ZOO ASSIGNMENT DUE --
May 8 May 10	Ecology Urban Herpetology (FDLT)	Ch 12 Homework 3 due
May 8 May 10	Turtle Trapping; Life & Times of a Herpetologist <i>Cane Toad: an Unnatural History</i>	-- --
May 15	Biogeography & Phylogeography	Ch 13
May 15	Poster Session	posters
May 22	COMPREHENSIVE FINAL EXAM 11:15-1:15 pm	Ch 1-21



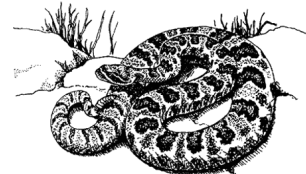
ASSESSMENT METHODS, GRADES AND GRADING

Your grade will be based on your performance on two laboratory practicals, three mixed-format (mostly short-answer) lecture exams, participation in field trips and labs, in-class presentations, and homework assignments throughout the semester. There are formal and informal opportunities for Extra Credit, as discussed below.

Any homework or extra credit assignment should be turned in on the day and time it is due. **You may turn in one assignment up to 3 calendar days late** during the semester. Assignments which cannot be submitted late include: exams, in lab activities, presentations, field trip participation, and extra credit. Allowable late work will be penalized 10% per calendar day. Following the return of any graded assignment or exam, you have 14 days in which to dispute any grade discrepancies. To dispute the scoring of an assignment, bring the assignment and supporting information showing why you deserved a different grade to my office, where we can discuss the issue privately. Please also verify each score on the Blackboard site to ensure proper grade entry.

GRADING SUMMARY

Assignment	Lecture/Lab	Date	Possible Points
CA Native Presentation (oral)	Lab	Throughout semester	100
Peer Presentation Evaluations	Lab	Throughout semester	25
In Class Activities	Lab	Throughout semester	75
Homeworks	Lecture	Due: Mar 1, Apr 17, May 10	3 x 20 = 60
Field Trips		Feb 23, Mar 8,	
Field notebook due Thurs, April 5	Lab	Mar 29, Apr 26	4 x 10 = 40
Zoo assignment due Tues, May 1			
Lecture Exam 1	Lecture	March 8	100
Amphibian Lab Exam	Lab	March 15	100
Lecture Exam 2	Lecture	April 19	100
Reptile Lab Exam	Lab	May 3	100
Life & Times of a Herpetologist	Lab	Finish reading: April 17 Presentations May 8	75
Poster Presentation	Lab	May 15	100
Peer Poster Evaluations	Lab	May 15	25
Final Exam	Lecture	May 22	100



Point Range	Grade
930-1000	A
900-929	A-
870-899	B+
830-869	B
800-829	B-
770-799	C+
730-769	C
700-729	C-
670-699	D+
630-669	D
600-629	D-
<600	F

EXPECTATIONS OF STUDENTS

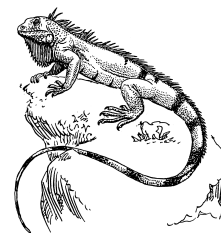
This may be the smallest class-size you will experience in college. Small classes offer great opportunities for learning, engagement, and fun, but the class dynamics are up to the participants. Let's work together to make this a great semester!

- **Engage the course material** through participation in class, reading the texts, and thinking about herpetology.
- **Be respectful of others** by arriving on time, giving your attention to whoever is presenting, listening to the ideas of your classmates, turning off cell phones, and generally being polite. This also means no text-messaging (yes, the person at the front of the room *can* tell what you are doing) and no internet surfing (it's distracting to those sitting around you).
- Students are expected to **take exams** on days and times scheduled. If you have a legitimate excuse to miss, I need to know the reason, in writing, before the exam date. If you have an emergency, you must let me know of the emergency as soon as you can. I will determine the appropriateness of taking the missed exam.
- **Observe lab and field safety** and cleanliness procedures.
- **If you are going to handle wild, native amphibians and reptiles on your own, you should have a CA State Fishing License and must comply with all State regulations. DO NOT UNDER ANY CIRCUMSTANCES HANDLE ANY VENOMOUS SNAKES.**
- **Maintain your academic integrity.** *Your integrity is your most valuable asset as a student* and in your future career as an educated person. In line with this, it is the policy of the Department of Biological Sciences that anyone caught *cheating or plagiarizing* will receive a grade of F for the course. I reserve the right to request any student suspected of cheating to take a second, different exam on the material. Protect yourself by making your integrity obvious.

EXPECTATIONS OF THE INSTRUCTOR

- Same as those for students, in terms of engagement in the course, respect for participants, and observation of lab and field safety. I do my best to protect your privacy and maintain an environment in which you can learn.
- Be **open to feedback** on the course and be flexible in order to make appropriate changes to meet student needs.
- Be **fair and consistent in assessment** of student learning.
- Be **available to students** outside of class time to answer questions and discuss class material.

ASSIGNMENT INFORMATION



CA Native Species Presentation (100 + 25 points)

The purpose of these presentations is to: a) provide the whole class more detailed familiarity with some of the native species common in California, b) provide each student in-depth knowledge of one California native, and c) provide each student an opportunity to hone the skill of producing and presenting a formal oral presentation.

1) Species Selection – in class you will choose a general group of amphibians or reptiles. Different taxa are associated with different presentation dates. After your initial selection, you will decide on a California native species on which to focus for your report.

2) The Presentation (100 points)

Your semi-formal presentation should share what you learned about your topic with the rest of the class. Your presentation can be done in PowerPoint (bring your laptop or bring a USB drive to use a classroom laptop) or on overheads. You are encouraged to use any/all of the A/V devices we have in the classroom. This assignment will give you an opportunity to practice your formal oral presentation skills in sharing new knowledge that you have investigated on your own. You have a maximum of 20 minutes for your talk. You should aim for 12-15 minutes in length for your talk, to give your peers ample opportunity to ask questions.

3) Peer Evaluation (25 points for evaluating your peers) – Listening to peer presentations should be an interesting opportunity to gain more insight into the habits and diversity of the animals we're studying in this course. Your peers will have put in a lot of effort to make the material easily accessible for everyone. Every student will perform peer evaluations during the presentations, to be turned in the same day. Your evaluations will help me in assigning final scores for presentations. Additionally, you will be able to contribute potential exam questions that will appear in the lecture exams.

In Class Activities (75 points)

Some days, you will spend the lab period studying specimens; on other days, you will be working on formal assignments that help you to understand or apply the course material. You will need to be present and submit properly completed assignments to earn the points for class activities.

Homeworks (3 x 20 = 60 points)

Homework assignments asking you to engage in the material by answering questions from the text and additional questions supplied by Dr. Gerson will be due three times during the semester. The purpose is you keep you on track so you will be ready for the exams.

Field Trips (4 x 10 = 40 points)

The purpose of the field trips is to introduce you to the habitats and habits of California amphibians and reptiles. By seeking these shy animals in the wild, I hope that you will gain an appreciation for both the animals themselves and for the work that herpetologists do. Finally, careful observation of live animals presents opportunities that are lacking in the study of preserved specimens; I hope that you will marvel at the colors, textures, and behaviors of these important animals.

A) Field Notebook Entries required for each Field Trip to find amphibians and reptiles in the wild. Due Thurs, April 5.

B) Chaffee Zoo – You will have a special assignment to complete on the Zoo field trip. Due Tuesday, May 1.

Exams (5 x 100 = 500 points)

Objective exams hold students accountable for learning course material by a set date and time and allow the instructor to evaluate to what extent you have learned and understood the course material.

Lab Practical Exams: These exams will ask you to identify the taxa and structures that you have studied in lab. (2 practicals.)

Lecture Exams: These mixed-format exams will ask you to demonstrate your understanding of the lecture material, and will also include questions based on the species presentations given by your peers. (2 midterms and 1 final.)

Life and Times of a Herpetologist (75 + 100 + 25 = 200 points)

One of the best ways to learn about a field of study is to read about the life and times of someone who has experienced that career. Another great way is to read primary literature articles in that field. In order to expand your understanding of what herpetology is all about, you will do both! Furthermore, you will have the opportunity to practice an important presentation format that is widely used at scientific meetings: the poster presentation.

1) Read a book: You will select and read a memoir, autobiography or biography of a herpetologist. Finish reading by April 17th.

2) Summary of the high points (75 points): You will work with other readers of the same book to present a short summary of the life of your chosen herpetologist.

3) Poster Presentation of a Primary Literature article (100 points): You will select a research article authored by your chosen herpetologist and prepare and present the work during our in-class poster session.

4) Evaluations of Poster Presentations (25 points): You will be assigned a subset of the poster presentations to evaluate. Careful evaluation gives your peers a chance to show off their knowledge and will also help you to become a better presenter in the future.

FORMAL EXTRA CREDIT OPPORTUNITIES

You can attempt to earn up to 30 points of formal extra credit during the semester. For any outside projects, you must be willing to accept liability for your participation, as the University and I cannot control your outside environment.

U.C. Berkeley Herp Group: Attend this biweekly meeting of Bay Area herpetologists and briefly report on your experience the next day in class. The group meets on Monday evenings, every other week. Value: 15 points.

AmphibiaWeb Entry: Make a scientific contribution to the AmphibiaWeb database, working with the AmphibiaWeb coordinator at U.C. Berkeley to complete a species account. If you choose to pursue this opportunity (which is great on your résumé and is a real contribution to the scientific community), you will need to commit early in the semester in order to have your final contribution accepted before the end of the semester. Value: 30 points.

Poster Presentation Guidelines

Poster presentations allow for a more *personalized interaction* between the presenter and the individual audience members, as conference attendees walk through the poster session browsing the selections. Posters have the added advantage of being *less intimidating to present*, since the audience has something to read and the presenter can mainly clarify points and field questions.

Your poster for class can be:

- A) Printed out on regular paper, trimmed, and mounted on a piece of regular poster board (or you can make a tri-fold board out of cardboard if you have some large pieces around).
- B) Printed on a large format printer. Use Microsoft PowerPoint to prepare a **single-slide** presentation. You must format the slide as a custom size and indicate how large a print you want your final poster to be. Talk to your print shop ahead of time to find out at what size they print posters, cost, and how long it takes. Grayscale printing is super cheap and looks great!

• **The main goal of a poster is to relate the main points of your paper with as little effort as possible on the part of the audience to read, interpret, and understand.**

- Use a suitable font size (can be read from about four feet away).
- Sections should have appropriate labels.
- **Include a Title, Authors and Addresses, Abstract, Introduction, Methods, Results & Discussion. Graphics are required.**
- Only include Literature Cited if you use a major source in the body of the poster (even though the original paper has lots of references).
- Only present the main points.
- Present as clearly as possible with as little text as you can get away with (used bulleted lists instead of paragraphs when you can).
- Use graphics to explain sections when possible.
- **Do NOT duplicate** the same information in your figures/tables and a verbal results/discussion. Use an explanatory caption to explain how the data shown in the figure support a conclusion.

Useful Websites on Poster Presentation

Flinn, C. 2000. Developing a Poster Presentation in the Social Sciences.

<http://writingcenter.gmu.edu/resources-template.php?id=45>. Accessed 1/20/2012.

Hammarling, S and N. Higham. 2009. How to Prepare a Poster.

<http://www.siam.org/meetings/guidelines/poster.php> Accessed 1/20/2012.

Hess, G., K. Tosney, and L. Liegel. 2007. Creating effective poster presentations.

<http://www.ncsu.edu/project/posters/NewSite/Resources.html>. Accessed 1/20/2012.

Kiefer, K., M. Palmquist, L. Barnes, M. Levine, D. Zimmerman, and J. Robinson. 2009. Poster Writing Guide from the Writing Center at Colorado State University. <http://writing.colostate.edu/guides/speaking/poster/>. Accessed 1/20/2012.

Purrington, C. 2007. Advice on designing scientific posters. <http://www.swarthmore.edu/NatSci/cpurrin1/posteradvice.htm>. Accessed 1/20/2012.

Where to Get Your Poster Printed? *Pricing information may be outdated.*

CSU Stanislaus Reprographics MSR B-10D, 667-3013.

Time to print: Can be up to two weeks, but faster if you say you have a deadline.

Cost: \$25 for a 48" x 36" full color; not much less for black and white

FedEx Kinkos www.kinkos.com; 1451 Geer Rd, Turlock, CA - (800) 463-3339; 2225 Plaza Pkwy # C11, Modesto, CA - (800) 463-3339

Time to print: Approximately 15 minutes. Send your file by e-mail and it will be ready for pick up when you arrive.

Cost: As low as \$5 for a black and white 30" x 36" on light-weight paper, up to \$80 for full color printing.

Staples 1850 Countryside Dr, Turlock, CA - (209) 632-2209

Time to print: 2-3 hours for color, black-and-white just a few minutes

Cost: Color 24" x 36" - \$38.39; B&W 24" x 36" - \$2.99; B&W 30" x 36" - \$4.00 (NOTE: Color posters may be LIMITED - up to 24" high x any length.)

Field Notebook Entry Template & Examples

- Don't forget to **write your name in the upper left-hand corner** of each page.
- You can find a Word Document template and a PDF for your use on the Blackboard site.
- You can also find information on field notebooks and entries in your field guide.
- Entries may be hand-written (or typed up if you prefer).
- Field Trip Field notebooks will be due in class on Thursday, April 5.



Date:	Location:
Time:	Species:
	Comments:
Time:	Species:
	Comments:

Explanation of sections:

Date. The date on which you are working

Location. Specific locality information should include enough detail to guide you back to the spot. Could include GPS coordinates, location along a road, name of and distance to nearest intersection, or approximate walking time from a particular road location. Must include general location information such as the town, city, park, etc. Must include county and state. Should include elevation, if known.

Time. The time at which you encountered the individual specimen. Must be clear as to whether it is day or night time.

Species. The full common name and scientific name.

Comments. The specific microhabitat or circumstance in which you found the specimen. Anything interesting or unusual about the specimen. Sex of specimen if known, interesting coloration or behavior.