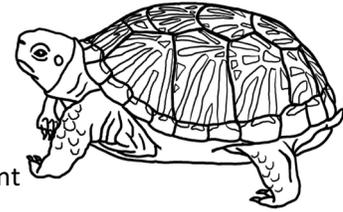


ZOOL 4620 HERPETOLOGY
Spring 2018



Instructor: Dr. Marina M. Gerson

Office: N-272

Office Hours: Wednesdays 1-2:30 pm and Thursdays 9:30-11 am and by appointment

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

Texts: Required *Herpetology* 4th 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 will be display 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.

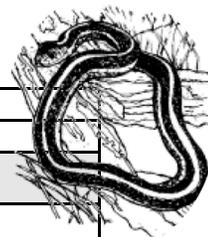
Participants will be able to demonstrate the following *scientific* skills:

- 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 25	Introduction & Syllabus	Ch 1
Jan 25	Introduction to the Taxa	Ch 1
Jan 30, Feb 1	Phylogenetics	Ch 1
Jan 30	<i>Life in Cold Blood 1</i> ; Phylogenetic Tree Exercise	Ch 1; printouts
Feb 1	Integument; Salamanders	Ch 1, 2, 3, 16; printouts
Feb 6, 8	Evolutionary History of Tetrapods	Ch 3
Feb 6*	Study Salamanders	--
Feb 8	Frogs	Ch 1, 3, 17; printouts
Feb 13, 15	Anatomy	Ch 2
Feb 13	<i>Life in Cold Blood 2</i> , work on salamanders and frogs	printouts
Feb 15	Locality Exercise; salamanders and frogs	printouts
Feb 20, 22	Reproduction & Life Histories	Ch 4
Feb 20	Presentations (3 salamanders); Calls; Skeletons	printouts
Feb 22	Caecilians; Presentations (3 salamanders)	Ch 1, 2, 3, 15, printouts
Feb 27	Leave on Field Trip #1	
Mar 1	Reproductive Modes	Ch 5
Feb 27	Field Trip #1 – Del Puerto Canyon	printouts
Mar 1	Dissections & Internal Anatomy	field notes
Mar 6	Reproductive Modes	Ch 5
Mar 8	Lecture Exam #1	1-5
Mar 6	Frog life histories activity; presentations (2 frogs)	printouts
Mar 8	<i>Life: Amphibians and Reptiles</i> ; Study Amphibians	printouts
Mar 13	Water Balance & Gas Exchange	Ch 6
Mar 13	Presentations (3 frogs), study amphibians	--
Mar 15	Field Trip #2 – Knights Ferry	field notes
Mar 20, 22	Thermoregulation, Performance, & Energetics	Ch 7
Mar 20	Study Amphibians	--
Mar 22	Amphibian Practical ; <i>Life in Cold Blood 5 & 3</i>	printouts
Mar 27, 29	Thermoregulation, Performance, & Energetics Spatial Ecology	Ch 7 Ch 8
Mar 27	Integument, Crocodylians, Turtles; Life & Times of a Herpetologist Prep	Ch 1, 2, 3, 18, 19, printouts
Mar 29	Lizards	Ch 1, 3, 21
Apr 2-Apr 6	SPRING BREAK – NO CLASSES (Finish Reading Biography)	--
Apr 10	Communication & Social Behavior	Ch 9
Apr 10	Introduce Snakes; presentations (2 turtles, 3 lizards)	Ch 1, 3, 22
Apr 12	Field Trip #3 – La Grange	field notes
Apr 17, 19	Foraging Ecology & Diets	Ch 10
Apr 17	Dissections, Skeletons; Presentations (4 lizards)	Ch 2, printouts
Apr 19	<i>Life in Cold Blood 4</i> ; Turtle Anatomy Exercise	FIELD NOTES DUE; printouts
Apr 24	Catch-up	Ch 6-10
Apr 26	Lecture Exam 2	Ch 6-10
Apr 24	Lizard Biogeography Exercise	printouts
Apr 26	Turtle Trapping	printouts
May 1	Defense & Escape	Ch 11
May 1	Life & Times of a Herpetologist ; study reptiles	--
May 3	Field Trip #4 - Fresno Chaffee Zoo Field Trip (return by 8 pm)	Zoo Assignment
May 8	Ecology	Ch 12
May 10	Biogeography & Phylogeography Conservation Biology	Ch 13 Ch 14
May 8	Presentations (4 snakes); Study for Practical	ZOO ASSIGNMENT DUE
May 10	Reptiles Lab Exam	--
May 15	<i>Cane Toad: an Unnatural History</i>	--
May 15	Poster Session	posters
Tues., May 22	COMPREHENSIVE FINAL EXAM 11:15-1:15 pm	Ch 1-21

*Native Species Presentation Sign-up in Lab.

Note: Feb 21 = Census Date



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 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 (date/time stamp by emailing, if this works out to be on a weekend or holiday).

Assignments which **cannot** be submitted late include: exams, in lab activities, presentations, field trip participation, and extra credit. Other late work will be penalized 10% per calendar day. Following the return of any graded assignment or exam, you have 7 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

<u>Assignment</u>	<u>Lecture/Lab</u>	<u>Date</u>	<u>Possible Points</u>
CA Native Presentation (oral)	Lab	Throughout semester	50
Peer Presentation Evaluations	Lab	Throughout semester	20
In Class Activities	Lab	Throughout semester	100
Field Trips			
Field notes due Thurs., April 26	Lab	Feb 27, Mar 15,	4 x 15 = 60
Zoo assignment due Tues., May 10		Apr 12, May 3	
Lecture Exam 1	Lecture	March 8	100
Amphibian Lab Exam	Lab	March 22	100
Lecture Exam 2	Lecture	April 26	100
Reptile Lab Exam	Lab	May 10	100
Life and Times of a Herpetologist	Lab	Finish reading by Mar 29 Presentations May 1	100
Poster Presentation	Lab	May 15	100
Peer Poster Evaluations	Lab	May 15	20
Final Exam	Lecture	May 22	150

<u>Point Range</u>	<u>Grade</u>
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

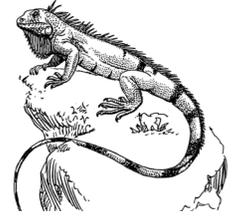
This may be the smallest class-size you will experience in college. Small classes offer great opportunities for learning, engagement, and fun, but the class dynamics are up to the participants. Let's work together to make this a great semester!

- **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 (50 + 20 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 (50 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 15 minutes for your talk. You should aim for 10 minutes in length for your talk, to give your peers ample opportunity to ask questions.

3) Peer Evaluation (20 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. If you evaluate too generously (e.g., grade of "A" regardless of quality), you may lose up to 50% of your Peer Evaluation points.

In Class Activities (100 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.

Field Trips (4 x 15 = 60 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. Entirely missing a field trip will result in a loss of 15 additional points for that day.

- A) iNaturalist field notes are required for each Field Trip, documenting amphibians and reptiles in the wild. Due Thurs., April 6.
- B) Chaffee Zoo – You will have a special assignment to complete on the Zoo field trip. Due Tuesday, May 8.

Exams (4 x 100 and 1 x 150 = 550 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 (100 + 100 + 20 = 220 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 March 29.

2) Summary of the high points (100 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 (20 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.

Poster Presentation Guidelines – You will role-play that you are an co-author on the paper

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 should be 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 still 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.

Not sure how to get started? Do an internet search on “free poster templates”. Here’s one good site, to get you started:
http://www.posterpresentations.com/html/free_poster_templates.html Accessed 1/20/2016.

Useful Websites on Poster Presentation

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

<<http://www.siam.org/meetings/guidelines/poster.php>> Accessed 1/20/2016.

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

< <https://www.ncsu.edu/project/posters/> >. Accessed 1/20/2016.

Purrington, C. 2007. Advice on designing scientific posters.

<<http://www.swarthmore.edu/NatSci/cpurrin1/posteradvice.htm>>. Accessed 1/20/2016.

Where to Get Your Poster Printed? (Warning: prices will have changed)

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: maybe <\$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.)



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.

Here are two formal opportunities:

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. You can get credit two times. Value: 15 points (for one visit).

AmphibiaWeb Entry: If you are interested in this option, please let me know! Must be submitted to U.C. Berkeley by Friday, May 11. 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: up to 30 points.