

IB464 – Herpetology

Spring 2019

Lecture: 9:00–9:50 PM CDT MWF Natural History Building Room 3011

Lab: 2:00–4:50 PM CDT T Natural History Building Room 3011

Professor:

Dr. Mark A. Davis

Natural Resources Survey Annex

Room 220

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Graduate Teaching Assistant

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Office Hours

Dr. Davis

8-9 AM M (NHB 3011) or by appointment (MAD's office NRSA 220)

Amanda

10-12 W (Turner S-415) or by appointment

Course objective: The course will familiarize you with the phylogenetic relationships, ecology, and evolutionary history of amphibians and reptiles. Take advantage of this opportunity to develop a deeper appreciation for these unique creatures and this particular aspect of the natural world.

Herpetology Learning Outcomes

- Connect taxonomic identification with major life history traits
- Describe the morphological, physiological, and developmental traits that define reptiles and amphibians.
- Place major gains/losses of traits within a phylogenetic context and suggest adaptive hypotheses
- Explain the role and importance of reptiles and amphibians in broader context of ecological communities
- Relate the biology of herps to the value of current science and scientists involved in herpetological research

Recommended Materials

Herpetology, 4th Edition by F.H. Pough, R.M. Andrews, M.L. Crump, A.H. Savitzky, K.D. Wells, and M.C. Brandley. 2015. (Sinauer Associates, Sunderland MA)

*NOTE: This text is very helpful for those interested in continuing a career associated with reptiles and amphibians, but you **will** be able to successfully complete this course without purchasing the text book. One copy of the textbook is on reserve at the Undergraduate Library. Consider the textbook optional.*

Required Materials

Peterson Field Guide to Reptiles and Amphibians of Eastern and Central North America, 4th Edition by R. Powell, R. Conant, and J.T. Collins. 2016. (Houghton Mifflin Harcourt).

NOTE: This book is NOT optional. It is essential for success in the laboratory portion of the course and on field trips. However, it will not be found in the UIUC bookstore. Please speak with Professor Davis with about sourcing your copy if you have concerns.

Additional readings will be assigned and posted on Moodle

Please Note: Herpetology is designed as a participatory class – this means that students are expected to attend class and take notes. Some materials will be posted prior to lecture, but students should not expect to have PowerPoint slides posted to Moodle prior to lecture.

Moodle: <http://learn.illinois.edu> IB464 should be listed under your Moodle course links. It is required that you use the Moodle page for this class. Handouts will be available there, and some assignments will only be accessed through **Moodle**.

Lecture slides will be posted no later than Friday following the final lecture of the week. Lab slides will be posted after lab. Additional materials will be posted on a semi-regular basis.

How to get your questions answered: E-mail is the preferred method for communication, either to answer your question directly or to set up a time to meet. Please note office hours are a great opportunity for you to ask questions. This YOUR time, and I encourage you to take advantage of it.

Prerequisites: Prerequisites for this course are IB 302 or consent of instructor. You will be expected to understand information displayed in graphs and equations. In addition, lectures in this course require a basic understanding of anatomy, evolution, physiology, and chemistry. Don't hesitate to ask for clarification if you don't understand something, but please take responsibility for knowing prerequisite material.

Course grading:

Student performance in IB494 will be evaluated based on quizzes, exams and a non-cumulative final exam. A detailed grading breakdown can be found below. There is no extra credit. Missed quizzes or exams will be scored as zero points (but please see absence policy below).

Quizzes (10%): There will be 12 surprise quizzes in class (each 10 points for a total of 100 points). The two lowest scores will be dropped. No make-up quizzes will be given.

Exams (30%): There will be three in-class exams (each 100 points for a total of 300 points). No make-up exams will be given (see dates in syllabus).

iNaturalist Observations (10%): This project will span the semester and is worth 100 points. Details will follow at a later date

Conservation Assessment (10%): This project will span the semester with a culminating presentation during final exams. It is worth 100 points.

Laboratory Grade (30%): The lab grade will consist of two components: Lab exams (200 points total) and Lab quizzes (100 points total). See lab schedule for exam and quiz dates.

Instructor-Based Grade (10%): Based upon attendance and participation.

Final Grade: Final Lecture Grade (60%) + Final Lab Grade (30%) + Instructor-Based Grade (10%) = 1000 points

Allocation of Final Grade is based on your score, following the traditional scheme: A=1000-900, B=899-800, C=799-700, D=699-600, F= less than 599

In-depth concepts in Herpetology: Pough et al. have done an excellent job of distilling herpetological principles and concepts. However, scientific experiments underlying the principles of the book were first described in scientific research articles (i.e., what we call “the primary literature”). Scientific papers will occasionally be assigned as part of your class readings. Reading and interpreting scientific writing is a useful skill for those of you interested in grad school or are pre-professionals. More importantly, this will help all of you become a scientifically literate member of society. These readings will be posted on **Moodle** and will, of course, be fair game on exams and quizzes.

Classroom etiquette: Help maintain an atmosphere conducive to learning. Act responsibly and show respect towards others in your class. Stop talking when the general session (lecture or other presentation) begins, but do raise your hand if you would like to ask a question or contribute your thoughts and ideas. Turn your mobile devices off at the beginning of each session. You will be asked to leave the class *immediately* if your behavior/actions impede the learning of other students. This includes cell-phone and laptop use (ringing or other such shenanigans).

Americans with Disabilities Act for Students with Special Needs: To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the as soon as possible. To ensure that disability-related concerns are properly addressed from the beginning, students with disabilities who require assistance to participate in this class should contact Disability Resources and Educational Services (DRES) and see the instructor as soon as possible. If you need accommodations for any sort of disability, please

speak to me after class, or make an appointment to see me, or see me during my office hours. DRES provides students with academic accommodations, access, and support services. To contact DRES you may visit 1207 S. Oak St., Champaign, call 333-4603 (V/TDD), or e-mail a message to disability@uiuc.edu. <http://www.disability.illinois.edu/>.

Responsible Employees and Mandatory Reporting: As employees of the University of Illinois and conscientious members of the UIUC community, one of our responsibilities is to help create a safe learning environment on our campus. We take this responsibility very seriously. We also have a mandatory reporting responsibility related to our role as instructors. We are required to share information regarding sexual misconduct with the Title IX Office. Students may speak to someone confidentially by contacting one of the Confidential Resources listed on the We Care website at wecare.illinois.edu.

Academic Honesty Statement: The academic community is predicated upon the principles of honesty, integrity, and fair play. The University of Illinois at Urbana-Champaign *Student Code* should also be considered as a part of this syllabus. Students should pay particular attention to Article 1, Part 4: Academic Integrity. Read the Code at <http://studentcode.illinois.edu/>. Every student is expected to review and abide by the Academic Integrity Policy. **Academic dishonesty will not be tolerated in any form and may result in a failing grade.** Ignorance is not an excuse for any academic dishonesty. It is your responsibility to read this policy to avoid any misunderstanding. Do not hesitate to ask the instructor(s) if you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity. All allegations will be submitted to the university FAIR system and sanctions will be proportional to the severity of the violation.

Cheating. Cheating is the use of external information (written material, the exams of your fellow classmates, etc.) to complete an assignment, quiz, or exam in which such sources had been explicitly prohibited. Students taking quizzes or exams are prohibited from consulting specific quiz and exam questions *prior* to taking the quiz or exam, any written information *while* they are taking the quiz or exam, and they may not communicate with their fellow students about the quiz or exam. You must formulate answers to questions without outside assistance of any kind. Allowing other students to copy your work is considered cheating by you. We examine quizzes/exams closely to detect evidence of cheating. Students often like to look around the room while thinking about the answers to questions. But it is best to avoid any behavior during a quiz that could be construed as looking at the paper of another student.

Plagiarism. Plagiarism is the presentation of others' work as your own. Science builds upon information that was gathered and published in the past. It is important to cite sources of information both to avoid appearing to take credit for work done by others and to allow the reader to check your statements. Students may (and are encouraged to) discuss the content of the lab assignments with their classmates or others. However, the assignment that each student hands in must be written *in his or her own words*.

Attendance and Punctuality: You should attend every lecture. **Students who miss a lecture and are requesting an excused absence must present written and dated documentation of a personal or medical emergency or a confining illness in a timely fashion for the opportunity to make up any missed quizzes, assignments, exams, etc.** Written documentation must specify the nature of the problem and document that it prevented the student from attending lab at the time in question. Students who visit McKinley Health Center or private physicians must provide verification of confining illness for the date in question. Letters for absences lasting more than three consecutive days should request a letter through the Office of the Dean of Students (Turner Student Services Building, 610 E. John, (217-333-0050)). ***Documentation must be received within 1 week of the absence unless you are working with the Office of the Dean of Students.***

Veterans and student service members with special circumstances or who are activated are encouraged to notify the instructor as soon as possible and are encouraged to provide Activation Orders.

Students who need to miss lab for any other reason (religious observances, University of Illinois student athletic meets, professional interviews) should be in contact with us ASAP. Students must request accommodation for religious observance from the student assistance center within the first two weeks of the semester. For other absences, documentation must be received at least 1 week prior to the absence unless you are working with the Office of the Dean of Students.

Make-up Quizzes/grading: All quizzes will occur at the beginning of lecture. If you miss (i.e. are late or absent), you will be subject to a 20% penalty for each 24-hrs late. You will receive a zero if a late quiz is not re-taken (via appointment with professor) within five days. If you have an excused absence, we will try to arrange a make-up quiz. A prorated will be given for a quiz associated with an excused absence if a make-up cannot be arranged. A prorated is the weighted average score of all similar assignments or quizzes.

Make-up exams are HIGHLY discouraged. There will be no make-up exams without university-approved documentation of your absence. Make-up exams will be in a different format than exams given and must be taken within 72 hours of the original missed exam.

Requesting a regrade: If you believe that an error has been made in the grading of any assignment, quiz, or exam, you may request a regrade. Such a request **must be made in writing** no more than one week after the assignment, quiz, or exam was returned to you. Except for arithmetical errors in point totals, a regrade involves the regrading of the *entire* assignment, quiz, or exam. The grade earned on the regrade will be the final grade for the assignment even if it is lower than the original grade.

Emergency Response Recommendations: Emergency response recommendations can be found at <http://police.illinois.edu/emergency-preparedness/>. We encourage you to review this website and the campus building floor plans website within the first 10 days of class at <http://police.illinois.edu/emergency-preparedness/building-emergency-action-plans/>.

Family Educational Rights and Privacy Act (FERPA): Any student who has suppressed their directory information pursuant to *Family Educational Rights and Privacy Act* (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See <http://registrar.illinois.edu/ferpa> for more information on FERPA.

How to do well in Herpetology

- Attend class regularly: exams will stress material presented in lectures and readings
- Come prepared for class
- Hand write your notes (rather than type) – research shows better retention with handwritten notes!
- Review your lecture notes after each lecture (an effective learning strategy)
- Do the assigned reading – chapters supplement & clarify topics presented in lecture
- Keep your lecture notes neat and organized – legible notes are easier to study
- Stay up with the material
- Deal with ambiguities by seeking assistance promptly

Lecture Schedule: This preliminary schedule may be altered. Notice of alteration will be made on the course website and in class.

Date	Day	Lecture	Topic
14-Jan	Monday		Course Overview
16-Jan	Wednesday		Intro to Herpetology
18-Jan	Friday		The Evolutionary History of the Herptiles (Origins)
21-Jan	Monday		NO CLASS (Martin Luther King Jr. Day)
23-Jan	Wednesday		Evolutionary History of the Herptiles part II
25-Jan	Friday		Herpetological Diversity I --> Amphibians
28-Jan	Monday		GUEST LECTURE --> TBD
30-Jan	Wednesday		Herpetological Diversity II --> Amphibians
1-Feb	Friday		Early Reptiles
4-Feb	Monday		Extant Reptiles I
6-Feb	Wednesday		Extant Reptiles II
8-Feb	Friday		Exam I
11-Feb	Monday		Reproduction & Parental Care - Amphibians
13-Feb	Wednesday		Reproduction & Parental Care - Reptiles
15-Feb	Friday		Reproductive Ecology - Reptiles
18-Feb	Monday		Reproductive Ecology - Amphibians
20-Feb	Wednesday		Life History - Reptiles
22-Feb	Friday		Life History - Amphibians

25-Feb	Monday	Water Balance/Gas Exchange - Amphibians
27-Feb	Wednesday	Water Balance/Gas Exchange - Reptiles
1-Mar	Friday	Thermoregulation & Energetics - Amphibians
4-Mar	Monday	Thermoregulation & Energetics - Reptiles
6-Mar	Wednesday	Anatomy
8-Mar	Friday	Exam II
11-Mar	Monday	Herptiles in Culture and Society
13-Mar	Wednesday	Film Study
15-Mar	Friday	Communication
25-Mar	Monday	Spacing/Movements/Orientation
27-Mar	Wednesday	GUEST LECTURE - TBD
29-Mar	Friday	Foraging Ecology/Diet - Amphibians
1-Apr	Monday	Foraging Ecology/Diet Reptiles
3-Apr	Wednesday	Defense
5-Apr	Friday	Population Structure/Dynamics
8-Apr	Monday	Community Ecology
10-Apr	Wednesday	Biogeography
12-Apr	Friday	Exam III
15-Apr	Monday	Guest Lecture --> TBD
17-Apr	Wednesday	Amphibians, Reptiles, and mass extinctions
19-Apr	Friday	Climate Change & Amphibians
22-Apr	Monday	Climate Change & Reptiles
24-Apr	Wednesday	Anthropogenic Impacts - Amphibians
26-Apr	Friday	Anthropogenic Impacts - Reptiles
29-Apr	Monday	Conservation Biology of Reptiles
1-May	Wednesday	Conservation Biology of Amphibians
7-May	Tuesday	Final Exam 7:00 – 10:00 PM CDT

Lab Details

Quizzes: Eleven quizzes will be given, each testing material taught during the previous lab. Quizzes will be worth 10 points, with the worst score dropped, for a total of 100 points. Quizzes function as a test of comprehension as well as attendance. One extra credit point may be available on each quiz. Quizzes missed due to justifiable conflicts will be rescheduled on a case-by-case basis.

Exams: Two exams will be given each of which will cover individual sections (Amphibians and Reptiles). Each exam will be worth 100 points. Up to five extra credit points will be available on each exam.

Field Trips: Two field trips will be taken. The first field trip (Feb. 26 weather permitting, Mar. 5 as an alternate) will be during lab and will be an exploration of herpetological field sampling techniques at sites in Vermilion County (~30 min. away). We will be visiting an ongoing project examining amphibian communities in ephemeral wetlands. The second field trip will be an overnight, weekend trip to Southern Illinois (date TBD) where we will visit hotspots of herp diversity in a variety of habitats to find as many of Illinois' herp species as we can.

Lab #	Date	Topic
1	Jan 15	Class Intro/Herpetology/Phylogeny Basics/Tetrapod Evolution
2	Jan 22	Amphibian Origins/Extant Amphibian Diversity/Caudata Anatomy for Identification/Intro to dichotomous keys/Ambystoma, Plethodontidae (16 species) QUIZ 1
3	Jan 29	Siren, Notophthalmus, Cryptobranchus, Necturus (4 species)/Anura Anatomy for Identification/Hylidae, Gastrophryne (9 species) QUIZ 2
4	Feb 5	Ranidae, Bufonidae, Scaphiopus (11 species)/Gymnophiona Anatomy and Diversity QUIZ 3
5	Feb 12	Review QUIZ 4
6	Feb 19	EXAM 1: Amphibians
7	Feb 26	Field techniques trip to Kickapoo State Park
8	Mar 5	Reptile Origins/Reptile Diversity/Turtle Origins and Diversity/Turtle Anatomy for Identification/Chelydridae, Kinosternidae, Tryonichidae (7 species) QUIZ 5
9	Mar 12	Emydidae (10 species)/Crocodylia Origins and Diversity QUIZ 6
10	Mar 26	Lacertilia Origins and Diversity/Lacertilia Anatomy for Identification/Squamata (7 species) QUIZ 7
11	Apr 2	Serpentes Origins and Diversity/Serpentes Anatomy for Identification/Clonopsis, Regina, Storeria, Tropidoclonion, Virginia, Viperidae (11 species) QUIZ 8
12	Apr 9	Thamnophis, Nerodia, Dipsadinae (14 species) QUIZ 9
13	Apr 16	Colubrinae (13 species) QUIZ 10
14	Apr 23	Review

		QUIZ 11 (Maybe)
15	Apr 30	EXAM 2: Reptiles