Biology 4435 Herpetology - Course Outline 2009

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Office: CB 4039
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Lectures: 10:30 -11:30 am M,W,F, ATAC 2021.
Res. Lab: CB 3021
Laboratory: Monday 2:30-5:30 pm, CB 3012
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Course Description: Origin, structure, life history, distribution, ecology and conservation of amphibians and reptiles. A survey of living families. Special attention is focused on species occurring in Canada, particularly those in Ontario.

Required Textbooks:
1) Vitt, L.J., and J.P. Caldwell. 2009. Herpetology: An Introductory Biology of Amphibians and Reptiles, 3rd edition. Academic Press, San Diego. 697 pp. ISBN: 978-0-12-374346-6

2) Conant, R., and J.T. Collins. 1998. A Field Guide to Reptiles and Amphibians: Eastern and Central North America. 3rd edition. Houghton Mifflin Company, Boston. 616 pp. ISBN 0-395-90452-8

3) Powell, R., J.T. Collins, and E.D. Hooper, Jr. 1998. A Key to Amphibians and Reptiles of the Continental United States and Canada. University Press of Kansas, Lawrence KS. 66049. 131 pp. ISBN 0-7006-0929-6

Other Required Materials: The lab Manual is available for purchase at the bookstore. Audio tapes and CDs of frog calls are available for loan from the technician. A small deposit is required and will be refunded upon return if the media is undamaged. Students should have their own dissecting kit, safety glasses and rubber gloves or may rent/purchase these from the Biology technicians. Proper attire (e.g. rubber boots) should be worn for field trips.

Optional Resource Materials:

Zug, G.R., L.J. Vitt, J.P. Caldwell. 2001. Herpetology: An Introductory Biology of Amphibians and Reptiles, 2nd edition. Academic Press, San Diego. 630 pp. ISBN 0-12-782622-X . *A used copy of the previous edition of the text will suffice.*

Pough, F.H., R.M. Andrews, J.E. Cadle, M.L. Crump, A.H. Savitsky, and K.D. Wells. 2004. Herpetology, 3nd edition. Prentice Hall, Upper Saddle River, NJ. 07458. 612 pp. ISBN 0-13-100849-8 *An alternative text to Vitt and Caldwell above.*

Harding, J.H. 1997. Amphibians and Reptiles of the Great Lakes Region. University of Michigan Press,

Ann Arbor. 378 pp. ISBN 0472066285. *A good field guide with detailed natural history information on species occurring in the Great Lakes Basin.*
MacCulloch, R.D. 2002. The ROM Field Guide to Amphibians and Reptiles of Ontario. McClelland & Stewart Ltd, Toronto. 168 pp. ISBN 0771076517. *A good compact fieldguide with excellent photographs covering Ontario species*.

Elliott, L. 1997. The Calls of Frogs and Toads. NatureSound Studio, Ithaca, NY <http://www.naturesound.com/frogs/frogs.html> *An excellent CD of North American frog calls accompanied by a booklet.*

Elliott, L., C. Gerhardt, and C. Davidson. 2009. The Frogs and Toads of North America. *A good guide to North American species with excellent photos, brief accounts, and it contains a CD of calls.*

Marking Scheme: Midterm 25%, Lab 35%, Final Exam 40%

Examination Dates: Midterm Friday. October 30th., Lab Exam: Monday November 30th.
Examination format - Combination of any or all of the following: fill in the blanks, true or false, multiple choice, definitions, short answers, essays, labeling, drawing.
Lab Mark - Consists of lab examination, quizzes, short assignments.

Reserve Material/Literature Assignment: The Paterson Library holdings in herpetology are somewhat limited and dated. However, we have added to the book collection over the past decade. The library subscribes to only a few electronic herpetological journals. Therefore, supplemental reading material in the form of primary literature will be provided for your use on reserve. Topics of papers will be chosen to complement or augment lecture topics. These papers will be held in a folder at the circulation desk of the library for loan/copying. Each student must provide evidence that they have read and comprehend at least five papers from the reserve collection. Alternatively, if a student has a special interest in herpetology, they may select other papers in herpetology in lieu of the reserve collection. A report consisting of a one page summary and review for each paper read must be handed in before the last lab in November. This report will not be used in calculating the final mark but must be satisfactorily completed in order for a final mark to be forwarded to the registrar's office. A grade of 'Incomplete' will be submitted if the report is not received or if it is unsatisfactory.

Herpetology on the World Wide Web: There are many websites dealing with various aspects of herpetology. As with any web-based sites the quality of information varies. Good information can generally be found on academic, government, official non-governmental organization, and herpetological society web pages. Here are a few useful resources....

<http://www.npwrc.usgs.gov/narcam/idguide/specieid.htm> U.S.G.S. amphibian site - identification, photos, & distribution of North American species.

<http://amphibiaweb.org/> Amphibia Web - U.C. Berkeley project offering information on all species of amphibians.

<http://www.open.ac.uk/daptf/> I.U.C.N. Declining Amphibian Population Task Force.

<http://www.reptile-database.org/> EMBL database on reptiles of the world.

<http://www.naturewatch.ca/cgi-bin/quiz/step1.asp> The Great Canadian Amphibian and Reptile Quiz - a good interactive test of your knowledge of identifying Canadian species by photographs or calls.

<http://www.carcnet.ca/> Canadian Amphibian and Reptile Conservation Network - Canada's working group website offer information on Canadian herpetological issues.

<http://www.mpm.edu/collect/vertzo/herp/atlas/welcome.html> Wisconsin Herpetological Webpage - an excellent site offering information on many species that also occur in Ontario. Links to state DNR herp pages.

<http://www.ssarherps.org/> The Society for the Study of Amphibians and Reptiles which publishes the *Journal of Herpetology* and *Herpetological Review*.

<http://www.herplit.com/herplit/> A searchable database of herpetological papers which includes many abstracts.

<http://nhic.mnr.gov.on.ca/MNR/nhic/herps/ohs.html> Ontario Herpetofaunal Summary Atlas - range maps of all Ontario species.

<http://www.naherpetology.org/> Centre for North American Herpetology - a good source of information and links.

Other Information: In this course we will be covering a lot of material. Although there are no specific prerequisites beyond first year biology, being a senior course, I assume that students understand basic biological, ecological, and evolutionary principles. Space may be limited so preference in registration may be given to senior biology majors or by special permission of the instructor. Maintaining good attendance is for your own benefit. Examination questions often come from poorly attended lectures. Noise or distractions will not be tolerated. With good attendance and study the student will leave this course with a good knowledge of herpetology and Ontario's herpetofauna.

Biology 4435 Herpetology - Tentative Schedule of Topics

Lecture

1. Introduction
2. Differences & Similarities Between Amphibians & Reptiles
3. Origin & Evolution of Tetrapoda: Amphibians
4. Origin & Evolution of Tetrapods: Reptiles
5. Phylogeny & Systematics
6. Classification of Extant Amphibians
7. Classification of Extant Amphibians
8. Classification of Extant Amphibians
9. Classification of Extant Reptiles
10. Classification of Extant Reptiles
11. Classification of Extant Reptiles
12. Survey of Ontario Amphibians

13. Survey of Ontario Amphibians
14. Survey of Ontario Amphibians
15. Survey of Ontario Reptiles
16. Survey of Ontario Reptiles
17. Survey of Ontario Reptiles
19. Temperature & Water Relations
20. Temperature & Water Relations
21. Energetics: Gas Exchange
22. Energetics: Metabolism & Performance
23. Reproduction & Genetics
24. Life Cycles & Life History
25. Feeding
26. Body Structure & Locomotion
27. Movements & Orientation
28. Communication
29. Ecology: Biotic & Abiotic Interactions
30. Ecology: Species Assemblages
31. Ecology: Spatial & Temporal Dynamics
32. Biogeography
33. Human Exploitation
34. Conservation: Amphibians
35. Conservation: Reptiles
36. T.B.A.

Lab

1. Introduction to Herpetology
2. Diversity of Amphibians
3. Diversity of Reptiles
4. Diversity of the Ontario Herpetofauna
5. Frog & Toad Calls
6. Structure of Anurans
7. Structure of Caudata
8. Structure of Serpents
9. Structure of Testudines
10. Field Methods and Equipment
11. Ecological Data Analysis
12. **Lab Exam (comprehensive)**