

Bio 3435G Animal Ecology

(revision 2 January 2014)

Instructor: Dr. Yolanda Morbey (ymorbey@uwo.ca; contact information posted on Owl)

TAs: information will be posted on Owl

Environmental variability is a problem faced by all organisms, and this course will explore the behavioural and physiological strategies used by individuals to cope with this variation. Thus, this course focuses on individual-based ecology. We will cover a variety of topics such as time and energy management in seasonal environments, habitat selection, foraging strategies, individual specialization, trophic polymorphisms, and physiological flexibility. Labs will integrate field-based and quantitative approaches in the study of individual variation in ecological settings. Animal Ecology is highly recommended for students doing a Specialization in Biology or Animal Behaviour and who have a strong background in ecology and evolution.

Lectures in NS 7: MW 1:30-2:30

Labs in CHB 380 during most weeks*:

M 8:30-11:30

M 2:30-5:30

T: 8:30-11:30

T: 2:30-5:30

*Computer labs will take place in HSB 13 during the weeks of 27 January, 3 March, and 17 March.

Important Dates

Week of January 13: labs start. The first lab will be short (1 hour).

Week of January 20: Goldenrod-Gall Fly System Lab I. Wear appropriate outdoor clothes and footwear!

Week of January 27: Computer Lab in HSB 13.

Week of February 3: **Assignment 1 (5%) due** in lab & Goldenrod-Gall Fly System Lab II. Wear appropriate outdoor clothes and footwear!

February 10: **Assignment 2 (5%) due** in class.

Week of February 10: No lab. Makeup labs during lab times.

Week of February 17: No lab (Reading Week).

February 24: **midterm** in class.

Week of February 24: Writing Workshop in lab.

Week of Mar 3: Computer Lab in HSB 13.

Week of Mar 10: **pre-proposal due**; **makeup midterm** during lab times.

Week of Mar 17: Computer Lab in HSB 13.

Week of Mar 24: **Assignment 3 (10%) due** in lab. Writing Workshop in lab.

Week of Mar 31: Writing Workshop in lab.

April 7: **research proposal due**.

Required readings

Booth, W.C., G.G. Colomb, and J.M. Williams. 2008. The craft of research. 3rd edn. The University of Chicago Press, Chicago, IL. (available in Bookstore)

Other readings as assigned in class (available in Owl).

Grading scheme

Midterm: 15%

Pre-proposal: 10%

Research Proposal: 20%

Lab assignments: 20% (3 assignments worth 5%, 5%, and 10%)

Cumulative final exam: 35%

Missed requirements: there will be 1 midterm makeup; if this makeup is missed, the final exam will be worth 50%. There will be one makeup lab time; if this makeup is missed, grades will be reallocated to the other lab assignments.

Research proposal and pre-proposal

Details will be provided in class. In short, you will write a 2500 word research proposal to study a major concept within the field of individual-based ecology. A one-page pre-proposal will be due March 10. The full proposal will be due in class on April 7. Choose your topic from the following list:

Optimal foraging theory
 Marginal value theorem
 Ideal free distribution
 Agent-based (or individual-based) models
 Bioenergetic models
 Trophic polymorphisms
 Ontogenetic diet shifts
 Diel vertical migration
 Individual heterogeneity
 Carry-over effects
 Partial migration
 Orientation and navigation
 Physiological flexibility – digestive system
 Physiological flexibility – brain
 Sexual differences in migration

Labs

The labs will focus on three main activities: collection of data, analysis and modeling, and writing. Field-based labs will use the goldenrod-gall fly system. Computer-based labs will focus on the use of R to analyze data and the use of NetLogo to build an individual-based model. Other lab times will be used for writing workshops involving peer review of draft versions of your pre-proposal or research proposal.

Lecture topics

You will be responsible for taking notes during class. Skeleton Powerpoint slides will be posted in advance (available on the day of lecture). Examples of topics I will cover in lecture:

The physical environment – review of climate, seasons, aquatic biomes, terrestrial biomes, global climate change

The niche concept - resource availability & hazards

Fundamental ecological tradeoffs –growth vs. mortality, current vs. future reproductive success

Individual variation – sex, age, body size, allometry, growth, physiology

Coping with environmental variability – foraging decisions

Coping with environmental variability – habitat selection

Coping with environmental variability – physiological decisions

Trophic polymorphisms and individual heterogeneity

Diel and seasonal movements

Individual-based models

Modelling in NetLogo

Individual-based models – shorebirds as a case study

Other useful sources of information

Barnard, C. 2004. Animal behaviour: mechanism, development, function and evolution.

Pearson/Prentice Hall, Toronto, ON.

Kingsolver, R.W. 2006. Ecology of campus: lab manual. Pearson Education, Toronto, ON.

Nordell, S.E., and T.J. Valone. 2014. Animal behavior: concepts, methods, and applications. Oxford University Press, New York.

Railsback, S.F., and V. Grimm. 2011. Agent-based and individual-based modeling: a practical introduction. Princeton University Press, Princeton, NJ.

Smith, T.M., R.L. Smith, and I. Waters. 2014. Elements of ecology: Canadian edition. Pearson Education, Toronto, ON.

Conduct

I expect professional conduct from all students. This includes doing your own work, and not disrupting others during class. I strongly recommend that you take notes by hand. For now, I will allow you to use your computer for note-taking only. No e-mailing, texting, social networking, checking websites (unless I request you to), watching videos, etc. This activity is unprofessional because it is distracting to others in the class who can see your screen. If distracting activity is reported to me, I will need to ban computers.

In e-mails, please put “Bio 3435” in the subject line and use your UWO account. To ensure a speedy response, be considerate and professional in your e-mails; harassment will not be tolerated. Begin your e-mail with a salutation (“Dear Dr. Morbey”) and end with an identifier of who you are (“Jane”).

Remember that these are permanent records of your interactions with your professors and TAs. E-mails will be answered on a first come, first served basis and every attempt will be made to respond within 3 working days. Do not expect a response outside of regular working hours, on weekends or holidays, or within 3 days of an exam.

Academic offences

“Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.”

Examples of scholastic offences include copying answers, plagiarism, and submission of your work for credit in multiple classes. Cheating- and plagiarism-checking software will be used to check for unusual coincidences in answers:

“Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.”

“All required papers will be subject to submission for textual similarity review to the commercial plagiarism detection software (Turnitin) under license to the University for the detection of plagiarism. All papers submitted will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com”

All cases of academic misconduct will be reported. The penalty for an academic offence will be determined on a case by case basis. Academic offences come with the maximum penalty of failing the course and a permanent record in your transcript.

Accommodation

If you are unable to meet a course requirement because of medical or personal reasons or a heavy exam load (i.e., 3 exams in 23 hours), you must obtain valid medical or other documentation and provide it to an Academic Counselor (located in the Dean’s office of your faculty) as soon as possible. You also must inform me within 48 hours. Without approval from an Academic Counselor, you will receive 0% for the missed requirement. In the event of a missed final exam, you will require a “Recommendation of Special Examination” form from the Dean’s office. For further information see:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf

For a missed midterm, there will be one chance at a make-up exam at a pre-scheduled time. If the make-up exam is missed for a valid reason, the 15% will be re-allocated to the final exam. For a missed final exam, there will be one chance at a make-up exam to be scheduled in January.

For missing the deadline for the research proposal because of a medical or other serious excuse (with Academic Counselor’s approval), an appropriate extension will be granted which will depend on the circumstances and extent of the problem.

UWO Accessibility Statement

Please contact me if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

Appeals

Grades are earned and, in the interest of fairness, additional points will not be granted because you need a certain GPA or because you expected better performance. I will round grades to the nearest integer (79.5% will become 80%; 79.4% will become 79%). I will let you know in class when graded

exams and assignments will be available for viewing. See UWO's policies on academic appeal for further information.

