Course Description, IBIO*6020 – Advances in Evolutionary Biology – Evolutionary Perspectives on Ecological Interactions, Winter 2017
Department of Integrative Biology

Note: This course description is tentative, some portions may be revised prior to the beginning of the course, but the basic objectives and learning outcomes will not change.

Course Instructor

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Course Description in the University Calendar

This modular course reviews books and/or other publications in the field of evolutionary biology, providing knowledge of progress in this area of biology. Topics may include epigenetics, phylogenetics, developmental basis of evolutionary change, and molecular evolution. The course includes lectures and seminars in which the students participate. Offered annually.

Recommended pre-requisites

Basic familiarity with experimental design and general linear models (i.e., regression, ANOVA), and some familiarity with the R environment for statistical computing. Enthusiasm and excitement about your topic of study.

Meeting times

Weekly meeting time and location to be announced prior to the first week of classes, initial class meeting will be 2-3 hours long.

Course objectives and learning outcomes

This semester, we will explore how evolutionary mechanisms can help us understand ecological interactions. To do this, each student will synthesize information on a particular evolutionary or ecological (or some combination of both) topic through a meta-analysis (i.e., an analysis of previously published analyses). This type of synthesis allows us to use the total weight of the evidence to determine how much support there is for any particular hypothesis.

The course will explore how an evolutionary perspective helps us understand ecological interactions, and so students will be expected to think about evolutionary perspectives either explicitly or implicitly. For example, an explicit perspective might involve synthesizing observations of natural selection on a particular trait in order to test a particular hypothesis about adaptation. In implicit evolutionary perspective might involve using phylogenetic information to correct for the statistical non-independence caused by shared ancestry in the analysis of a specific ecological or evolutionary interaction.

Each student will choose their own hypothesis for meta-analysis. It is expected that students will work on hypotheses that are closely related to their thesis topics, as the meta-analysis exercise is meant to assist with development of the students own research. For the

purposes of exploration, ecological interactions are defined broadly, including abiotic and biotic interactions, and processes taking place at the individual (i.e., physiological), population, community and ecosystem levels. Evolutionary questions can also be asked at any level and hypotheses can be explored in any biological system.

During the first class meeting, we'll go over the basic theory of meta-analysis, and explore how phylogenetic information can be used to account for the effects of shared ancestry when evaluating ecological or evolutionary hypotheses. Following that, students will select topics and submit a short proposal justifying their topic and hypothesis. Other class meetings will take place individually or in small groups during scheduled class time to assist with topic development and data analysis. Towards the end of the semester, the class will meet for a symposium to present talks on the results of their meta-analysis. A final scientific paper describing the results of the meta-analysis will be due at the end of the semester.

Course Requirements and grading

Your grade for the course will be based on the following:

1. A short proposal that develops your hypothesis and provides evidence that sufficient literature has been published to enable meta-analysis (10%).
2. A mid-semester update on progress, including any preliminary analyses (10%).
3. Oral presentation of research findings (20%).
4. Final scientific paper describing results of the meta-analysis (60%).

Course Resources

Readings to help with understanding how to do meta-analyses and how to incorporate phylogenetic information into statistical analyses will be provided.

Course and University Policies

The Academic Calendar is the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs: http://www.uoguelph.ca/registrar/calendars/index.cfm?index

Policy on Late Submissions

All items are due on the dates shown by the specified time. Late submissions will not be accepted, unless academic consideration has been granted.

Policy on the use of technology in the classroom

You are welcome to bring a laptop to lectures, but use it in a manner that will not disturb those around you. Please do not use your laptop for anything other than activities related to the course. Turn your cell phones off, or put them on silent, and do not text-message during class.

When you are unable to meet a course requirement

Students who miss exams or assignments will receive a grade of zero for that work (missed final exams automatically result in consideration by academic review). The grade will remain zero until the student is granted Academic Consideration from their program counselor

for documented medical or other legitimate, compassionate reasons for missing the assigned work. If you are unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, student ID number, and e-mail contact. If Academic Consideration is granted, the student will be permitted to submit the assigned work. No changes to the evaluation scheme will be made without written consent of all students in the course and approval of instructor. Unofficial deferments of any scheduled evaluation will not be granted.

Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments. You may be asked to resubmit work at any time.

Drop Date

The last date to drop one-semester courses, without academic penalty, for Winter 2017 is Friday, March 10, 2017. For regulations and procedures for Dropping Courses, see the Graduate Calendar.

E-mail Communication

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly. E-mail is the official route of communication between the University and its students. All emails to course instructors must be sent from your <uoguelph.ca> e-mail account.

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Academic misconduct and plagiarism

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study. Faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

The University policy on academic integrity, http://www.academicintegrity.uoguelph.ca/ defines plagiarism as "…stealing and lying about it afterwards. It means using others' work and misrepresenting that work as your own without giving the author credit". Field work and data analysis will be done in groups and we therefore expect that many of you will use the same resources, share ideas and discuss how to interpret results. Doing shared work will help you learn, but you must not engage in plagiarism when submitting assignments. If we detect

plagiarism, we will be forced to assign a grade of zero for the item and take other disciplinary action under university guidelines.

Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse your responsibility to verify the academic integrity of work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor. If in doubt - ASK!

Plagiarism detection software

In this course, we will be using **Turnitin**, integrated with the CourseLink Dropbox tool, to detect possible plagiarism, unauthorized collaboration or copying as part of the ongoing efforts to maintain academic integrity at the University of Guelph.

All submitted assignments will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Usage Policy posted on the Turnitin.com site.

A major benefit of using Turnitin is that students will be able to educate and empower themselves in preventing academic misconduct. In this course, you may screen your own assignments through Turnitin as many times as you wish before the due date. You will be able to see reports that show you exactly where you have properly and improperly referenced the outside sources and materials in your assignment.

Course Evaluation information (from the CCS website)

CCS now provides the U of G Online Course Evaluation System in a secure, online environment. End of semester course and instructor evaluations provide students the opportunity to have their comments and opinions form part of the information used by Promotion and Tenure Committees in evaluating the faculty member's contributions in the area of teaching. Course evaluations are now conducted through this web site: https://courseeval.uoguelph.ca/CEVAL_LOGIN.php. Login with your central email account login ID and password: Occasionally course evaluations are conducted in class. Instructors do NOT receive evaluations until the end of exam period. Furthermore, evaluations are anonymous, unless you specifically indicate you want to acknowledge your comments

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Student Accessibility Services (SAS) as soon as possible. For more information, contact SAS at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: http://www.csd.uoguelph.ca/csd/

Campus Resources

If you are struggling to succeed academically

There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist. http://www.learningcommons.uoguelph.ca/

If you are struggling with personal or health issues:

Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance. https://www.uoguelph.ca/counselling/. Student Health Services is located on campus and is available to provide medical attention. https://www.uoguelph.ca/studenthealthservices/clinic For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations. http://www.uoguelph.ca/~ksomers/

If you have a documented disability or think you may have a disability:

Student Accessibility Services (SAS) can provide services and support for students with a documented learning or physical disability. They can also provide information about how to be tested for a learning disability. For more information, including how to register with the centre please see: https://www.uoguelph.ca/csd/