

**University of Guelph
College of Biological Science**

Integrative Biology

COURSE OUTLINE

IBIO*6000 Advances in Ecology and Behaviour [0.50]

Winter 2017

Course description

This is a modular course in which several faculty lecture and/or lead discussion groups in tutorials about advances in their broad areas, or related areas, of ecology and behaviour. Topics may include animal communication, optimal foraging, life-history evolution, mating systems, population dynamics, niche theory and food-web dynamics. The course includes lectures and seminars in which the students participate. Offered annually.

Based on the students' interests, they will be divided in groups and each group will select one seminal historical paper that outlines a statistical method or framework in their area of research. They will then track how this method has changed through time, the (statistical) controversies around this method, the advantages and disadvantages of competing methods, the statistical limitations and assumptions, the more powerful new methods etc. They will summarize this history and present it to the rest of the class by leading a class discussion. During the semester, they will also implement these different methods using their own research data in the R environment.

Teaching team

Instructor: Karl Cottenie (cottenie@uoguelph.ca)

Course schedule

TBA

Learning goals and rationale

At the end of this course, the successful graduate student will be able to work collaboratively and efficiently with peers and instructor to achieve the following from the perspective of an Integrative Biology graduate student:

1. summarize and present the history and main changes through time in a current statistical method/framework.
2. reflect on the importance of statistical methods in their own graduate research, both by leading group discussions, by self-reflecting, and by implementing them with their own data.
3. set up an efficient R working environment using a combination of R and R Studio.
4. apply the principles of reproducible data analysis to their own research project.

Course Resources

The information available to the students consists of a mix of links to web pages, primary literature articles, and R books from the instructor's library.

Course Content

Week	Topics Covered in Lecture	Lab/Seminar Topic
Weeks 1 and 2	What is statistics?	Setting up the R environment
Weeks 3 and 4	TBD	Data import and protocol for data exploration
Weeks 5 and 6	TBD	Concepts of reproducible research
Weeks 7 and 8	TBD	Data analysis
Weeks 9 and 10	TBD	Data analysis
Weeks 11 and 12	TBD	graphics in R

Methods of Assessment

Assessment				
Form of Assessment	Weight of Assessment	Due Date of Assessment	Course Content /Activity	Learning Outcome Addressed
Presenting a statistical method	15%	once in the semester	Lecture, adjusted by peer evaluation	1
Leading a group discussion	15%	once in the semester	Lecture, adjusted by peer evaluation	2
Participating in group discussions/ data analysis goals	10%	weekly	Lecture, individual (drop the lowest 2 scores)	2, 3, 4
Reflecting on statistical method improvements	15%	2017-04-02	Lecture, individual	2
Presenting your R environment	10%	2nd half of the semester, in class	non-lecture, individual	3

Presenting your reproducible data analysis	35%	2017-04-02	non-lecture, individual	4
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Important Dates

- 2017-01-05 Class schedule starts
- 2017-02-16 Winter break begins - No classes scheduled this week
- 2017-02-20 Winter break ends
- 2017-03-06 40th class day - Last day to drop courses
- 2017-04-02 Classes conclude - reflection and data analysis due

Course and University Policies

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact, and be prepared to provide supporting documentation. See the undergraduate calendar for information on regulations and procedures for Academic Consideration:

Please note: 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 students from responsibility for verifying the academic integrity of their 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.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

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.

Drop Date

The last date to drop one-semester courses, without academic penalty, is the 40 class day. To confirm the actual date please see the schedule of dates in the Undergraduate Calendar. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

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.

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.

Grading

Indicate all course policies regarding in-semester tests and assignment submissions, including time and place for submission of assignments and explicit penalties for late submissions.

Campus Resources

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>

If you are concerned about any aspect of your academic program:

- make an appointment with a program counsellor in your degree program.
<http://www.bsc.uoguelph.ca/index.shtml> or
<https://www.uoguelph.ca/uaic/programcounsellors>

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:

- The Centre for Students with Disabilities (CSD) 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/>