

Department of Biology Course Outline

SC/BIOL 3171 3.00 Population Ecology
Fall 2020

This course includes only online and off-campus independent activities
There are no in-person interactions or activities on campus
This course is presented in Toronto time (Eastern Time Zone)

Course Description

Using lectures and labs, this course explores the dynamic and changing field of population ecology, focusing primarily on demographic traits of populations and patterns of population growth and change. Topics to be investigated include temporal and spatial dynamics of populations; constraints on the distributions of populations; patterns of population growth and regulation; density dependence and density independence; vital statistics and life history biology; age and sex structure of populations; meta-populations and dispersal; and the genetic attributes of populations. Labs provide experiential exposure to several of the topics developed in lectures. Two lecture hours per week, three laboratory hours in roughly alternate weeks. One term. Three credits.

Course Format, Hardware and Software Requirements

All elements of the course will be conducted either online or as off-campus independent activities. There are no on-campus activities. Students must have a laptop or desktop computer with a camera and microphone. Access to reliable high-speed internet is required.

- Some aspects of the course will involve **Zoom** video conferencing software.
- Some labs involve SimUText software made by the SimBio company (simbio.com). Please visit <https://simutext.zendesk.com/hc/en-us/categories/200170134-Check-Your-Tech-> to confirm that the SimUText application will work on your computer, and/or to explore your options if there is a problem.
 - If you have a Chromebook please contact the SimUText support team (below) to determine if your system supports SimUText.
 - For SimUText technical support, including questions about system requirements, please consult the support team at <https://simutext.zendesk.com>
- Microsoft Office, including Word, Excel and Power Point, are strongly recommended.
- The final exam may be conducted with the aid of an online proctoring service.
- See Schedule information below for details regarding the format of lectures and tutorials

Prerequisites

SC/BIOL 2060 3.00 and SC/BIOL 2050 4.00. Course Credit Exclusion: SC/BIOL 3170 3.00.

Course Instructors and Contact Information

Instructor / Course Director: Dr Mark Vicari, Room 151A Farquharson Building

- **Email:** mvicari@yorku.ca. Please include BIOL 3171 in the subject line.
- **Virtual Office Hours:** Monday and Wednesday, 12:00-1:00

Teaching Assistants:

1. Melissa Galicia, mgalicia@yorku.ca
2. Taylor Kerekes, tk1994@my.yorku.ca

Lecture schedule

Lectures will be pre-recorded (asynchronous) and posted on the course website on Tuesday and Thursday mornings at approximately 10:30 a.m.. While it is not necessary to virtually attend lectures during the 10:30-11:30 time slot, please note that course announcements (due date reminders, information about tests, etc.) are made in the first few slides of most lectures. It is the student's responsibility to check these announcements on a regular basis. Most announcements will not be emailed or posted elsewhere on the website.

Lab Schedule

There are five independent lab projects.

- Labs 1, 4 and 5 are SimBio (SimUText) computer exercises.
- Labs 2 and 3 are field projects requiring data collection from a local greenspace. Class data to be shared for individual lab writeups.

	Available from:	Data submission due:	Final assignment due:
Lab 1: SimBio #1	Wed. Sept. 16	NA	Fri Sept 25, 11:59 p.m.
Lab 2: snail mark-recapture	Wed. Sept. 23	Fri. Oct 9, 5:00 p.m.	Fri. Oct. 23, 11:59 p.m.
Lab 3: goldenrod galls	Wed. Oct. 21	Fri. Oct 30, 5:00 p.m.	Fri. Nov. 13, 11:59 p.m.
Lab 4: SimBio #2	Wed. Nov. 11	NA	Fri. Nov. 20, 11:59 p.m.
Lab 5: SimBio #3	Wed. Nov. 25	NA	Fri. Dec. 4, 11:59 p.m.

Evaluation

Tests – 34%	Test 1: 17% Test 2: 17%	Monday Oct 19, online, 10:30-11:30 a.m. Monday Nov 16, online, 10:30-11:30 a.m. The final exam grade will automatically replace the lowest test grade IF the final exam grade is higher
Labs – 33%	Lab 1 (SimBio): 5% Lab 2 (Snail mark-recapture): 10% Lab 3 (Goldenrod galls): 10% Lab 4 (SimBio): 4% Lab 5 (SimBio): 4%	Submission due Sept 25, 11:59 p.m. Lab report due to Turnitin Oct 23, 11:59 p.m. Lab report due to Turnitin Nov 13, 11:59 p.m. Workbook due to Turnitin Nov 20, 11:59 p.m. Workbook due to Turnitin Dec. 3, 11:59 p.m. A penalty of 10% per calendar day will apply to material handed in late.
Final Exam – 33%	Cumulative	Online during the December examination period, Dec. 9-23; exact date and time to be announced by the Registrar

Important Dates

Test 1: Monday Oct. 19, online at 10:30 a.m.

Test 2: Monday Nov. 16, online at 10:30 a.m.

Last date to drop course without receiving a withdrawal note on your transcript: **Friday Nov 6**

Final Exam: to be held online during the fall examination period, **Dec. 9-23**. Exact date and time TBA by the registrar's office

NOTE: for additional important dates such as holidays, refer to the "Important Dates" section of the Registrar's Website at <https://registrar.yorku.ca/enrol/dates>

Resources

Textbook: L.L. Rockwood, 2015. *Introduction to Population Ecology*, 2nd edition. Wiley. Available in hard or electronic copy from the York bookstore.

Lab materials: There is no formal lab manual.

- Handouts for some labs will be available on the course website.
- Students must purchase and download three SimUText online labs (approx. \$22 US). Purchase must be made directly from SimBio using a credit card (details TBA).
- Lab kits containing materials for labs 2 and 3. These will be mailed to students (no purchase necessary). Students must provide some additional lab materials including scissors, a ruler and a dissection kit.

Website: The course will be managed through an eClass site. Please log in at: <https://eclass.yorku.ca>

Learning Outcomes

Upon successful completion of this course, students will be able to:

Area 1. Fundamental Understanding

Use terminology appropriate to the field of population ecology; Distinguish different models of growth; Recognize the main parameters and major formulae for describing population growth; Derive the formula and employ the formula for mark-recapture analysis; Distinguish between r- and K-selected traits and connect them to life history strategies and growth patterns; Demonstrate a knowledge of the effects of competition, predation, parasitism and mutualism on population dynamics; Apply the principles of population ecology to issues of conservation; Interpret population patterns in terms of evolutionary selective forces and evolutionary mechanisms applicable to small populations; Use natural history knowledge to understand population constraints

Area 2. Critical Thinking Skills

Employ case studies as exemplars of biological concepts; Draw generalized concepts from the results of particular scientific studies or experiments (inductive reasoning); Assess the effectiveness of experimental designs in answering questions about population dynamics; Predict population outcomes of hypothetical changes to the environments of natural populations

Area 3. Problem Solving Skills

Apply principles from the scientific literature to new fact situations; Employ diverse field methods for collecting field data that is sought to address particular biological questions.

Area 4. Effective Communication

On tests and exams, clearly construct written answers to questions and clearly construct written explanations or arguments for scenarios or fact situations

Course Content

Population Ecology is the study of population dynamics of species, and it focuses on regulation, life history biology, patterns of abundance and conservation and extinction. Life history traits and evolutionary processes will be examined as key factors influencing population dynamics.

We will consider: Life Histories and Demographic Traits, Fitness, Population Structure, Population Growth and Regulation, Population Dynamics in space and time, Metapopulation Dynamics, Consumption, Competition, Antagonistic and Mutualistic Co-evolution, Behavioural Ecology and Territoriality. Sub-themes may include Population Outbreaks, Dispersal, Sinks and Traps.

Experiential Education and E-Learning

Labs 2 and 3: performing independent field work; collecting, analyzing and interpreting original data
Labs 1, 4 and 5: exploring concepts in ecology using interactive computer simulations.

Course Policies

Email etiquette

- **Subject line:** please begin with “BIOL 3171” followed by a brief, but reasonably detailed, indication of the subject of your email (e.g., “question about lecture 3”)
- **Body of the email:** remember to include your name and student number at the end of every email.
- **Response time:** please allow 2 working days.

Online Tests/Exams – general:

- Tests will be “open book”; you may consult the course textbook, power point slides, your own lecture notes and the eClass website for the course during a test.
- Tests are strictly individual exercises. Communication of any kind with any person other than the course director (to ask questions via email) during a test is prohibited and will be treated as academic misconduct.
- Consulting websites other than the course website during a test is prohibited and will be treated as academic misconduct.
- The final exam may be conducted with the aid of an online proctoring service, and may not follow the same format and/or procedures (details TBA)

Missed test policy:

- There are no makeup tests.
- If you miss a test, the grade for the missed test will be the final exam grade. No documentation is required to transfer the weight of the missed test to the final exam; the transfer will be automatic.
- You must write at least one test to be eligible to write the final exam.
- If you access or view a test in any way it will be considered completed. The grade of the test (even if you do not complete any part of it and the grade is zero) will apply to your final grade.

Missed exam policy

- If you miss the final examination please complete and submit a Deferred Standing Agreement (DSA) form available from the Registrar’s website to mvicari@yorku.ca together with a letter outlining the reason for missing the exam, within one week of the missed exam.
- An oral exam will be arranged for those who are approved to write a deferred exam.

Penalty for late submission of assignments: 10% per calendar day

Religious observance days

Should the dates for tests or exams pose a conflict with a religious observance day for your particular religion, you must complete an **Examination Accommodation Agreement Form**, available at

<https://secure.students.yorku.ca/pdf/religious-accommodation-agreement-final-examinations.pdf>

and submit it to the instructor **at least 3 weeks before the date of the test.**

Requests for grade changes will be considered only in the event of a recording or marking error. ALL OTHER requests to “bump” grades to the next highest level will be denied.

University Policies

Academic Honesty and Integrity

York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty (<http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>). The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards.

Numerous students in Faculty of Science courses have been charged with academic misconduct when materials they uploaded to third party repository sites (e.g. Course Hero, One Class, etc.) were taken and used by unknown students in later offerings of the course. The Faculty's Committee on Examinations and Academic Standards (CEAS) found in these cases that the burden of proof in a charge of aiding and abetting had been met, since the uploading students had been found in all cases to be willfully blind to the reasonable likelihood of supporting plagiarism in this manner. Accordingly, to avoid this risk, students are urged not to upload their work to these sites. Whenever a student submits work obtained through Course Hero or One Class, the submitting student will be charged with plagiarism and the uploading student will be charged with aiding and abetting.

Note also that exams, tests, and other assignments are the copyrighted works of the professor assigning them, whether copyright is overtly claimed or not (i.e. whether the © is used or not). Scanning these documents constitutes copying, which is a breach of Canadian copyright law, and the breach is aggravated when scans are shared or uploaded to third party repository sites.

There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve students' research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website at - http://www.yorku.ca/spark/academic_integrity/index.html

Access/Disability

York University is committed to principles of respect, inclusion and equality of all persons with disabilities across campus. The University provides services for students with disabilities (including physical, medical, learning and psychiatric disabilities) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University.

Students in need of these services are asked to register with disability services as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with disabilities services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs.

Additional information is available at the following websites:

Counselling & Disability Services - <http://cds.info.yorku.ca/>

Counselling & Disability Services at Glendon –

<http://www.glendon.yorku.ca/counselling/personal-counselling/what-is-counselling/>

York Accessibility Hub - <http://accessibilityhub.info.yorku.ca/>

Ethics Review Process

York students are subject to the York University *Policy for the Ethics Review Process for Research Involving Human Participants*. In particular, students proposing to undertake research involving human participants (e.g., interviewing the director of a company or government agency, having students complete a questionnaire, etc.) are required to submit an *Application for Ethical Approval of Research Involving Human Participants* at least one month before you plan to begin the research. If you are in doubt as to whether this requirement applies to you, contact your Course Director immediately.

Religious Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community, and making accommodations for observances of special significance to adherents. Should any of the dates specified in this syllabus for an in-class test or examination pose such a conflict for you, contact the Course Director within the first three weeks of class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the Course director immediately. Please note that to arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students

must complete an Examination Accommodation Form, which can be obtained from Student Client Services, Student Services Centre or online (see URL under Course Policies, above)

Student Conduct in Academic Situations

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and procedures governing disruptive and/or harassing behaviour by students in academic situations is available at - <http://secretariat-policies.info.yorku.ca/policies/disruptive-andor-harassing-behaviour-in-academic-situations-senate-policy/>