

## Department of Biology Course Outline

# SC/BIOL/ENVB 2080 3.0: Ecology in Practice – Research Fundamentals in Ecology and Evolution

**Course Instructor:** Dr. Mark Vicari

**How to address me:** Prof/Dr Vicari

**Personal Pronouns:** he/him/his

**Email:** [b2080@yorku.ca](mailto:b2080@yorku.ca)

Note: If you have a question or would like to talk with me, you can send an email, or visit me during office hours.

**Office Hours:** Wed & Fri, 12:30-1:30 via Zoom:  
<https://yorku.zoom.us/j/96716949056>

For in-person office hours please email [b2080@yorku.ca](mailto:b2080@yorku.ca) to make an appointment.

**Office Location:** Farquharson 254.

**Prerequisites:** One of the following: (1) SC/BIOL 1000 3.03 and SC/BIOL 1001 3.0; or (2) SC/ISCI 1101 3.0 and SC/ISCI 1102 3.0; or (3) SC/ISCI 1110 6.0.

**Course Format:** This course has 6 lab contact hours per week (i.e. two 3-hour practical sessions in a lab or field setting per week) and 1 lecture hour per week. Most lab sessions will run in person and in-person attendance is required. Some labs will take place outdoors. The lectures will be online and asynchronous (i.e., recordings to be watched on your own time each week).

**Laboratory location:** Lumbers Bldg (LUM) 118

### Laboratory Times:

Lab section 01: Wed & Fri 14:30-17:30  
 Lab section 02: Wed & Fri 10:00-13:00  
 Lab section 03: Tue & Thu 14:30-17:30  
 Lab section 04: Tue & Thu 10:00-13:00

### Study Spaces on Campus:

<https://currentstudents.yorku.ca/study-spaces>

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### Email etiquette:

Please remember to exercise email etiquette and be professional in your correspondence:

- Use your @my.yorku.ca email address - email from other sources may be filtered out.
- Please include your name and student ID in your email text, and sign with the name you would like us to use when addressing you (and your preferred pronouns, if you are comfortable with that)
- Please include a brief indication of the topic in the subject line, e.g., “Question about lab 2”

## Land Acknowledgement

York University recognizes that many Indigenous Nations have longstanding relationships with the territories upon which York University campuses are located that precede the establishment of York University. York University acknowledges its presence on the traditional territory of many Indigenous Nations. The area known as Tkaronto has been caretaken by the Anishinabek Nation, the Haudenosaunee Confederacy, and the Huron-Wendat. It is now home to many First Nation, Inuit, and Métis communities. We acknowledge the current treaty holders, the Mississaugas of the Credit First Nation. This territory is subject of the Dish with One Spoon Wampum Belt Covenant, an agreement to peaceably share and care for the Great Lakes region.

## Welcome to BIOL 2080!

This course provides you with the opportunity to develop practical research skills that are highly valued by employers in the field of ecology. When developing this course, several professionals working for non-profit organizations and government agencies, in academic settings and in environmental consulting, were interviewed to determine what those skills are. You will explore and evaluate a broad range of ecological research methods and gain practical research experience applying select techniques in the field and/or laboratory. Assessments will include a range of different ways of communicating your findings (from presentations, to blogs, to lab reports), as well as quizzes, a final exam, etc. There will be lots of outdoor time and teamwork for a fun and exciting atmosphere in which to gain these skills.

***A few things to keep in mind:*** This is a practical course which means that active involvement is key and in-person attendance for the labs is required. Most labs involve collaborative work in teams so please be prepared to work with others. Being able to communicate and work with others is an important skill that is very much sought-after by employers. Working collaboratively is an official learning outcome for this course. The course is also a major time commitment (6 hours of lab and up to 1 hour of lecture time each week, plus extra time to prepare for the labs, work independently, analyze data and complete assignments/lab reports), so please plan your time commitments accordingly.

### Course Calendar Description

This course focuses on experiential learning in field and laboratory settings to help students acquire practical research skills in ecology, including applied aspects of evolutionary biology. It introduces students to a range of methods - from traditional approaches to modern tools and technologies - to address ecological and related evolutionary questions. Students work collaboratively to design and conduct research projects, test hypotheses, analyze and interpret data, and communicate scientific

findings to different audiences. Prerequisites: One of the following: (1) SC/BIOL 1000 3.03 and SC/BIOL 1001 3.0; or (2) SC/ISCI 1101 3.0 and SC/ISCI 1102 3.0; or (3) SC/ISCI 1110 6.0.

## **Course level learning objectives**

### **Upon successful completion of this course, students should be able to:**

1. Explain the concept of biodiversity, how it is estimated, the factors influencing species abundances and distributions, and why these matter in a conservation context.
2. Describe how ecosystems function, the roles and interactions that species have within them, and how they can change over time.
3. Apply the process of observation and scientific inquiry to ecological problems, including hypothesis testing, data collection, analysis, visualization, interpretation, and reporting.
4. Critically evaluate different survey, monitoring and quantification methods and design an ecological survey and monitoring project.
5. Carry out observational studies or experiments designed in collaboration with others and use appropriate tools such as instruments and apps in field and laboratory settings.
6. Effectively communicate scientific concepts and findings to different audiences using a variety of methods.
7. Demonstrate critical thinking and problem-solving skills, including troubleshooting, in field and laboratory settings.
8. Critically assess and discuss relevant scientific articles in the context of their own studies or experiments.
9. Contribute to community science (formerly 'citizen science') initiatives.

### **Skills development:**

1. Critical thinking and scientific literacy.
2. Design of surveys, observational studies, and experiments.
3. Use of instruments, apps and other tools in field and laboratory settings.
4. Basic statistics and graphical presentation in the context of ecological data.
5. Species identification and surveying.
6. Working collaboratively in teams.
7. Introduction to short and long-term monitoring of populations and communities, including use of devices and techniques commonly employed by governmental agencies, NGOs and consulting companies.
8. Communication through a range of different media which may include podcasts, blogs, scientific reports, poster presentations.
9. Carry out biological laboratory and data-collection activities, in-person, with safety and reliability in a laboratory or field setting.

## Inclusive teaching statement

As your instructor, I am committed to fostering an environment for learning that is inclusive for everyone regardless of gender identity, gender expression, sex, sexual orientation, race, ethnicity, ability, age, class, etc. All students in the class, the instructor, and any guests should be treated with respect during all interactions. It is my hope that our class will support diversity of experience, thought, and perspective. Please feel free to contact me via email or in person to let me know about any experiences you have had related to this class that have made you feel uncomfortable. I will continually strive to create inclusive learning environments and would therefore appreciate your support and feedback.

## Community Guidelines

The following values are fundamental to academic integrity and are adapted from the International Center for Academic Integrity\*. In our course, we will seek to behave with these values in mind.

	As students, we will...	As your instructor or TA, we will...
<b>Honesty</b>	<ul style="list-style-type: none"> <li>Honestly demonstrate our knowledge and abilities on assignments and exams</li> <li>Communicate openly without using deception, including citing appropriate sources</li> </ul>	<ul style="list-style-type: none"> <li>Provide honest feedback on your demonstration of knowledge and abilities on assignments and exams</li> <li>Communicate openly and honestly about the expectations and standards of the course via the course outline, and with respect to assignments and exams</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Complete assignments on time and in full preparation for class</li> <li>Be physically and mentally present in class, participate fully and contribute to team learning and activities</li> </ul>	<ul style="list-style-type: none"> <li>Provide timely feedback on your assignments and exams</li> <li>Create relevant assessments and class activities</li> </ul>
<b>Respect</b>	<ul style="list-style-type: none"> <li>Speak openly with one another, while respecting diverse viewpoints and perspectives</li> <li>Provide sufficient space for others to voice their ideas</li> </ul>	<ul style="list-style-type: none"> <li>Respect your perspectives even while we challenge you to think more deeply and critically</li> <li>Help facilitate respectful exchange of ideas</li> </ul>
<b>Fairness</b>	<ul style="list-style-type: none"> <li>Contribute fully and equally to collaborative work, so that we are not freeloading off others</li> <li>Not seek unfair advantage over fellow students in the course</li> </ul>	<ul style="list-style-type: none"> <li>Create fair assignments and exams, and grade them in a fair, and timely manner</li> <li>Treat all students equitably</li> </ul>

	As students, we will...	As your instructor or TA, we will...
<b>Trust</b>	<ul style="list-style-type: none"> <li>Not engage in personal matters while on class time</li> <li>Be open and transparent about what we are doing in class</li> <li>Not distribute course materials to others without authorization</li> </ul>	<ul style="list-style-type: none"> <li>Be available to all students when we say we will be</li> <li>Follow through on our promises</li> <li>Not modify the expectations or standards without communicating with everyone in the course</li> </ul>
<b>Courage</b>	<ul style="list-style-type: none"> <li>Say or do something when we see actions that undermine any of the above values</li> <li>Accept the consequences (e.g., a lower or failing grade) of upholding and protecting the above values</li> </ul>	<ul style="list-style-type: none"> <li>Say or do something when we see actions that undermine any of the above values</li> <li>Accept the consequences (e.g., lower teaching evaluations) of upholding and protecting the above values</li> </ul>

\* This class statement of values is adapted from Tricia Bertram Gallant, Ph.D.

## Learning Materials







**Textbook:** None.

**Lab Manual:** Lab handouts and other materials will be available electronically through the eClass website. You are expected to read lab instructions carefully ahead of each scheduled lab.

**Website (eClass):** <https://eClass.yorku.ca>

- Log in with Passport York credentials
- Please check the course eClass site often for important information and updates
- Important information will be sent out through course announcements. Please make sure you receive course announcements to your email & check your email often.

## Equipment Checklist:

 <p>An internet-enabled computer to access eClass and materials.</p>	 <p>Cell phone with camera and flash</p>	 <p>Access to reliable internet</p>	 <p>Scientific calculator for test-writing</p>	 <p>Rain suit / outdoor clothes and sturdy shoes or boots</p>	 <p>Lab coat and safety glasses</p>
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**Note:** If you don't have access to a computer or cell phone, [consider borrowing a laptop or phone from York U](#), [financial aid from York](#), and [single workspaces available for student use on campus at the library](#).

Also recommended: downloading Office so you can use Excel (freely available to students, see: <https://uit.yorku.ca/faculty-staff-services/free-microsoft-office-365-education-software/>).

Alternatively, you can use Google spreadsheets.

Other software that may be needed/useful in the course (SPSS, PDF X-change PRO) is available for free through myApps: <https://uit.yorku.ca/student-services/computer-labs/myapps/#squelch-taas-tab-content-0-0>

## Assessment in this Course

Research about learning strongly suggests that the most important factor in learning is doing the work of reading, writing, recalling, practicing, synthesizing, and analyzing. Learning happens best when people actively engage material on a consistent basis, and that is why we have high standards in this course. We are confident that, with appropriate effort, you **all** can meet those standards.

When possible, we also try to reduce unintentional bias in grading by, for example, grading assignments one question at a time (grading all of question 1 before grading any of question 2), grading anonymously, and using rubrics. These also help improve consistency in marking.

Most assessments will be submitted electronically, using Crowdmark and/or Turnitin. Submission links and instructions will be available on the eClass website.

## Grade Breakdown

Component	Grade Value
<b>Lab 1: Statistics (online quiz)</b>	7%
<b>Prelab quizzes</b>	8%
<b>Lab 2: Molecular ecology: metabarcoding</b>	10%
<b>Lab 3: Insect monitoring and the use of iNaturalist</b>	12.5%
<b>Lab 4: Pollinator-predator interactions</b>	12.5%
<b>Lab 5: Community properties and succession</b>	12.5%
<b>Midterm test (in lab Oct 24-25)</b>	10%
<b>Lab 6: Indigenous Knowledge presentation</b>	10%
<b>Final Exam</b>	17.5%

## Lab exercises

Many of the lab activities in this course will take place outdoors. It is important that you check the forecast on your lab day and dress accordingly. Labs will normally take place rain or shine (except in the event of severe weather), so you must have a rain jacket, rain pants and waterproof footwear available if needed. Sturdy closed shoes are a must as you will encounter unstable terrain during the outdoor labs. Some activities will include independent projects to be completed on your own time, online or in a local greenspace.

You may only attend the lab section in which you are registered. In the event you are unable to attend your lab due to illness or a family emergency, contact the course director immediately at [b2080@yorku.ca](mailto:b2080@yorku.ca) and attach any available supporting documentation.

Lab assessments may include a variety of different components, such as quizzes, writeups, data submission, etc. A full breakdown of the grade components of each lab activity will be available in the electronic lab handout.

**Late policy:** a penalty of 1% per calendar day will apply to labs and assignments handed in late during the first 5 days after the deadline. The penalty will increase to 5% per calendar day starting on day 6 after the deadline. Labs and assignments more than 14 days late will not be accepted. **Pre-lab quizzes and other tasks that are specifically meant to prepare you for an upcoming lab session, and scheduled in-class presentations, cannot be submitted late.**

## Midterm Test

The midterm test will take place in person during your scheduled lab period. You must attend the test for the lab section in which you are registered. In the event you are not able to attend due to illness or a family emergency, you must email [b2080@yorku.ca](mailto:b2080@yorku.ca) asap. Attach supporting documentation if available.

## Final Exam

The final exam will take place in person, during the Final Exam period (Dec. 7-20, 2023) and will be scheduled by the Registrar's Office.

## Regrading/Reappraisal Procedures

For all regrading requests, please submit your request via the reappraisal form on eClass. In this form you'll be asked to include your (1) Your Name and Student Number, (2) A summary of the request (e.g., the total was miscounted), and (3) a copy of the assessment. We will strive to review all regrading requests within 3 weeks.

If you think your work was marked incorrectly, point (2) above should include a rationale for regrading based on academic merit (i.e., an explanation as to why marks were deducted unfairly). Note that re-marking can result in the mark being raised, confirmed, or lowered and the grade from a remark/reappraisal is final.

Please note that in fairness to all students in the course, final grades are **NOT** negotiable and will not be “bumped up” to a higher grade bracket. Individual ‘extra credit’ assignments are not available during or after the course.

## University Policies

### Important Dates

**Drop Deadline:** Wed. November 8, 2023 (last day to drop without course on transcript)

**Course Withdrawal Deadline:** Tues. December 5, 2023 (course still appears on transcript with ‘W’)

**Fall Reading Week:** October 7-13, 2023 (includes Thanksgiving holiday)

**Fall Exam Period:** December 7-20, 2023

*For additional important dates such as holidays, refer to the “Important Dates” section of the Registrar’s Website:*

<https://registrar.yorku.ca/enrol/dates/2023-2024/fall-winter>

### Grading Scheme

In accordance with the York University Undergraduate Calendar Regulations, the letter grades assigned in undergraduate courses at York conform to the descriptions and grade ranges shown here:

<https://calendars.students.yorku.ca/2023-2024/grades-and-grading-schemes>

### Academic Honesty and Integrity

Academic misconduct undermines the values of honesty, trust, respect, fairness, and responsibility that we expect in this class. York University provides supports such as academic integrity workshops to ensure that all students understand the norms and standards of academic integrity that we expect you to uphold.

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. Please review and familiarize yourself with the policy.

There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve your research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website:

<https://www.yorku.ca/unit/vpacad/academic-integrity/>



**Examples of actions that do not adhere to York's Academic Integrity Policy include:**

- Plagiarism (passing off someone else's work as your own)
- Accessing unauthorized websites for assignments or tests. **In this course, the use of ChatGPT or other generative A.I. systems for the completion of academic work is not authorized and will be considered academic misconduct.**
- Unauthorized collaboration on assignment and exams
- Uploading work to third party repository sites (e.g., Course Hero, One Class, etc.)
- Scanning, sharing, uploading, or publishing exams, tests, or scholarly work

For more information on what academic integrity is and why it is important see:

<https://spark.library.yorku.ca/academic-integrity-what-is-academic-integrity/>. Information on the process of investigations into breaches of academic honesty:

<https://spark.library.yorku.ca/academic-integrity-breach-of-policy-on-academic-honesty/>

**Important Note from the FSc Committee on Examinations & Academic Standards (CEAS):**

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. Whenever a student submits work obtained through an external site (e.g., Course Hero, Chegg), the **submitting student will be charged with plagiarism** and the **uploading student will be charged with aiding and abetting**. To avoid this risk, students are urged not to upload their work to these sites.

**Assistance for Students (Academic and Well-Being)**

**Academic Advising\***: <https://www.yorku.ca/science/academic-advising/> \* Departments also offer program-specific advising. Check with your Department's Undergraduate Office.

**Centre for Human Rights, Equity, and Inclusion**: <https://rights.info.yorku.ca>

**Centre for Indigenous Students Services**: <https://aboriginal.info.yorku.ca/>

**Good2Talk 24-hour Ontario Student Helpline**: 1-866-925-5454 /Text: GOOD2TALKON to 686868

**Keep.meSAFE**: <https://myssp.app/keepmesafe/ca/home>

**Learning Commons** (general academic learning supports including library research, time management, study skills, career planning, etc.): <https://learningcommons.yorku.ca/>

**Peer Assisted Study Sessions (PASS)**: <https://www.yorku.ca/colleges/bethune/get-help/pass/>

**Peer Tutoring**: <https://www.yorku.ca/colleges/bethune/get-help/peer-tutoring/>

**Sexual Violence Response and Support**: <https://thecentre.yorku.ca>

**Student Counselling, Health & Well-being**: <https://counselling.students.yorku.ca/>

**Support Services for International Students**: <https://yorkinternational.yorku.ca/international-student-support/>

**Writing Services**: <https://www.yorku.ca/colleges/bethune/get-help/writing/>

**York University Student Services:** <https://family.yorku.ca/student-services/#SCD>

**York University Student Well-being Resources:** <https://www.yorku.ca/well-being/resources/students/>

## Accessibility

York University is committed to principles of respect, inclusion, and equality of all persons with accessibility needs across campus. The University provides services for students with accessibility needs (including physical, medical, learning, and psychiatric needs) 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 accessibility 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 accessibility 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:**

**Student Accessibility Services:** <https://accessibility.students.yorku.ca>

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

## 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 course outline 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. To arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete and submit an accommodation request form at least 3 weeks before the exam period begins. <https://secure.students.yorku.ca/pdf/religious-accommodation-agreement-final-examinations.pdf>

## Student and Instructor 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/>.

Academic accommodation refers to educational practices, systems and support mechanisms designed to accommodate diversity and difference. The purpose of accommodation is to enable students to perform the essential requirements of their academic programs. At no time does academic accommodation undermine or compromise the learning objectives that are established by the academic authorities of the University.

University rules regarding registration, withdrawal, appealing marks, and most anything else you might need to know can be found on the university's website, here:

<https://calendars.students.yorku.ca/policies-and-regulations>

**Course Schedule** Please note that this schedule is tentative and subject to change.

Activities shown in **green** involve outdoor field work during the lab period. Please check the forecast and dress accordingly.

Monday	Tuesday	Wednesday	Thursday	Friday
<b>September</b>				
4	5	6	7	8
			Start on <b>Lab 1: Statistics</b> (independent project)	
11	12	13	14	15
	Lab 2: Molecular Ecology, part I		Lab 3: Insect monitoring Lab 2: Molecular Ecology, part II	
18	19	20	21	22
	Lab 4: Pollinator-predator interactions		Lab 5: Community succession, part I	
25	26	27	28	29
	Lab 5: Community succession, part II		Rain days	
<b>October</b>				
2	3	4	5	6
	Rain days <i>Lab 3 data submission (iNaturalist uploads, light pollution data) due</i>		Library instruction with Ilo Maimets  <b>Lab 1 quiz due, Oct 6 11:59 p.m.</b>	
9	10	11	12	13
Thanksgiving	Reading Week	Reading Week	Reading Week	Reading Week
16	17	18	19	20
	Lab 5: Community succession, part III		<b>Lab 4 lab report due, Oct.20 11:59 p.m.</b>	
23	24	25	26	27
	Midterm test during your lab period		TBA	

Monday	Tuesday	Wednesday	Thursday	Friday
<b>November</b>				
Oct. 30	Oct. 31	Nov. 1	2	3
	<i>Lab 3 analysis and blog post due, Nov. 1 11:59 p.m.</i>			TBA
6	7	8	9	10
	<b>Lab 6: Indigenous knowledge presentation, given during your lab period</b>		<b>Lab 6: Indigenous knowledge presentation, given during your lab period</b>	
13	14	15	16	17
	<i>Lab 5 lab report due at end of your lab period</i>		<b>Lab 2</b> part III: meet and discuss metabarcoding results	
20	21	21	23	24
		TBA		TBA
<b>December</b>				
Nov. 27	Nov. 28	Nov. 29	Nov. 30	Dec. 1
		TBA	<i>Lab 2 group poster due <u>24 hrs before</u> your lab period; individual poster presentations during your lab period</i>	
4	5	6	7	8
	Last day of classes		Exams start	