

# From Individuals to Ecosystems: Advanced Topics in Ecology

## Syllabus: BIOD63H3 Winter 2021

Course Instructors: Dr. Rachel Sturge, [rachel.sturge@utoronto.ca](mailto:rachel.sturge@utoronto.ca), SW 563B  
Virtual Office hours: Wed 13:10 – 14:00 pm (or by email)  
TA: Juan Vargas Soto ([juan.vargassoto@mail.utoronto.ca](mailto:juan.vargassoto@mail.utoronto.ca))

Class meeting time: Lectures Tuesday 09:10 – 10:00 (online)  
Tutorials Thursdays 15:10 – 17:00 (online)

### 1) Course Description

This lecture/seminar course will discuss advanced topics in behavioural ecology, ecosystem and landscape ecology, and evolutionary ecology, with an emphasis on the impacts of past and present species interactions. Students will work both independently and collaboratively throughout the course to strengthen their research, writing, and presentation skills. The overall goal of the course is to provide students with a chance to delve more deeply into the topics they are interested in that they have been exposed to in lower-level courses, and to give them a chance to explore these topics while strengthening their critical analysis, research, writing and presentation skills.

### 2) Learning Outcomes

At the end of this course, students should be able to...

1. Use and apply ecological concepts first introduced in pre-requisite courses to new case studies.
2. Read and interpret scientific literature from the field, process information and use it to synthesize persuasive arguments in written and oral form.
3. Critically evaluate scientific literature for its scientific writing, techniques used (where applicable), data representation, and overall conclusions.
4. Communicate effectively with others during paper discussions, reflective work, debates, and collaborative assignments.
5. Create presentations based on research and present them in a class setting.
6. Effectively disseminate scientific research to a lay audience in written or oral form.
7. Apply the skills and strategies of an effective listener in both small group and a class-wide setting.

### 3) Academic Honesty

All work in this course is covered by the University of Toronto's policies on Academic Misconduct (see below hyperlink), which outlines the behaviours that constitute academic dishonest, as well as the processes for addressing academic offences. The University treats cases of cheating and plagiarism very seriously, so please **REVIEW THIS MATERIAL** as you are expected to be familiar with it.

<http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/ppjun011995.pdf>

Potential offences include, but are not limited to:

In papers and assignments:

- Using someone else's ideas or words without appropriate acknowledgement.
- Submitting your own work in more than one course without the permission of the instructor.
- Making up sources or facts.
- Obtaining or providing unauthorized assistance on any assignment.

On tests and exams:

- Using or possessing unauthorized aids.
- Looking at someone else's answers during an exam or test.
- Misrepresenting your identity.

In academic work:

- Falsifying institutional documents or grades.
- Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from Dr. Sturge or from other institutional resources (see <http://academicintegrity.utoronto.ca/>).

All students should have confidence in their ability to master this course material and earn an acceptable grade. If you are struggling with the material, please come see me or speak with your Teaching Assistant. You should also consider forming study groups as research has shown that students who participate in study groups earn, on average, higher grades in courses than those who do not.

#### 4) Course Policies

- Stay on top of course content.
- Show up on time for all synchronous components of this course, stay focused on course content, and do not distract classmates.
- Read all material related to that day's tutorial BEFORE class, and complete any pre-class assignments in advance.
- Ask questions and discuss the material with other students. Group discussion promotes learning. There will be opportunities for group discussion virtually so please participate!
- Be an active learner and participate fully in all aspects of the course. Hold yourself and your teammates accountable for all tasks assigned to you / them in any group activity. Be honest with yourself if you are not contributing as fully as you should be, and make positive changes, if necessary.
- When using technology, which includes (but is not limited to) cellphones, tablets and computers, please use them responsibly. The human mind is NOT capable of multitasking (as many scientific studies have shown), and distracted learners are not high-achieving learners. Please avoid having distractions around you when you are taking part in online learning.

#### 5) Assessment

##### a) Methods of instruction

The basic information of this course will be presented through virtual lectures on major topics that will be held during scheduled class time, and in tutorials that will be also held during scheduled time and will include literature reviews of recent articles, in-class discussions of course material, along with individual and / or group-based active learning exercises. Virtual attendance is **MANDATORY** and prompt arrival is crucial.

##### b) Lectures

Lectures will be held online every week during the scheduled lecture time. Students are expected to show up on time and will be held responsible for all material covered. Lectures will also include active learning questions which will be run through TopHat Classroom – use of TopHat Classroom is optional, but is strongly encouraged as it will help students practice answering questions and applying concepts, which will aid students in developing a deeper understanding of course content. Students who opt out of TopHat Classroom should submit their answers to active learning questions via email at the end of lecture. Active engagement in lectures will contribute to student's participation scores in this course.

Students who are in another time zone can receive permission to watch lectures asynchronously and complete active learning assignments asynchronously as well. You will still be expected to complete lectures and lecture exercises on the same day they occurred. All students are expected to attend tutorials as scheduled. Students who wish to attend lectures asynchronously must receive permission to do so at the start of the semester.

### c) Tutorials

The main goal of this course is to give students a chance to explore topics of their choice. As such, we will spend time in tutorial analyzing and discussing scientific papers on topics that relate to each week's lecture that have been selected by students in the course. Students are expected to read the assigned paper and come to tutorial prepared to discuss it. Through these discussions, you will learn how to read scientific literature critically, and how to identify both the limits of a study and the general principles that we can draw from it. Reading scientific literature requires understanding the basics of methodology, putting effort into thinking about the research and the results, and critical thinking skills. These skills, which you will develop in this course, will be tested on the final exam.

In this course, there will be a series of small assignments that students can choose between to earn their **Small Projects** grade (see page 7 for details). One of these options includes leading a paper discussion, which students can do alone or in a small group. For students that choose this option, they will be expected to pick the paper and prepare to lead a class-wide discussion on it. They will also need to submit a written summary of the paper afterwards as part of this grade.

In addition to literature discussions, students participate in active learning, and individual and / or group-based exercises aimed at promoting deeper thinking about the concepts introduced in this course. These exercises may include, but are not limited to, a reflective journal that all students are expected to keep throughout the course, writing assignments, debates, and presentations that are worth 10% of the final grade. Some of these activities will be mandatory for all students (and count towards the tutorial grade), while others will be part of **Small Projects** (see page 7 for details), and students will be able to decide which projects they wish to take on to fulfill this part of their final grade. All small projects and the **Final Project** (see page 8 for details) will require students to read additional material and conduct research outside of the classroom. More details regarding these assignments will be given out as the semester progresses. Students will also work individually or in a group (depending on their preference) to complete the **Final Project**, which will be worth 15% of their final grade. More details regarding this assignment will be given out as the semester progresses.

Tutorial attendance each week is mandatory, and no makeup work will be permitted for any assignments that were completed during tutorial time. Tutorial assignments that are ongoing will be penalized according to the below late penalty.

#### **Late penalties**

No late assignments will be accepted for work that is completed in lecture or tutorial. For all other assignments, work that is turned in late will be penalized by 10% per day, **starting with 5 minutes after the due date / time**, unless the student provides documented proof of the reason for their tardiness. Illness on the day an assignment is due is **NOT** considered an acceptable excuse for late assignments where students had sufficient time to complete them prior to the start date of their illness. For group assignments, if your groupmates choose to complete the assignment without you, then you will earn a 0 grade unless you missed the assignment for a university-accepted reason. Putting your name on an assignment that you did not contribute to is an academic offence. If we catch you doing this, we will report you to the Office of Academic Misconduct.

#### d) Exams

There is no midterm exam for this course, but there will be a final exam worth 35% of your grade. This exam will be cumulative and cover all content, both lecture and tutorial, from the semester. This exam will include questions that test your understanding of the course concepts, and also your ability to read scientific literature, interpret that literature, and disseminate that literature to a scientific and a layperson audience.

For students who have opted into TopHat Classroom, part of this exam will take place using TopHat testing. For students who have chosen not to purchase TopHat Classroom, an alternate version of this part of the exam will be held using Quercus quizzes. There will also be a take home component of this exam that students will be expected to complete and submit before the exam end date / time. Students who have opted into TopHat Classroom can choose to take the Quercus version of the exam instead, but must let the instructor know of this decision at least 48 hours before the final exam.

**It is the responsibility of all students to ensure that they have a secure wifi connection and a working device before the final exam.** Students who do not have access to this technology **MUST** let the instructor know before the exam takes place in order for alternate arrangements to be made (note: students should also let the instructor know if this will be an issue at the start of the semester so alternate arrangements can be made for all course content!)

**Note:** If you miss the final exam you must go through the registrar's office to request a deferred exam.

#### e) Accessibility

We welcome students with diverse learning styles and needs at this University and in this course. If you require some sort of accommodation, please see me or contact the AccessAbility Services Office (see below links) as soon as possible. We will work with you to ensure that you are able to meet the course learning objectives successfully. The UTSC AccessAbility Service staff are available by appointment to assess your specific needs, provide referrals, and to arrange appropriate accommodations. All enquiries are confidential.

UTSC AccessAbility: [ability@utsc.utoronto.ca](mailto:ability@utsc.utoronto.ca), (416) 287-7560, SW 302

#### f) Grading policies

Students are responsible for all material that is presented in lecture and tutorial. If you miss a class, you are strongly advised to obtain the notes and assignments from another student. Participation in lecture and tutorial will be an important factor in determining borderline grades, so attendance and participation are strongly advised. For more details, please refer to the relevant section of this syllabus.

<b>Category</b>	<b>Percent</b>
Reflective Journal	10%
Participation	10%
Tutorial Assignments	10%
Small Projects	20%
Final Project	15%
Final Exam (cumulative, during final exam period)	35%

### **Late penalties**

No late assignments will be accepted for work that is completed in lecture or tutorial. For all other assignments, work that is turned in late will be penalized by 10% per day, **starting with 5 minutes after the due date / time**, unless the student provides documented proof of the reason for their tardiness. Illness on the day an assignment is due is **NOT** considered an acceptable excuse for late assignments – plan to email assignments to your TA or your instructor BEFORE the deadline if you are ill on the day they are due.

### **Forms required to document missed coursework**

Students miss class or tutorial for a university-accepted reason must provide documentation to support their absence. Note that if you miss course work due to an illness, you can submit a self-declaration of student illness form. This form must be submitted within three days of the missed coursework, and **MAY NOT** be used to excuse yourself from the midterm exam. There is also a limit to the number of times this form may be used. Please see <https://www.utoronto.ca/biosci/missed-term-work-policy> for more details on documentation.

Please note that, even though we will drop your lowest tutorial score, you still need to document all absences for tutorials – if you miss one tutorial that you have properly documented, and a second tutorial for which you have no documentation, this second absence will count as a zero, lowering your tutorial grade.

### **One week 'Statue of Limitations'**

All grading questions about exams, homework, quizzes, group exercises, literature reviews, etc. must be addressed **within one week** of the scores being posted online or handed out in class. **After this time, no changes will be made to existing grades unless there is a calculation error.** Thus, it is essential that you check your grades regularly and contact your TA or instructor **within one week** if you feel an error has been made or if you are unsure why you lost points.

### g) Reflective Journal

Students will keep a journal throughout the semester where they reflect on their experience in the course, with a focus on knowledge and skills development, along with their feelings about the journey they are taking in the course. This journal can be on paper or in typed format, but paper versions will need to be scanned so students can submit them. Journals will be graded based on the amount of critical reflection present as well as the effort put in throughout the course. More details regarding this journal will be provided early in the semester. This journal will be assessed at multiple points throughout the course, and is worth 10% of your final grade.

### h) Small Projects

Students will work individually or in groups (depending on their preference) to complete a series of smaller projects throughout this course. You will be given the choice of what projects you wish to complete, and can repeat a project if you wish to do so (note: you cannot use the same research, and the second version must be completely different from the first or it will not count towards this grade). Different options are valued differently, and each student needs to complete enough projects to earn the entire grade, which is worth 20% of your final grade.

These options include:

1. Low-stakes Small Projects (worth 5%, each)
  - Annotated Bibliography
  - Mini review of topic of choice
  - Mini presentation of topic of choice
  - Ecology in the news presentation
  - Lead journal discussion in tutorial (includes a written summary of paper)
  - TikTok or other social media post (text, pictures with captions or video formats are all acceptable) aimed at disseminating an appropriate scientific topic to a lay audience – if through twitter or Instagram students must include multiple posts due to the limitations of text size. Students DO NOT need to post these for public consumption unless comfortable doing so. Submissions can be through a link to the post(s) or by screen capture.
  - Another project of your choice, approved by your instructor beforehand
2. High-stakes Small Projects (worth 10%, each)
  - Newspaper article that summarizes scientific literature on a topic of your choice
  - Blog entry on topic of interest
  - Video presentation on topic of choice (with written summary)
  - Public Service Announcement (following PSA guidelines) – students MAY NOT use projects from BIOC58 here, including use of the same topic
  - Debate (this is a group project: students will research a debate topic of interest and debate about it in front of the class during tutorial – students will need to make arrangements to obtain sufficient tutorial time beforehand)
  - Another project of your choice, approved by your instructor beforehand

Each student is responsible for ensuring they have submitted enough small projects to earn the full grade. You can choose to work individually on all aspects of this grade, or in a group for all aspects, or can work in groups (the same one, or different ones) for some of the projects and alone for others – the choice is yours. There will be deadlines throughout the semester when small projects are due.

Note: you can submit more than one small project on one of these deadlines, or skip a deadline and submit more than one small project later on – the choice is yours. However, students who leave all of this work to the last small projects deadline will likely earn lower grades as they will not benefit from feedback on earlier projects. Students can also submit more small projects than necessary to earn this grade – your top scores will be the ones used to calculate this 20%. Please keep in mind grading loads, however – if you submit 10 different projects for one deadline I reserve the right to grade only a subset so as to not take grading time from other students.

All small projects should follow proper citation guidelines for science writing. Any components that are oral will include a written component to meet this requirement. More details will be provided during the semester.

### **i) Final Project**

Students will work independently or in groups on a final project of their choice that is worth 15% of their final grade. This project can include: a primary literature review paper, a primary lit review presentation (students MAY NOT use the project they completed in BIOC63 nor may they complete a presentation on the same topic for this course), a documentary-style video (students MAY NOT use the project they completed in BIOC90 nor may they complete a video on the same topic for this course), a blog with multiple entries disseminating scientific research to a lay audience, or any other project for which they receive approval – including various social media sites aimed at sharing science with a lay audience (with prior permission on the format). Students will need to submit a project proposal as part of this project and as a way of receiving approval. Students can choose to use small projects to work towards this final project: for example, completing an annotated bibliography, a mini review of the topic, leading a paper discussion on the topic, etc. However, the final project is expected to be much larger and include more research than any one of the small projects.

## **6) Turnitin.com**

Some of your tutorial assignments will involve group and individual written work. You are expected to submit a digital copy of these assignments, when instructed to do so, through Quercus where your work will be checked via Turnitin.com. The following statement is included for your information, as per University policy:

*Normally, students will be required to submit their course essays to Turnitin.com for review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site.*

You should have only one account for all of your University of Toronto coursework. Note that you do not need to have an account when submitting work through Quercus – it will be checked by turnitin automatically as part of the submission process.

## 7) Potential Course Topics

The topics covered in this course are intended to be driven by student interest, which means there is no set schedule of classes. Potential topics can include (but are not limited to):

- Competition, competitive exclusion, and coexistence
- Group living and social behaviour
- Co-evolution (commensalisms, mutualisms, negative species interactions)
- Evolutionary arm's races (predator-prey, host-parasite, chase away selection)
- Cooperation, altruism, manipulations, and spite
- Population dynamics and the effects of species interactions on these dynamics
- Species interactions and community structure (effects of disturbance, competition, life histories of organisms involved)
- Metacommunities and species coexistence
- Ecosystem function and restorations
- Natural selection, sexual selection and kin selection
- Past and present species coexistence and the effects on community structure / biodiversity
- Mating systems and parental care
- Conservation of species and / or ecosystems
- Climate change and its impacts on species and / or ecosystems

In the first week of class students will be asked to complete a survey where they identify potential topics of interest. Please make sure to complete this survey on time if you wish for your input to be included in course planning!