

## **BIOB51 – EVOLUTIONARY BIOLOGY** **SUMMER 2021**

### **COURSE SYLLABUS**

Lectures: Monday 14:00-16:00 EST

<b><u>Professor:</u></b>	Dr. Mark Fitzpatrick <a href="mailto:mark.fitzpatrick@utoronto.ca">mark.fitzpatrick@utoronto.ca</a>	<b>Online Availability:</b>	class time, Mon 1400-16:00 evening – day & time, tba (or by appointment)
<b><u>Course Coordinator:</u></b>	Laura Shelly <a href="mailto:laura.shelly@utoronto.ca">laura.shelly@utoronto.ca</a>	<b>Online Office Hours:</b>	contact by email
<b><u>TA:</u></b>	Vanessa Luzuriaga Aveiga <a href="mailto:biob51.utsc@utoronto.ca">biob51.utsc@utoronto.ca</a>	<b>Online Office Hour:</b>	tba

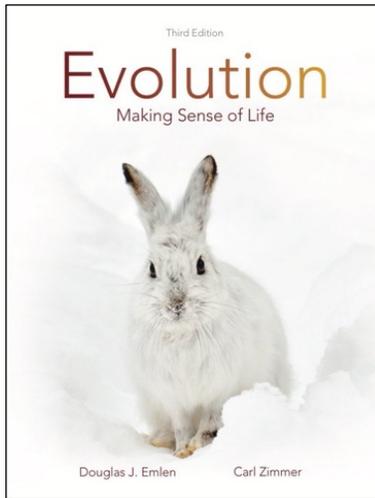
**COURSE DESCRIPTION:** Evolutionary Biology is the study of the diversity, relationships, and change over time in organisms at all scales of organization (from individuals to populations to higher taxonomic groups). The theory and principals of evolutionary biology give critical insight into a wide range of fields, including conservation, medicine, pathogenesis, community ecology, and development. This lecture-based course will give you a firm grounding in modern Evolutionary Biology. The course material: i) reinforces the logic and methods that underlie this field, ii) illustrates these with key historical and modern research studies, and iii) makes clear the importance of links to other areas of Life Sciences. This course assumes an introductory-level knowledge of Evolution.

### **LEARNING OBJECTIVES:**

1. Understand the basic principles of Evolutionary Biology, and be able to outline links between mechanisms of evolutionary change and patterns of diversity within as well as across species.
2. Be able to suggest appropriate methodologies and approaches for testing predictions arising from hypotheses in different areas of Evolutionary Biology.
3. Be able to explain how Evolutionary Biology links to other fields of Biology.
4. Be able to make logical inferences from a variety of different types of data, and evaluate how well or poorly a given dataset supports an argument or assertion.
5. Be able to identify, read, and evaluate scientific research papers from the primary literature.
6. Understand how to motivate, support, and engage in productive collaborative work in a professional context.

**REQUIRED TEXTBOOK:**

Emlen DJ & C Zimmer (2020) Evolution: Making Sense of Life. 3<sup>rd</sup> Edition. Macmillan. New York.



*Please ensure you purchase both the textbook (e-book or hardcopy) and Achieve (the publisher's online system). Both are required and should be bundled together when you them from the U of T Bookstore.*

*The unique code for our course on Achieve is: 22p5ub*

**READINGS:** Readings in support of lecture material are found on the lecture schedule. You should ensure that you UNDERSTAND everything you read, KNOW the theory and examples outlined in lecture and videos and ensure you can follow the additional examples given in the textbook. Homework assignments (see below) will help to keep you on task with textbook readings.

**LECTURES:** Lectures will be pre-recorded. The lecture videos for a given week (and the accompanying slides) will be posted to Quercus the preceding Friday at 09:00 EST. During our regularly scheduled lecture time (Monday 1400-1600 EST) I will be available online for discussion. I will also hold an office hour one evening per week (date and time, tba).

Attendance during class time discussions (and/or the weekly office hour) provides you with an opportunity to ask questions, discuss concepts, and request further explanation. This will also help you to keep up with the course material, know where you need help, and will improve my ability to better assist your learning in this class. **With the online delivery of courses it becomes vitally important that you establish and maintain a weekly schedule. Getting behind on lectures and course material creeps up very fast and it is often very difficult to recover.**

**ANNOUNCEMENTS:** It is your responsibility to be aware of announcements made in class. Major announcements will be posted to Quercus. Reminders are usually found on the first couple of lecture slides.

**GRADING & EVALUATION:**

Achieve Quantitative Assessments & Videos (9 @ 2% each) <sup>1</sup>	18%
Achieve Chapter Homework (14 @ 1.5% each) <sup>2</sup>	21%
Evolution Rap Assignment	8%
Midterm Exam	20%
Final Exam	33%

<sup>1</sup>16 are assigned. Your top 14 marks will count towards your grade

<sup>2</sup>11 are assigned. Your top 9 marks will count towards your grade

**AIDS TO UNDERSTANDING:** In addition to the lecture material there are several opportunities to expand, apply, and discuss the course material. These include Quantitative Assessments and Videos, Chapter Homework, and the Evolution Rap Assignment. Collectively these assignments are worth **47%** of your grade.

**Quantitative Assessments & Videos (Achieve) (18%):** These are very helpful online assignments that are specifically designed to aid in understanding the more challenging topics covered during the course. There are 11 of these assessments and I will be taking the grade from your top 9. Six are due prior to the midterm and the remaining five are due prior to the final exam. On the posted lecture schedule I have outlined how each assignment is aligned with specific chapters.

**Chapter Homework (Achieve) (21%):** Each week we will cover 1 or 2 textbook chapters. To aid in your understanding of the material, there are a set of homework questions associated with each chapter. We will be covering 16 textbook chapters and I will be taking the grade from your top 14. Homework assignments are due weekly on Thursdays at 23:59 EST.

**Rap Assignment (8%):** In collaboration with Canadian Hip Hop artist Baba Brinkman ([bababrinkman.com](http://bababrinkman.com)), we have developed an experiential learning assignment for this class. Baba raps on topics including evolution, climate change, medicine, psychology, space travel, green energy, COVID-19, and English literature! His lyrics are accurate since they are literally “peer-reviewed” by scientists.

In this class we will be working with the song “Stay Home” (<https://youtu.be/r2TWtjhNDww>). This song is about the COVID-19 pandemic. Your assignment will be to annotate a selection of his lyrics. You will describe the science that supports his lyrics with evidence (e.g. scientific references, images, figures). Further details of this assignment will be communicated within the first few weeks of the term.

**ASK THE PROFESSOR:**

**Online Office Hours:** I will hold weekly office online hours using the ‘Bb Collaborate’ link on the Quercus navigation bar (or perhaps on Zoom or MS Teams, I will provide details). This is a great chance to get help, discuss the lecture material, or just listen in to the discussion. Course content questions may also be submitted to the discussion board. I am also available to arrange office hours by appointment.

**Discussion Board:** There are two discussion boards, one for student communication with each other (I will not comment on discussions on this board), and one which directs comments/questions to me (although students are also welcomed to comment on threads on this board as well). Your TA, Vanessa, may also participate. The Discussion Board becomes like a running FAQ for the course. I ask that all content related questions are directed to the discussion board so all questions and answers can be shared with the entire class. Responses to Discussion Board questions tend to be far more detailed than an email response. Whether or not you have asked any questions, I recommend that you regularly check the discussion board for new content. Many students find this to be very helpful when studying. Questions are generally answered in 1-2 days.

As always, inclusive and civil discussion conforming to the Student code of conduct is expected. Disagreements and challenging opinions are welcome, but harassment or disparagement of others is not acceptable and will be dealt with promptly.

**Email:** You may email questions to [biob51.utoronto.ca](mailto:biob51.utoronto.ca). Note that this email is checked sporadically through the week, and response time varies accordingly. The email will be monitored by the Instructor and the TA. Faster responses are possible via Office hours or the Discussion Board. For course administration questions (e.g., I missed the midterm, I just joined the course) please email Laura Shelly ([laura.shelly@utoronto.ca](mailto:laura.shelly@utoronto.ca)).

**Ask the TA:** Similar to my office hours, your TA will also be available to discuss course content. Dates and times are to be announced. Details will be communicated during lecture and on Quercus.

### **MIDTERM & FINAL EXAM:**

**Format:** The Midterm (20%) will include 5-7 written answer questions and 40-60 multiple choice, matching, true/false, and/or fill-in-the-blank questions. Topics covered are specified on the lecture schedule, and the materials for which you are responsible include lecture material and the assigned online content. The Term Test will be 2 hours in duration and will take place during class time (Monday, June 28, 14:00-1600 EST). The material to be covered on the midterm will be discussed in the lectures preceding the midterm.

The format of the Final Exam (33%) will be very similar to the Midterm, will be 3 hours in duration, and is scheduled by the Registrar during the Final Exam Period. Roughly 3/4 of the exam will focus on material since the Midterm and 1/4 will be cumulative, with questions spanning the entire course.

**Content:** The Midterm and Final Exam will focus on material covered in lecture, quantitative assignments, chapter homework, and specific material from the text to which I have directed you to during the lecture (i.e. important topics not discussed in lecture). Questions will focus on your understanding of theory, hypothesis testing and mechanisms, evidence in support of these, as well as testing your ability to make inferences from novel examples or data. Straight recall of examples or vocabulary will also be required.

The best way to study for these tests is to:

- 1) Do the weekly homework assignments, quantitative assessments, and video assignments. Be sure you understand the answers and if not, please ask.
- 2) Read and think about examples in the text and in lectures – what do they demonstrate and why? To what theory do they apply?
- 3) Discuss, debate, and converse about the course materials with your peers.

**ACADEMIC INTEGRITY:** The University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters (<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences.

Potential offences in papers and assignments include 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.

For tests and exams, cheating includes using or possessing unauthorized aids, looking at someone else's answers during an exam or test, communicating with classmates during an examination, misrepresenting your identity, or falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

THE UNIVERSITY OF TORONTO'S CODE OF BEHAVIOUR ON ACADEMIC MATTERS APPLIES TO ALL UNIVERSITY OF TORONTO SCARBOROUGH STUDENTS. THE CODE PROHIBITS ALL FORMS OF ACADEMIC DISHONESTY INCLUDING, BUT NOT LIMITED TO, CHEATING, PLAGIARISM, AND THE USE OF UNAUTHORIZED AIDS. STUDENTS VIOLATING THIS CODE MAY BE SUBJECT TO PENALTIES UP TO AND INCLUDING SUSPENSION OR EXPULSION FROM THE UNIVERSITY.

#### CODE OF BEHAVIOUR ON ACADEMIC MATTERS - SECTION B1

1. It shall be an offence for a student knowingly:

- (a) to forge or in any other way alter or falsify any document or evidence required by the University, or to utter, circulate or make use of any such forged, altered or falsified document, whether the record be in print or electronic form;
- (b) to use or possess an unauthorized aid or aids or obtain unauthorized assistance in any academic examination or term test or in connection with any other form of academic work;
- (c) to personate another person, or to have another person personate, at any academic examination or term test or in connection with any other form of academic work;
- (d) to represent as one's own any idea or expression of an idea or work of another in any academic examination or term test or in connection with any other form of academic work, i.e. to commit plagiarism (for a more detailed account of plagiarism, see Appendix "A") ;
- (e) to submit, without the knowledge and approval of the instructor to whom it is submitted, any academic work for which credit has previously been obtained or is being sought in another course or program of study in the University or elsewhere;
- (f) to submit any academic work containing a purported statement of fact or reference to a source which has been concocted.

**ACCESS FOR STUDENTS WITH DISABILITIES:** The University provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code. This occurs through a collaborative process that acknowledges a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the University's courses and programs. Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services Office as soon as possible. AccessAbility Services staff (located in Rm AA142) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations 416-287-7560 or email [ability.utscc@utoronto.ca](mailto:ability.utscc@utoronto.ca). The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

**ENGLISH LANGUAGE SUPPORT:** The academic English used in science texts (and by Professors) tends to be concise with complex grammar that can make it challenging to interpret. Academic English is new to most students in University. If you want help mastering scientific texts, consider taking the free, 20-minute, confidential, Academic English Health Check (AEHC) (link below) and use the free support available at the English Language Development Centre to support your learning (link below).

Academic English Health Check: <https://www.utscc.utoronto.ca/eld/academic-english-health-check-aehc>  
English Language Development Centre: <https://www.utscc.utoronto.ca/eld/english-language-development-support-consultations>

**INFORMATION ON RELIGIOUS OBSERVANCES:** The University provides reasonable accommodation of the needs of students who observe religious holy days other than those already accommodated by ordinary scheduling and statutory holidays. Students have a responsibility to alert members of the teaching staff in a timely fashion to upcoming religious observances and anticipated absences and instructors will make every reasonable effort to avoid scheduling tests, examinations or other compulsory activities at these times. Please reach out to me as early as possible to communicate any anticipated absences related to religious observances, and to discuss any possible related implications for course work.

**EQUITY, DIVERSITY, & INCLUSION:** The Department of Biological Sciences acknowledges the barriers that people of colour and other marginalized groups face, particularly in science and academia. As a department, we are highly committed to creating a welcoming scientific community where everyone feels safe, comfortable participating, and which provides the necessary support to thrive. We acknowledge and are disheartened that Black, Indigenous and other marginalized communities are, and always have been, disproportionately impacted by systemic racism and face barriers within academia. In August 2020, our department formed an equity and inclusion task force that will meet regularly to discuss equity and inclusion and enact improvements to our departmental practices by actively engaging with the literature on best practices, and seeking ongoing input from all members of the department including students, post-doctoral fellows, staff and faculty. Among our main priorities will be a commitment to hire and support faculty and staff that are representative of our diverse student population, and to promote a departmental culture that will foster inclusive teaching and research excellence.

**FAMILY CARE RESPONSIBILITIES:** The University of Toronto strives to provide a family-friendly environment. You may wish to inform me if you are a student with family responsibilities. If you are a student parent or have family responsibilities, you also may wish to visit the Family Care Office website at [familycare.utoronto.ca](http://familycare.utoronto.ca).

**LAND ACKNOWLEDGEMENT:** I (we) wish to acknowledge this land on which the University of Toronto operates. For thousands of years it has been the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.

**MISSED DEADLINES:** Students should use the Absence Declaration tool on Acorn (link below) to declare an absence if they consider for missed academic work. Students are responsible for contacting the instructor (or course coordinator) to request the academic consideration they are seeking. Students should record each day of their absence as soon as it begins and up until the day they return to class or other academic activities.

<https://acorn.utoronto.ca/sws/#/>

**MISSED MIDTERM TEST:** Students that are unable to attend the Midterm for religious reasons, short-term illness, or several personal circumstances must notify the Course Coordinator (Laura Shelly) by email within 3 working days and submit documentation (see above). Students that are unable to attend due to an AccessAbility issue should inform that office and Laura Shelly to arrange an accommodation. Students who miss the midterm for a medical reason should use the Absence Declaration tool on Acorn (see link and details above).

There will be a single make-up for the Midterm for students with a documented excuse or accommodation, as validated by Laura Shelly. Alternative arrangements are NOT possible, except as arranged by AccessAbility. The date of the make-up test will be announced on Quercus and it is the **SOLE RESPONSIBILITY** of the affected student to ensure they are aware of this date. Students that miss a term test with no acceptable, documented excuse will receive a “0” grade for that test. Students that miss a term test and the make-up and have documented, confirmed excuses for both will have their final grades adjusted accordingly.

*Students that miss the Final Exam must petition the Registrar to write a deferred exam.*

**PROCEDURES REGARDING FINAL MARKS:** The final mark in BIOB51 is based on your work throughout the term. The evaluation breakdown is given above in this syllabus. After the final exam, marks are calculated and submitted to the Department for review. Once approved, the final mark for each student in the course will be released on ROSI/ACORN.

Final marks are not negotiable and instructors are not permitted to discuss final marks with students. If students have concerns about their final mark, they should consult the proper procedures to be followed as outlined by the Registrar’s office: <https://www.utoronto.ca/registrar/petitions>.

Once final marks are posted, it is an academic offense to ask for your mark to be changed (see Academic Handbook).

**INTELLECTUAL PROPERTY:** The University has guidelines around students entering relationships with external organizations offering access to course materials. In these organizations, the intellectual property (IP) rights of the content creators/owners (e.g. of lecture notes, tests, examinations, projects, solution sets, etc.) may be infringed, and may be inconsistent with the University of Toronto's integrity policies. Students should be aware that their courses contain the IP of their instructor, TA, and/or the University of Toronto.

IP includes items such as:

- Lecture content, spoken and written (and any audio/video recording thereof);
- Lecture handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides);
- Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and
- Work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner)

Sharing this IP without the IP owner's permission is a violation of IP rights. For this reason, it is necessary to ask the instructor, TA and/or the University of Toronto for permission before uploading and sharing the IP of others online (e.g., to an online repository).

Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of IP rights.

Please alert the instructor if you become aware of IP belonging to others (past or present) circulating, either through the student body or online.

**DISCLAIMER:** Prof. Fitzpatrick reserves the right to modify this syllabus and lecture schedule as necessary throughout the term to better achieve course objectives and/or enhance the quality of instruction. As such, the lecture outline is tentative. Notification of changes will be made in class and the most up-to-date version will always be the one available on Quercus. **You are responsible for being aware of the contents of this syllabus.**