

Biological Consequences of Global Change

Syllabus: BIOC58H3 Fall 2017

Course Instructors: Dr. Rachel Sturge, rachel.sturge@utoronto.ca, SW 563B
Office hours: Mon or Tues 11am to 12pm or by appointment
TA: Sara Campbell, sarae.campbell@mail.utoronto.ca

Recommended Textbook: Lee Hannah. *Climate Change Biology* 2nd edition.

Class meeting time: Lectures Mondays 9 – 11am SW 143
Tutorials Tut 0001 Tues 9 – 11am HW 214
Tut 0002 Thus 3 – 5pm BV 264

1) Course Description

This class is a lecture and tutorial course that addresses the key environmental factor that will dominate the 21st century and life on the planet: Global Climate Change. The course will examine the factors that influence climate, from the formation of the earth to the present time, how human activities are driving current and future change, and how organisms, populations, and ecosystems are and will respond to this change. Finally, it will cover human responses and policies that can permit an adaptive response to this change.

2) Learning Outcomes

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

1. Correctly use common biological terms and principles from the study of global climate change.
2. Describe the major factors contributing to both past climates and today's climate.
3. Compare and contrast natural and anthropogenic factors contributing to global climate change, and describe the impact of these changes on various biological systems.
4. Recognize that the climate has changed in the past, and be able to describe how biological systems have responded to those changes. Be able to use this information to predict future trends.
5. Read and interpret scientific literature from the field, and use that literature to synthesize persuasive arguments in both debates and in written form.
6. Explain how studies in the field can help us understand the impacts of climate change and how organisms have responded / continue to respond to these changes.
7. Apply the knowledge used in this course for both understanding and to inform policy in an effort to mitigate the impacts of climate change, both in this course and in your future lives.

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 dishonesty, 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>

Note that academic dishonesty includes (but is not limited to) failure to properly acknowledge other people's words, information or ideas (including information in textbooks), making up sources or facts, citing non-accredited sources (such as Wikipedia) as if they were peer-reviewed, submitting your own work in more than one course without the permission of both instructors, obtaining or providing unauthorized assistance on any assignment or test (including the use of unauthorized aids or looking at the answers of another student), misrepresenting your identity or falsifying / altering any documents required by the university (for example, a doctor's note), or putting your name on work that you did not contribute to.

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 the 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

- Come to class on time and be ready to start as soon as class begins.
- Read all material related to that day's lecture / tutorial BEFORE class, and complete any pre-class assignments in advance.
- Ask questions and discuss the material with other students. Group discussion promotes learning.
- 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.
- If 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. I reserve the right to dock points from any students caught using electronic devices for non-class activities, and also to ban them from future use of these devices while in class.

5) Assessment

a) Methods of instruction

The basic information of this course will be presented through lectures on major topics, student-led literature reviews of recent articles, and group-based active learning exercises. Class attendance (both lecture and tutorial) is **mandatory** and prompt arrival is crucial. We will be using iClicker Cloud for lecture participation – please see Blackboard for more details.

b) Tutorials

We will spend time in tutorial analyzing and discussing scientific papers on topics that relate to each week's lecture. Students are expected to read the assigned paper and come to tutorial prepared to discuss it. In tutorial, students will work in groups of four to answer questions related to that week's article. Groups will then be randomly assigned questions and asked to present their findings to the class as a whole. At the end of the discussion, students will take a quiz designed to test their understanding of the paper. 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 readings will supplement the lecture material, and the material from these papers will be covered on tests / exams.

In addition to literature discussions, students will participate in active learning and group-based exercises aimed at promoting deeper thinking about the concepts introduced in this course. These exercises may include, but are not limited to, writing assignments, small presentations, debates, worksheets. Students will also work on groups to complete two major projects during the semester: a public service announcement (worth 2% of your final grade) and researching and preparing a write-up for the final debate (worth 3% of your final grade). More details regarding these assignments will be given out as the semester progresses. You will be asked to submit assignments to turnitin.com (see section 6 of this syllabus).

No makeup tutorials will be permitted. All students will be allowed to drop their lowest tutorial score (excluding PSA and debate), regardless of the reasons for the missed tutorial. Note this dropped score also includes all university-accepted excused absences (such as illness). If you will miss more than one tutorial for a university-accepted reason, you must contact your TA or myself as soon as possible so we can discuss alternate accommodations.

Late penalties

No late assignments will be accepted for work that is completed in 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.

c) Term Tests and Final Exam

There will be two term tests worth 15% each, and one cumulative final exam worth 40% of your final grade. All tests / exams will be based on lecture material and on the literature discussed during tutorials. Readings supplement the lecture material and are immeasurably helpful in preparing for tests / exams. All tests will consist of multiple choice, short answer and problem-solving questions.

The final exam (worth 40% of your final grade) will take place during the final exam period. It will be cumulative, and will have a similar format to the term tests, but may include a few essay questions as well. You will be given advanced notice on the format of this final exam.

Makeup term tests If you miss a term test due to a university-accepted reason, please contact me within three days of the missed test and provide me with documentation to support your absence. Students with a valid excuse will be given a makeup test within one week of the missed test (unless there is a valid reason for a longer delay). Students who fail to contact me within three days will earn a score of zero and no makeup test will be permitted (note that students who are unable to contact me within this time frame due to circumstances beyond their control are exempt from this.) Makeup tests will consist solely of ten short answer questions. If you miss the final exam you must go through the registrar's office to request a deferred exam.

d) 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, (416) 287-7560, SW 302

e) 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. Please note again that **NO MAKEUP TUTORIALS ARE PERMITTED.** For more details, please refer to the relevant section of this syllabus.

Category	Percent
Term tests (2, worth 15% each)	30%
Lecture and Tutorial Participation	10%
Reading Quizzes	5%
Tutorials	10%
PSA assignment	2%
Debate and Debate Write-up	3%
Final Exam (cumulative, during final exam period)	40%

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.

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.

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, to Turnitin.com and a to turn in a hard copy to be marked by your TA. 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.

Schedule of Classes

Instructor: Dr. Rachel Sturge (rachel.sturge@utoronto.ca)

Lecture: Monday 9-11am SW 143

Tutorials: Tuesday 9-11am HW 214 or Thursdays 3-5 BV 264

Readings from *Climate Change Biology* 2nd edition (recommended text)

Week	Date	Topic	Chapter
1	Sep. 4	NO CLASS OR TUTORIAL THIS WEEK	
2	Sep. 11	Introduction & Evolution of Earth's climate Tutorials start this week	1, 2
3	Sep. 18	Earth's past climates & Human impacts part 1	3, 4
4	Sep. 25	The impacts of human induced climate change part 2	4, 5
5	Oct. 2	Past terrestrial responses to climate change	6
6	Oct. 9	READING WEEK - NO CLASS	
7	Oct. 16	Past aquatic responses to climate change	7, 8
8	Oct. 23	Mass extinctions and the Anthropocene	9
9	Oct. 30	Estimating extinction risk from climate change	12
10	Nov. 6	Ecosystem services and their importance	13
11	Nov. 13	The human ecology of climate change	-
12	Nov. 20	Conservation strategies and protected area planning	14
13	Nov. 27	Managing landscapes and threatened species	15, 16
14	Dec. 4	Policy and actions to find solutions	17 – 20
Final Exam and Term Test dates are TBA			