Biology 4012WA
Climate Change and Biology
Course syllabus

Winter term 2026

TEXTS: Textbooks: There is no assigned textbook. I can let you know of available choices.

INSTRUCTOR:
Dr. Joe Carney
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OFFICE HOURS: posted on office door or by appointment

LECTURES: MWF – 1330 – 1430: ATAC 2003

EVALUATION:

Lecture Midterm	=	15 % (13 February)
Presentation:	=	15% (TBD)
Seminar Lead	=	20%
Seminar Response	=	50% (total, divided by number of seminars)

GRADES:
A+ ≥ 90
A = 80 – 89 (1st class standing)
B = 70 – 79
C = 60 – 69
D = 50 – 59
E = 40 – 49 (failed)
F = 1 – 39 (failed)
F Academic Dishonesty = 0

Withdrawal without academic penalty: 6 March 2026

COURSE OBJECTIVES:

This is a senior level course that will focus on the consequences of climate change for biological systems. It will be a hybrid lecture/seminar format. The beginning of the course will be lectures that focus on the science behind contemporary climate change, what some of the consequences may be, and what predictions for the future look like. Once this foundation is set then the effects of climate change on biological systems will be investigated. This will be accomplished by a short lecture or two on the specific topic followed by an in class seminar based on papers I will provide. The seminars (1 per week) will be lead by a team of two students. The presenting team will be graded on their presentation and summary of the topic, and how they lead the discussion that will follow. The rest of the class will be graded on their participation and on a very brief written summary of what they learned from the seminar. Success will depend on your commitment to engage with the material and participate in the discussion.

Learning Outcomes

The learning outcomes of this course are for you to:

1. Understand the historical context of climate change and to have a fundamental understanding of the major concerns relating to contemporary climate change,
2. To be able to understand and communicate the science behind climate change and how it affects biological systems;
3. To be able to critically evaluate the literature (both scientific and popular) related to climate change;
4. To improve your writing, effective communication, and analytical problem-solving skills.

To succeed in reaching these goals and in this course you will need to attend class and commit to being prepared and engaged for class. You will get out what you put in.

Lectures and seminars

There will not be lectures in every class. I envisage having 1-2 lecture sessions per week (Monday and Wednesday) to introduce the major topic. This will be followed by a seminar and discussion lead by students (groups of two) based on papers that I will provide. The papers will relate to the topic that was just discussed in the preceding lecture. For these seminars to work, everyone must come prepared: this means the papers are read, and notes for discussion are prepared. The group leading the seminar will be expected to provide a brief summary of the papers being considered and have questions for the class to initiate the discussion. There also may be room to discuss items in the news that relate to the course material.

Presentation

There will be an in class presentation (10 minutes + 5 for questions) based on a topic of your choosing. The general theme will be how climate change affects some specific aspect of biology. Please let me know as early as possible what your topic will be in order to prevent duplication of topics. If you are struggling coming up with a topic please let me know and I will provide some guidance.

COURSE POLICIES

Exams:
There will be a single midterm exam. This will occur in the first month of the term and will cover the series of lectures on the topic of the science of climate change (not on how it affects biotic systems). If you miss the exam you will receive a grade of zero unless you are absent for a documented valid reason such as a family or medical emergency. If you wish to have the exam regraded you must submit a written explanation of why you think the assigned grade was incorrect within 2 weeks of return of the exam. Be aware the entire exam will be re-evaluated and your mark may go up, remain the same, or go down.
Note: this does not apply to arithmetic errors such as incorrect addition. You may bring these types of errors to my attention for correction, without a written explanation, at any time.

Academic Dishonesty:
(The following is taken directly from the University website, with minor modification.)
The University takes a most serious view of offences against academic honesty. Penalties for dealing with such offences will be strictly enforced.
The following rules shall govern the treatment of candidates who have been found guilty of attempting to obtain academic credit dishonestly.
(a) The minimum penalty for a candidate found guilty of plagiarism, or of cheating on any part of a course will be a zero for the work concerned.
(b) A candidate found guilty of cheating on a formal examination or a test, or of serious or repeated plagiarism, or of unofficially obtaining a copy of an examination paper before the examination is scheduled to be written, will receive zero for the course and may be expelled from the University.
A copy of the "Code of Student Behaviour and Disciplinary Procedures" may be obtained from the Office of the Registrar.