# Impact of Global Change on New England's Coastal Environment (OCG103g) Spring Semester, 2020 Class Meets: T-Th 8:00-9:15 Location: White Hall 204 Field Trip(s): TBD Office Hours: TBD

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Required Text: None, reading and video material will be provided and accessible on-line.

## **Course Description**

Instructors

The relationship between science and society will be explored with a range of environmental change topics related to climate change (e.g., sea level rise, major storm frequency) and societal change (e.g., population trends, globalization). These topics will be presented in the context of past, recent and future environmental change with both local and global perspectives. A field trip to coastal regions will expose students to the dynamic character of the coastal environment and provide real-world examples of environmental change. Students will synthesize their course experience with a final group presentation that identifies a local/regional example of environmental change. The project will then consider opposing viewpoints on the appropriate response to the environmental change.

## **General Course Goals**

1) To explore the relationship between science and society.

2) To use critical thinking for the analysis scientific and societal events.

3) To recognize the factors and processes driving global environmental change.

4) To understand the dynamic nature of environmental processes that impact coastal regions.

## **General Education Areas**

Knowledge. A1 STEM Responsibilities. C2 Global Responsibilities Grand Challenge

## **Specific Student Learning Outcomes**

Students will be able to describe the difference between weather and climate, and identify the primary factors that cause global climate to vary.

Students will be able to recognize various greenhouse gases and how they impact climate. They will also recognize data sources used to constrain past climate and the concepts used to predict future climate.

Students will be able to conduct in-class activities that demonstrate the impact of atmospheric CO<sub>2</sub>,

albedo and feedback mechanisms on climate.

Students will be able to use climate data and atmospheric CO<sub>2</sub> measurements to identify seasonal, decadal and millennial patterns and potential causes.

- Students will be able to analyze different representations and interpretations of climate data to evaluate arguments for and against climate change.
- Student will use Social Institutions (e.g., gov't, family, education, religion, economy) as a method to become self-aware of their own and fellow students identity, as well as other cultures.
- Students will be exposed to oral history of the Narragansett Indian Tribe for perspective on how a culture has adapted to sea level change since the last glacial maximum.
- Students will combine knowledge of climate change and social institutions to discuss implications and potential interventions that will address issues of global environmental change.

## **Course Administration**

Exams – 2 online exams (specifics TBD).

If missed due to illness, emergency, or pre-approved circumstance, a make-up exam will be provided. Accommodations will be made for documented conditions (please inform instructors in advance)

<u>Assignments</u> – a range of on-line questionnaires, readings, and in-class activity reports. Late assignments will have their maximum point value decreased by 10% per day

<u>Class Participation</u> – respectful and timely discussion or group work.

Use of electronic devices subject to instructors permission.

Attendance - expected, unless provided with an acceptable excuse.

 $\underline{\text{Field Trip}(s)}$  – Preference for a trip during an extended class period. If schedules do not permit, an extended class-time field trip will be scheduled for a Saturday.

For those unable to attend field trip with valid excuse, classes will meet to cover material missed. Grading

Exams (20%) Assignments (20%) Class Participation (20%) Attendance (20%) Final Group Presentation (20%)

# Tentative Calendar of Course Topics & Events

Date	Topics	Exams	
Jan. 23	Introduction		
Jan. 28	Weather vs Climate (Critical Thinking)		
Jan. 30	Climate History (described & causes)		
Feb. 4	Climate Proxies (ice activity & review)		Jt
Feb. 6	Climate Greenhouse Gases (lecture + box activity)		ser
Feb. 11	Sea Level Change – (activity rev., SL defined, causes	5)	ě
Feb. 13	Earth History (Recent Sea Level History		ط
Feb. 18	Glaciers		
Feb. 20	Storms - case studies		
Feb. 25	Climate Summary - effects on people		
Feb. 27	Summarize Narragansett Case Study		Ist
Mar. 3	Societal Institutions - Defined/Connections	On-line Exam #1	Ра
Mar. 5	Role of Social Media in Science		
	SPRING BREAK		
Mar. 17	Where were we?		
Mar. 19	Climate Models - (NetLogo activity & models)		
Mar. 24	Climate Predictions & Implications (IPCC)		
Mar. 26	Feedback Mechanisms - (Post-it activity)		
Mar. 31	John's Choice		
Apr. 2	Field Trip Preparation		Le
Apr. 7	Societal Institutions - Social Change		itu
Apr. 9	NYTimes Reading		Ъц
Apr. 14	Group Project - introduction		
Apr. 16	Geoengineering		
Apr. 21	Societal Impacts	On-line Exam #2	
Apr. 23	Group Projects - help session		
Apr. 28	Group Projects - help session		

Finals

Group Projects - final presentations

#### **Example of Pre-class Questionnaire**

Go to the websites listed below, read the information & answer a few questions below. You may have to copy and past the URL's into your browser. Responses are due by 11:59 pm on Monday.

http://www.nasa.gov/mission\_pages/noaa-n/climate/climate\_weather.html

http://en.wikipedia.org/wiki/Temperature\_record

#### \*1. Please Enter Your Name

#### 2. What it the difference between weather and climate?

3. What is a temperature proxy?

\*4. What is one thing from the two readings that you did not understand?

## **Example of On-line Exam**

#### Directions

There are 5 short answer questions, answer them all. There are 5 possible essay questions, answer only 2 of them. You will have 1 hour to complete the exam once it is opened. Exams shall be completed by 9:59 PM on Sunday November 11th, 2020.

This is not a group effort. Do not seek answers from any other individuals.

It is OK to use your class notes or any notes we posted on Sakai.

DO NOT use GOOGLE or seek any other on-line answers. You do not want to know what will happen if we think someone has used Google.

#### Short Answer Example

1) What is the difference between weather and climate?

#### **Essay Example**

1) Describe how greenhouse gases can cause global temperatures to rise.