

RC 203

Global Impact of Climate Change

3 Credits

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RC 203 Version: 5



Global Impact of Climate Change

Calendar Description

This course examines the broader potential impacts of a warming planet. The potential impacts on plants, animals and mankind are considered. Opposing theories about global warming and the potential implications are reviewed.

Rationale

This is a required course for the Sustainable Energy Technology program. There are several benefits to increasing the world's use of renewable energy. One of the benefits is the reduced greenhouse gas emissions from renewable energy sources relative to fossil fuel energy sources. There is a general consensus among scientists that emissions of greenhouse gases from fossil fuels are a major contributor to climate change on Earth. If renewable energy sources can be used to replace existing or fossil fuel energy use, then the global impacts of climate change could be reduced. Decisions about the use of renewable energy sources (or continued fossil fuel use) should be made with knowledge of current climate change issues.

There is a vast amount of information available about climate change and its consequences. Such information provides contradicting points of view, scenarios ranging from no consequences to severe impacts, and timelines that vary widely. It can be difficult analyzing all of the available information and achieving a personal perspective on climate change. This course discusses the current evidence supporting the existence of climate change, some arguments against this evidence, projected impacts to Earth from climate change, and possible ways to lessen the global impacts of climate change.

Prerequisites

None

Co-Requisites

None

Course Learning Outcomes

Upon successful completion of this course, students will be able to

1. state recent measured and observed changes in the Earth's climate and physical and biological systems.
2. explain how changes in Earth's systems can affect global heat distribution, and how the global climate system has changed in the past.
3. list some of the causes of climate change.
4. apply critical thinking to discussions of climate change and discuss some arguments disputing the theory of climate change.
5. explain how climate models work, their limitations, the type of climate changes they predict, different scenarios, and certainty levels.
6. describe some of the impacts on Earth's systems and human activities due to climate change.
7. outline some of the possible mitigation, adaptation, and geoengineering responses to climate change.
8. explain how carbon pricing and carbon accounting are used.
9. describe some of the political initiatives that can be used to respond to climate change.
10. outline the individual and personal actions that could be taken to reduce climate change.

Resource Materials

Required Texts:

These textbooks are mailed out to registered students:

Dessler, A.E. 2016. Introduction to modern climate change. 2nd edition. Cambridge University Press.

Dow, K., and T.E.Downing. 2011. The atlas of climate change: mapping the world's greatest challenge. 3rd ed. University of California Press, Berkeley and Los Angeles, California.

Conduct of Course

This course consists of the equivalent of 45 hours of lecture delivered through the Internet using an on-line learning manager program. Course content modules and links to some assigned readings are available on-line. A course facilitator is available to guide the student through the course, answer any questions, and grade assignments. Students are expected to participate in on-line discussion forums with other classmates and the course facilitator. Assignments include on-line discussions, assessments (on-line quizzes) and assignment papers. Assignments are submitted through the learning manager program. Exams are taken on-line. In order to complete the course on time, deadlines for assignments and exams are enforced.

Evaluation Procedures

Grades are assigned with the following weightings:

<u>Evaluation Tool</u>	<u>Weighting</u>
20 Assignments/Assessments/Discussions worth 3% each	60%
Midterm Exam	20%
Final Exam	20%
Total	100%

Grade Equivalents and Course Pass Requirements

A minimum grade of D (50%) (1.00) is required to pass this course.

Letter	F	D	D+	C-	C	C+	B-	B	B+	A-	A	A+
Percent Range	0-49	50-52	53-56	57-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-100
Points	0.00	1.00	1.30	1.70	2.00	2.30	2.70	3.00	3.30	3.70	4.00	4.00

Students must maintain a cumulative grade of C (GPA - Grade Point Average of 2.00) in order to qualify to graduate.

Attendance

Active participation is required in all courses within the Sustainable Energy Technology certificate and diploma programs. Each facilitator designates these requirements through the use of tools within the management system and personal contact with learners.

These expectations can be given marks as part of the assessment process. Each course outlines these expectations within the course structure.

Learners are asked to demonstrate their participation/attendance through discussion forums, sharing research results, contributing relevant information, submitting assignments, communicating with colleagues and the facilitator, and participating in synchronous meetings or asynchronous activities.

Attendance or participation is considered vital to the learning process. Students are expected to keep up with the set course schedule. If a student is unable to participate for an extended period of time, marks will not be given for material missed. With prior notice, the facilitator may allow extensions for missed assignments at his/her discretion.

NOTE: Any exceptions to the above attendance policy (e.g. family or work-related issues) **must** be approved in writing by the Department Chair **prior** to the beginning of the course.

Course Units/Topics

- 1: Evidence of Climate Change
 1. Introductions
 2. Measured and Observed Changes in Climate
 3. Global Processes
 4. Causes of Climate and Change
- 2: Climate Models
 1. What are Climate Models
 2. Future World
- 3: Arguments Against Climate Change
 1. Debating Climate Change
 2. Climate Change Arguments
- 4: Impacts of Climate Change
 1. Rising CO2 Levels
 2. Disrupted Ecosystems
 3. Melting Glaciers and Sea Ice
 4. Thawing Permafrost
 5. Threatened Water Supplies
 6. Agriculture and Food
 7. Threats to Health
 8. Rising Sea Levels
 9. Cities at Risk
 10. Cultural Losses
- 5: Responding to Change
 1. Mitigation
 2. Geoengineering
 3. Carbon Accounting & Carbon Pricing
 4. Adaptation
 5. Economics and Politics of Climate Change
 6. Individual Action on Climate Change



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