



## Understanding Climate Change

EDUO 9315 2 Semester Credits/Units

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### Course Syllabus

#### Course Overview

Learn the root and continuing causes of climate change, its impact on our environment and thus the future of all Earth's inhabitants. Discover how to engage your students in an understanding of climate change through study, discussions and activities that will encourage them becoming ambassadors of climate change reversal.

**Required Text:** [The Carbon Almanac](#)

**Required Supplement (free)** [The Carbon Almanac Educators' Guide](#)

**Course Learning Objectives:** Course participants will have opportunity to:

- Understand how four big factors; coal, combustion, cows and concrete are significant in the increase of greenhouse gases released into the environment
- Learn the science of the climate crisis: Defining Carbon and recognizing the properties and role of the Carbon element on Earth.
- Learn about the five potential negative scenarios presented by the Intergovernmental Panel on Climate Change.
- Study how Climate impacts **everything** around us.
- Teaching Climate Change to your students through collaboration and innovative lessons.

#### Course Relation to CCS or other Professional Standards:

[NGSS Climate Change](#)

[State science and social studies standards for grades kindergarten through 12](#)

#### How to Submit Coursework

Each completed assignment in this course is submitted to the instructor for review. Follow directions at the end of each assignment on how to prepare and submit your assignments. Name each file submitted with your last name and assignment number (i.e. BrownAssignment3. Make sure you place your full name, course number and assignment number at the top of each document page. You will receive feedback from your instructor within 5 days indicating successful completion of the assignment or the need for revision. Assignment grades will be averaged for the final course grade.

**Submit completed work to the corresponding Module dropboxes in Moodle**

## Learning Modules

Complete only the items listed in the Assignment sections

Module 1	<b><i>The Beginning – Climate Change for Rookies</i></b>
Objectives	Understand how four big factors; coal, combustion, cows and concrete are significant in the increase of greenhouse gases released into the environment which together are significant contributors to climate change.
Assignments	<p>A. <i>Read pages 2-5 in The Carbon Almanac</i>, explain in a written document, how the fictional story of the Four Horsemen of the Apocalypse could become a reality through the Four Horsemen of the Carbon Apocalypse.</p> <p>B. <i>Climate Change for Rookies</i>. Read pages 20-37 in The Carbon Almanac. Based on the reading, prepare a detailed outline that could be used to prepare either a talk or, a slide presentation to share with peers during a PD session or at a conference on the topic of urgency to act on climate change before it is too late.</p> <p>Reference <a href="#">The Almanac Collective</a> for help with this assignment.</p> <p><b>Submit your A and B work to the Module 1 Dropbox</b></p>
Suggested Activities for Classroom Students	<p><b>Objective:</b> Familiarize students with Climate Change.</p> <p>A) Review the following videos, selecting one to watch with students.</p> <ul style="list-style-type: none"> <li>• <a href="#">What is Climate Change? Explore the Causes of Climate Change</a></li> <li>• <a href="#">Climate Change for Kids   A fun engaging introduction to climate change for kids</a></li> </ul> <ol style="list-style-type: none"> <li>1) Discuss with students the content of the video selected.</li> <li>2) Discuss with students the four “C” factors, coal, combustion; cows and concrete as human-created factors and choices that are significant in the increase of greenhouse gases released into the environment.</li> <li>3) Break the class into small discussion groups of five. <b>Discussion Group objective:</b> Discuss how the Four Carbon elements could destroy the planet and how destruction could be prevented. One group member takes discussion notes using a method of their choice, i.e. Drive, Canva, pencil/paper or other.</li> <li>4) Create one new group with one member from each of the five groups. They will compare their group’s results.</li> <li>5) Bring the class together and have them come up with one occurrence and one or more possible solution.</li> </ol> <p>B) From <a href="#">The Carbon Almanac Educators’ Guide</a></p> <ol style="list-style-type: none"> <li>a. Dictionary; (ages 8+) Page 7</li> <li>b. You are Brave (ages 12+) Page 8-12</li> <li>c. How to Live in a Carbon-Neutral World by 2050 (ages 8+, 10+) Pages 15-17</li> <li>d. Goldilocks Tackles Climate Change (ages 8+) Page 18-20</li> </ol>
Assessment	All course assignments will be assessed based on the course rubric.

<b>Module 2</b>	<b><i>Here's What's True</i></b>
<b>Objectives</b>	Learn the science of the climate crisis: Defining Carbon and recognizing the properties and role of the Carbon element on Earth.
<b>Assignments</b>	<p>Familiarize yourself with <b><i>Here's What's True</i></b> – Pages 38-91 in The Carbon Almanac. Prepare an overview outline of what is taking place on Earth to have caused the imbalance of carbon buildup in the atmosphere, to an audience of a city council and citizens. Use the abundance of information presented in <b><i>Here's What's True</i></b>, focusing on large and small causes and examples of carbon pollution.</p> <p>The overview needs to be in the form of a detailed Outline that would serve to guide a presentation by you, a concerned citizen, to your local city council as they take public input on plans to develop a large housing, business, and manufacturing annex to the city. The outline's details should be detailed to the point that if handed to another concerned citizen they could understand the goal and rationale behind your scientific-based opposition to a blanket expansion without consideration of its impact on climate change.</p> <p><b>Submit your work to the Module 2 Dropbox.</b></p>
<b>Suggested extension Activities for Classroom Students</b>	<p><b>Objective:</b> Engage students in learning about carbon production, and the greenhouse effect on Earth. Use partners or small groups for collaborative learning opportunities.</p> <p>From <a href="#">Educators' Guide</a></p> <p>Computing and Carbon (ages 12+)</p> <p>Build a Carbon-Eating Machine (ages 6+)</p>
<b>Assessment</b>	All course assignments will be assessed based on the course rubric.

<b>Module 3</b>	<b><i>Scenarios</i></b>
<b>Objectives</b>	Learn about the five potential negative scenarios presented by the Intergovernmental Panel on Climate Change.
<b>Assignment(s) Include Activities and Needed Materials</b>	<p>Familiarize yourself with <b><i>Scenarios</i></b> – Pages 94-105 in The Carbon Almanac. Prepare an overview outline of what is taking place on Earth to have caused the imbalance of carbon buildup in the atmosphere, to an audience of a city council and citizens. Use the abundance of information presented in <b><i>Here's What's True</i></b>, focusing on large and small causes and examples of carbon pollution.</p> <p>The overview needs to be in the form of a detailed Outline that would serve to guide a presentation by you, a concerned citizen, to your local city council as they take public input on plans to develop a large housing, business, and manufacturing annex to the city. The outline's details should be detailed to the point that if handed to another concerned citizen they could understand the goal and rationale behind your scientific-based opposition to a blanket expansion without consideration of its impact on climate change.</p> <p><b>Submit your work to the Module 3 Dropbox</b></p>
<b>Suggested extension Activities for Classroom Students</b>	<p>Activities to engage students in learning about production and, the greenhouse effect on Earth.</p> <p>A. Educator's Guide; pages 25-27</p> <p>Taking the Green Road (ages 12+)</p> <p>Creating the World I Want (ages 12+)</p>

	<p>B. Create a document (spreadsheet or presentation) on the causes of carbon pollution.</p> <ul style="list-style-type: none"> <li>• <a href="#">What is Climate Change? Explore the Causes of Climate Change</a></li> <li>• <a href="#">Climate Change for Kids   A fun engaging introduction to climate change for kids</a></li> </ul>
<b>Assessment</b>	All course assignments will be assessed based on the course rubric.

<b>Module 4</b>	<b>Impacts</b>
<b>Objectives</b>	Understand that Climate impacts <b>everything</b> around us.
<b>Assignment(s) Include Activities and Needed Materials</b>	<p>Familiarize yourself with <b>Impacts</b>– Pages 108-155 in The Carbon Almanac</p> <p>The list of <b>Impacts</b> found in The Carbon Almanac is staggering. Up to now in this course you have learned about <i>why and how</i> climate change is taking place. Its impact reaches every area of our planet, every day, every minute. We are all aware of the impact to some degree. How it is impacting your community, your life, your job, and your family, is the objective of this assignment.</p> <p>Because of your climate change knowledge, a representative from a local university has contacted you to present at their upcoming annual April 22, Earth Day event help on campus (or present a media presentation 30 slides).</p> <p>From the many Impacts topic covered on pages 108-155, select at least 12 that you feel are most important to cover in your presentation based on their widespread impact on the planet and how they can trickle down to impact life on Earth. Prepare a medial presentation using either a video app or presentation app for the event. Keep in mind your audience, the need for detail, the importance of engaging and keeping their interest and attention. Avoid overloading your presentation with videos, especially long ones (try editing them down; use Start and Stop features in your presentation app if available) and quotes A few short videos are fine. Be the “voice”, first person, perhaps make it a story. Viewer engagement is important. Include a look at climate change now and its projected future impact. End with a summary of your presentation.</p> <p><b>Submit your work to the Module 4 Dropbox. For videos and presentations stored on servers, send the url and make sure permission is set for <u>anyone with a link</u>.</b></p>
<b>Suggested extension Activities for Classroom Students</b>	<p><b>Objective:</b> Engage students in understanding the impacts of Climate Change on the planet and their lives.</p> <p>A. Educator’s Guide; pages 29-32 Climate Anxiety (ages 12+) Seeing Plants (ages 6+)</p> <p>B. Have students create a similar presentation as yours. Adjust the length and number of impact topics accordingly by grade level. .</p>
<b>Assessment</b>	All course assignments will be assessed based on the course rubric.

<b>Module 5</b>	<b><i>Teaching Students About Climate Change</i></b>
<b>Objectives</b>	Teaching Climate Change to your students through collaboration and innovative lessons.
<b>Assignment(s) Include Activities and Needed Materials</b>	<p>Create collaborative assignments that engage student partners or small groups in learning about Climate Change. The assignments do not need to include solutions but can mention the now-needed actions to move towards Net 0 - <i>The balance between the amount of greenhouse gas produced and the amount removed from the atmosphere.</i></p> <p>View <a href="#">Resources</a> listed in this document for assistance and as well, search the web for ideas on how to create grade-appropriate ideas. There is no shortage. Keep in mind Copyright, Fair Use and, online responsibility standards.</p> <p>Using the <b><i>Unit of Study</i></b> template provided for this assignment, create a unit of study, PBL or other multimedia project to meet the objective of engaging students in learning about Climate Change, its causes and impact on the planet.</p> <p><b><i>Students must collaborate with peers either in their classroom or, strongly recommended, with peers in another class within your school or district.</i></b></p> <p><i>For an exciting and memorable global, peer-partnership approach to finding peers at the K-8 level, join <a href="#">Empatico</a>.</i></p> <p style="text-align: center;"><b>Submit your completed work for Module 5 in the Module 5 Dropbox and Share your Unit of Study to the Module 5 Forum</b></p>
<b>Suggested extension Activities for Classroom Students</b>	No suggested extension activities for this assignment. You are authoring your own activities to share with peers taking this course.
<b>Assessment</b>	All course assignments will be assessed based on the course rubric.

### Course Resources:

- [What is Climate Change? Explore the Causes of Climate Change](#)
- [Climate Change for Kids | A fun engaging introduction to climate change for kids](#)
- <https://climatechampions.ucsd.edu/k12-curriculum/>
- <https://www.cde.ca.gov/ci/sc/ee/>
- <https://www.npr.org/2019/04/25/716359470/eight-ways-to-teach-climate-change-in-almost-any-classroom>
- 36 organizations helping solve the climate crisis  
<https://foodtank.com/news/2020/10/36-organizations-helping-solve-the-climate-crisis/>
- 7 climate change organizations you should know  
<https://www.idealist.org/en/careers/7-climate-change-organizations-you-should-know>

- [The Almanac Collective](#): The Educators Guide, Facilitating Conversations with Podcasts & How to Use the Carbon Almanac as a Teaching Tool
- Climate Change Education Overview and 7-12 curriculum – [Stanford University](#)
- [Climate Change and You-What You Can Do at School](#)
- [University of Oxford; Net Zero](#)
- [Generation Carbon – A Carbon Almanac for Kids](#) Free Download or purchase

[Our Planet: Our Business](#) The global business community can be a powerful force to drive action for nature - find out why we are confident that change

### Course Assessment Rubric:

EXCELLENT  Meets or Exceeds Course Objectives: <b>A to A-</b>	ACCEPTABLE  Majority of Work Meets Course Objectives; <b>B+ to B-</b>	NOT ACCEPTABLE  Needs Considerable Improvement: Resubmit Work Suggested: <b>C or below</b>
All work submitted reflects in-depth understanding of course objectives.	Most work submitted reflects in-depth understanding of course objectives.	Work shows little or no in-depth understanding of course objectives.
Assignment responses show evidence of new knowledge evidenced by thoughtful, detailed and accurate assignment responses.	Most assignment responses show evidence of new knowledge evidenced by thoughtful, detailed and accurate assignment responses.	Responses show little to no evidence of new knowledge as evidenced by lack of thoughtful, detailed and accurate assignment responses.
Work submitted was organized and clearly articulated. The student carefully followed all assignment instructions. The instructor did not have to provide continual assignment clarification or request revisions.	Most work submitted was organized and clearly articulated. The student carefully followed all assignment instructions. The instructor had to provide continual assignment clarification or ask for revisions.	Work submitted was not organized or not clearly articulated. The instructor had to provide constant clarification and ask for continued revisions.
Assignment content and required projects were original.	Assignment content and required projects were original.	Evidence that not all assignment content and required projects were original.
Work is free of spelling and/or grammatical errors.	Work has few spelling and/or grammatical errors.	Work has numerous spelling and/or grammatical errors.