COURSE INFORMATION
MET 209 Introduction to Climate Studies
*Online with optional Monday 11:00 AM to 12:20 PM investigation work sessions E-133*
Course Website ID and Password: [http://amsedu.ametsoc.org/amsedu/login.cfm](http://amsedu.ametsoc.org/amsedu/login.cfm) ID: uhwo043 password: c!im@te14
We will also use the UHWO Laulima site to post assignments, take quizzes, and for announcements.

INSTRUCTOR
Dr. Richard M. Jones  rmjones7@hawaii.edu

PHONE & OFFICE  (808) 689-2340, Building E 215

OFFICE HOURS  Monday, Tuesday, and Wednesday 12:30 – 1:30 PM or by appointment

COURSE DESCRIPTION
This course is online with optional weekly face-to-face investigation work sessions and is specifically designed for non-science majors and prospective elementary teachers. The objectives of the course are to aid students in developing meaningful and functional understanding of key concepts found within the Atmospheric Sciences and their interrelations; to provide students with open-ended problems solving environments that facilitate insight in the nature of science as an intellectual activity; to explore alternated conceptions of scientific phenomena; to help students develop more positive attitudes about science and increase their confidence in their ability to do science. This course satisfies the General Education requirement for a physical science (DP)

PREREQUISITES
None

TEXT(S)
Climate Studies: Introduction to Climate Science, Moran, R. (2010 edition, Required)
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Course Back-up Website: [http://www.ametsoc.org/amsedu/login.cfm](http://www.ametsoc.org/amsedu/login.cfm)

COURSE RATIONALE
MET 209 was designed to provide an solid introduction to Climate Science for all students at the University of Hawai`i-West O`ahu (UHWO) as well as meet the accreditation guidelines for UHWO’s elementary education program that requires future elementary teachers to teach science at the K-6 level. MET 209 is one of several content courses at UHWO designed to meet this need. While MET 209 meets the General Education requirement for Physical Science (DP), it has been specifically designed to prepare future teachers to teach earth science at the K-6 level with reference to state and national benchmarks for scientific literacy. Methods regarding how to teach science in the K-6 classroom are taught in a separate course, EDEE 434 Elementary Science Methods.

What is Climate Studies?
MET 209 will engage you in learning key concepts and principles of Climate Science within the Earth System. What do we mean by the “Earth System?” Our planet can be thought of as having four basic components – the land surface and interior of the Earth (geosphere), water and ice (hydrosphere), air (atmosphere), and living creatures, including humans (biosphere). In order to understand how the earth works, we need to understand not only the processes that occur in each of these components, but how these components interact with each other. Additionally, we must consider the place of the earth in the solar system and universe, and how the earth and its inhabitants have changed through time. In short, MET 209 considers how our climate works and interacts with the other Earth Systems as matter and energy continuously cycle through and between these cycles. MET 209 provides an introduction to the processes that occur in the earth’s atmosphere and hydrosphere, how these processes create the earth’s climate, and how humans interact with weather and climate systems.
The Inquiry Approach

In the inquiry approach to learning, you will engage in numerous hands-on activities, where you will “discover” the principles and concepts of earth science. You will then use these concepts to understand and explain much of the phenomena that you observe in Hawai‘i and around the world. Work through each activity carefully and use the questions to help guide your thinking as you determine what is happening. Once you understand the processes involved, you can begin to synthesize the ideas into a general statement, which summarizes the principles and concepts. The next stage is to apply the information to explain new situations or data. An important part of this learning process is discussion. You and other students will exchange ideas and suggestions, with the intent of gaining a better understanding of earth science.

Science is not only a noun, a list of facts and principles to learn, it is also a verb, a way of looking at the world and asking questions.

Sometimes, students are apprehensive about getting into science. They worry about doing activities and experiments "correctly." But activities may not always work out as planned. That's okay! Practicing scientists experience failure far more often than success, and often learn more from ideas or experiments that fail. In this course, there is usually more than one way to do a given activity and often there is more than one possible result. The activities in this course will guide you towards the scientifically accepted ideas and concepts, but also allow you to learn about how science is done.

NOTES:

1. **Regular participation and completion of class activities is required.** This is an online course so you will not have to be concerned with absences. However, you are still expected to complete all work by the designated due dates.
2. Penalties will be imposed for assigned work, which is submitted late at 3.4% per day after the due date.
3. Students who require assistance with writing or mathematics are encouraged to seek assistance from the No'eau Center (www.uhwo.hawaii.edu/wlcenter). The Center also provides workshops on other topics that may be of use to you: for example, how to take notes in class, how to read a textbook, and how to prepare for exams. The course website also has mathematics tutorials for each week to help you with the algebra if you desire.
4. Course materials will be posted on http://amsedu.ametsoc.org/amsedu/login.cfm ID: uhwo043 password: c!im@te14 and announcements and additional resources and copies of investigations will be posted on the course Laulima site.
5. **This syllabus is a living document and the instructor reserves the right to alter, edit, or modify activities and/or assignments based on the learning needs of the individuals in the course.**
6. No “extra-credit” projects, reports etc., are possible in this course. Please do not ask!

**COURSE GOALS**

01. Ability to analyze and the use web based resources in science learning.
02. Utilize scientific methodology as a problem solving techniques to learn key concepts of earth science.
03. Use the vocabulary and concepts of climate science to describe local issues within a global context.
04. Be able to relate the study of climate science to contemporary, historical, technological, and societal issues in the context of Hawai‘i.
05. Reflect upon the nature and practice of climate science as a process rather than a body of disconnected facts to be memorized.

**COURSE POLICIES:**

**Student Conduct:** For information on what is expected of UH-West O‘ahu students, please refer to the Campus Policies sections (pp. 38-39) of the UHWO 2013 – 2014 Catalog (http://westoahu.hawaii.edu/pdfs/UHWOcatalog_2013-14.pdf).

**Accommodations:** Students with disabilities, whether physical, learning, or psychological, who believe that they may need accommodations in this class are encouraged to contact a counselor in Student Services or your instructor as soon as possible to ensure that accommodations can be arranged for you to fully participate in all components of this course. If you question the appropriateness of an accommodation or wish to discuss the nature of a disability directly or exclusively a counselor in Student Services is available to answer any questions and to consult on access, disability and universal design. The instructor strongly encourages you to seek any help that might be needed to support your success.

**UHWO CREDIT HOUR POLICY**

For a 3-credit hour course delivered during the normal 15 week semester a student should normally devote 9-hours of work each week. Of this, 1:20 may be spent in the optional face-to-face investigation sessions. The remainder of your class time will be spent engaged in reading your text and eInvestigation Manual, responding Chapter Progress and eInvestigation questions,
researching and reading articles in both research and popular media focused on climate and atmospheric science or policy, completing homework, working online, and studying for and taking exams.

ASSIGNMENTS/LAB REQUIREMENTS

A. Homework/Daily Activities and Class Participation: (70%)
This course is structured to provide online and static (text based) assignments four times per week. It is important that you access the course website: http://amsedu.ametsoc.org/amsedu/login.cfm ID: uhwo043  password: c!im@te14 each day. Remember that 3.4% of your grade on an assignment will be deducted for every day it is late even during SPRING BREAK.

B. Optional Laboratory/Investigation Activities: (0%)
Climate Science lends itself to hands-on, minds-on inquiry and there will be a variety of laboratories or investigations that will help the student conceptualize the often, abstract concepts covered in the course. While all the Laboratory/Investigations for this course are available online as part of the weekly course requirements they may involve manipulatives that can be better understood by interaction with the instructor in a face-to-face setting. In order to meet this need, there will be one optional Laboratory/Investigation Session that you may attend on Mondays 11:30 to 12:20 in Room E-133.

D. Climate and the Environment in the News: (15%)
There will be 3 Climate and the Environment assignments during the term. You may select any article from local newspapers or popular magazines (such as Scientific American or Newsweek). The assignment will consist of a written summary (no more than ½ page) of the topic and a discussion of the relationship of the topic to what you have learned from your textbook. A guide to writing these short papers will be provided.

E. Assessments: (15%)
There will be a midterm and final in this course as well as quizzes and other assessments that be given periodically throughout the semester. Assessments may cover content from previous classes, extensions of activities, and/or materials from assigned readings.

The course grade is based on the sum of the scores obtained on the above requirements. Note that late assignments will not be accepted.

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ACKNOWLEDGEMENTS

The development of this atmospheric science course is the result of work done by Dr. Robert Moran and the education division at the American Meteorological Society.

Student Learning Outcomes

By the end of this course students will be able to demonstrate content mastery as described within the Hawai’i Content and Performance Standards in the context of the Earth Science Standards 6, 7 and 8 Physical, Earth, and Space Sciences. GELO 7 (Social and Natural Science Literacy), ILO 4 (Disciplinary Knowledge), Humanities DLO 3 (Analyze research questions, problems, and issues in Humanities subjects), Education DLO 5 (Demonstrate knowledge of content)

By the end of this course students will be familiar with key concepts, developments, and reasoning strategies used in earth science such that they are able to successfully solve problems in open-ended, inquiry environments using materials, maps, data collection tools, models and computer simulations, other class activities and discussions, and background readings GELO 8 (Contemporary Ethical Issues), ILO 3 (Critical Thinking), Humanities DLO 2 (Analyze contemporary issues from multiple cultural perspectives of global regions and indigenous traditions including Native Hawaiian), Humanities DLO 6 (Analyze research questions, problems, and issues in Humanities subjects), Education DLO 4 (Foster effective communication in the learning environment), Education DLO 7 (Use active learning strategies)

By the end of this course students will be able to clearly articulate through writing and or presentation media study of the Atmosphere to contemporary, historical, technological, and societal issues. GELO 1 (Effective Communication), GELO 4 (Global and Multicultural Perspectives), ILO 2 (Cultural Awareness), Humanities DLO 2 (Analyze contemporary issues from multiple cultural perspectives of global regions and indigenous traditions including Native Hawaiian), Education DLO 4 (Foster effective communication in the learning environment)
### Tentative Schedule

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<th>Week of January 13, 2014</th>
<th>Chapter 13</th>
<th>Climate Classification</th>
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<tr>
<td>Week of January 20, 2014</td>
<td>Chapter 14</td>
<td>Responding to Climate Change</td>
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<td>Week of January 27, 2014</td>
<td>Chapter 1</td>
<td>Today’s Climate Science</td>
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<td>Week of February 3, 2014</td>
<td>Chapter 2</td>
<td>Monitoring Climate</td>
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<td>Week of February 10, 2014</td>
<td>Chapter 3</td>
<td>Earth’s Energy Budget</td>
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<td>Week of February 17, 2014</td>
<td>Chapter 4</td>
<td>Climate, Heat, and Temperature</td>
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<td>Week of February 24, 2014</td>
<td>Chapter 5</td>
<td>Global Water Cycle</td>
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<td>Week of March 3, 2014</td>
<td>Chapter 6</td>
<td>Global Atmospheric Circulation</td>
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<td>Week of April 10, 2014</td>
<td>Chapter 15</td>
<td>Climate Change and Public Policy</td>
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<td>Week of March 17, 2014</td>
<td>Chapter 7</td>
<td>Air/Sea Interactions</td>
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<td><strong>Week of March 24, 2014</strong></td>
<td><strong>SPRING BREAK</strong></td>
<td><strong>Chapter 8</strong></td>
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<td>Week of March 31, 2014</td>
<td>Chapter 9</td>
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<td>Week of April 7, 2014</td>
<td>Chapter 10</td>
<td>Natural Climate Change</td>
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<td>Week of April 14, 2014</td>
<td>Chapter 11</td>
<td>Regional Circulations</td>
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<tr>
<td>Week of April 21, 2014</td>
<td>Chapter 12</td>
<td>Anthropogenic Climate Change</td>
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