Syllabus GEOL1330 Global Warming - Spring 2015

This course satisfies the University of Arlington core curriculum requirements in Life and Physical Sciences.

Instructor: Arne Winguth, Associate Professor
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Teaching Assistant: Nguyen Cao
Email Address: ncao@mavs.uta.edu
Office Hours: Tuesday & Thursday 13:30 -14:00 or after appointment

Section Information:
Lecture: GEOL1350-001
Lab: GEOL1350-011

Time and Place of Class Meetings:
Lecture 001: Tuesday & Thursday 12:30 – 13:20 Geosciences Room 104
Lab 011: Tuesday, 14:00 – 15:50, Geosciences Room 246

Required Textbook:

Recommended reading:
Course description:
Future climate change is among the most serious environmental problems facing the world community. This class will survey the scientific basis of global warming and the impacts of climate change on human society. The course will discuss mitigation strategies for creating a more sustainable environment.

Student Learning Outcomes:
This core course cover causes and impact of climate change ranging from the historical record to future prediction, and the possible associated socioeconomic impacts and risks. It is one of the courses listed for the interdisciplinary environmental and sustainability studies minor.
After completion of this class, students will enhance critical thinking skills, communication skills, teamwork, and empirical and quantitative skills in earth and environmental science and will have a well-rounded understanding of the major climate science processes. The student will be able to:
- Describe the Earth’s energy balance, and feedbacks in the climate system.
- Demonstrate how major fossil fuel resources have been formed and are currently used for.
- Assess the sources of greenhouse gas concentrations and future projection of energy resources, and the ability to forecast future energy production rates.
- Describe the global carbon cycle and the interaction between it various components.
- Analyze the climate record of the past from ice cores, tree rings, and sedimentary deposits.
- Explain the fundamental theories in weather and climate forecast and the application of these theories for future predictions.
- Interpret results from climate projection including expected regional trends in mean climate and climate extremes in temperature and the hydrological cycle.
- Discuss projected socioeconomic impact by climate changes by droughts, flooding and other severe weather conditions.
- Analyze how health conditions change and diseases may propagate.
- Identify alternative strategies for the future energy resources and innovations in transportation how these strategies could improve environmental sustainability.

This knowledge will enable them to have a fundamental knowledge in scientific problems and a better understanding of great societal important associated with future climate change and concepts and decision-making for environmental sustainability.
Grading:

Grading calculation:
Lecture Portion: 70% of course
Lab Portion: 30% of course

Lecture Portion: Lecture tools quizzes 4% of course
Quizzes (3) 6% of course (2% each)
Exams (3) 45% of course (15% each)
Final Exam 20% of course

Lab Portion: Lab exercises (8) 18% of course (2.25% each)
Signature project 8% of course
Project Presentation 4% of course

Final grade calculation:
0.3 x lab + 0.10 x quizzes + 0.45 x exams + 0.20 x final exam
Score will be translated into a grade based on class average.

Grades will not be released over the phone or by email. Grades must be either obtained in person or from the UTA online database.

Grading: Lecture Portion: 70% of course; Lab Portion: 30% of course

Exams:
Exams will be mostly multiple-choice questions, but the final exam will also contain essay questions. No early exams are allowed. Exams must be taken at the scheduled time. Make-up exams can be only taken in cases of illness or family emergency. A valid note from the University disciplinary officer or doctor may be required in these cases. Students who do not take an exam receive zero points as a grade on that exam. Make-up exams are scheduled and set by the instructor.

Quizzes:
Lecture quizzes are not announced. The 3 best quizzes will be counted towards the total grade. There are no make-up quizzes. Lecture Tool quizzes are taken on-line in class.

Lab exercises:
Eight weekly lab assignments as part of the lab section will be given throughout the semester. Maximum average grade of labs will be no more than 100%. Identical copy of a term paper from web or other sources (plagiarized papers or web pages) will result in an F.

Attendance:
Attendance is strongly recommended and will be taken in form of lecture tool quizzes. Lack of attendance may influence the final grade.
Climate Change Research Project (signature project): A signature research assignment in the area of climate change is part of the core curriculum assessment and is designed to stimulate critical thinking skill, team skills, communication and empirical and quantitative skills. A list of research topics will be handed out at the beginning of the semester, however, teams can also propose own topics to the instructor, which need to be approved. Total project length for each team will be four pages, letter size, single-spaced, 12 pt times new roman font including graphs and references. Each team member will individually present the project part. Total length of team presentation will be a 10-minute presentation. Identical copy of a term paper from web or other sources (plagiarized papers or web pages) will result in an F.

Format of signature project submission: pdf format via safe assign on blackboard

Extra credit:
Two extra credit assignments will be given during the class. Extra credit assignments will count towards quizzes. Maximum average grade of quizzes will be no more than 100%

Class Material: https://elearn.uta.edu/webapps/login/

Blackbord Info: http://www.uta.edu/blackboard/students/index.html

Expectations for Out-of-Class Study: A general rule of thumb is this: for every credit hour earned, a student should spend 3 hours per week working outside of class. Hence, a 3-credit course might have a minimum expectation of 9 hours of reading, study, etc.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. Students will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/aao/fao/).

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the Americans with Disabilities Act (ADA). All instructors at UT Arlington are required by law to provide "reasonable
accommodations” to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

**Title IX:** The University of Texas at Arlington is committed to upholding U.S. Federal Law “Title IX” such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit www.uta.edu/titleIX.

**Academic Integrity:** Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

> I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

> I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System Regents’ Rule 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University.

**Lab Safety Training (required):** Students registered for this course must complete all required lab safety training prior to entering the lab and undertaking any activities. Once completed, Lab Safety Training is valid for the remainder of the same academic year (i.e., through the following August) and must be completed anew in subsequent years. There are no exceptions to this University policy. Failure to complete the required training will preclude participation in any lab activities, including those for which a grade is assigned.

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as
well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

**Student Feedback Survey:** At the end of each term, students enrolled in classes categorized as “lecture,” “seminar,” or “laboratory” shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit http://www.uta.edu/sfs.

**Final Review Week:** A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**Emergency Exit Procedures:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities. More details: UT Arlington Procedure 7-6: Emergency/Fire Evacuation Procedures (https://www.uta.edu/policy/procedure/7-6).

**Student Support Services:** UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the
reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

**Writing Center.** The Writing Center, 411 Central Library, offers individual 40 minute sessions to review assignments, *Quick Hits* (5-10 minute quick answers to questions), and workshops on grammar and specific writing projects. Visit https://uta.mywconline.com/ to register and make appointments. For hours, information about the writing workshops we offer, scheduling a classroom visit, and descriptions of the services we offer undergraduates, graduate students, and faculty members, please visit our website at www.uta.edu/owl/.

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**Emergency Phone Numbers** In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911.

For non-emergencies, contact the UTA PD at 817-272-3381

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**Librarian to Contact:** Antoinette Nelson (nelsona@uta.edu)

Other important library information

- Library Home Page ......................... [http://www.uta.edu/library](http://www.uta.edu/library)
- Subject Guides .......................... [http://libguides.uta.edu](http://libguides.uta.edu)
- Course Reserves ........................ [http://pulse.uta.edu/vwebv/enterCourseReserve.do](http://pulse.uta.edu/vwebv/enterCourseReserve.do)
- Connecting from Off- Campus .......... [http://libguides.uta.edu/offcampus](http://libguides.uta.edu/offcampus)
- Ask A Librarian ............................ [http://ask.uta.edu](http://ask.uta.edu)
# SYLLABUS GEO 1430 Global Warming, Spring 2014; Prof. A. Winguth

As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. –Arne Winguth

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Days</th>
<th>Topics and Readings</th>
<th>Reading Ch. Kitchen</th>
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<tr>
<td>1</td>
<td>Jan. 20, 22</td>
<td>Introduction to Weather and Climate</td>
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<td>2</td>
<td>Jan. 27, 29</td>
<td>Evidence of Climate Change</td>
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<td>3</td>
<td>Feb. 3, 5</td>
<td>Energy and Earth Climate</td>
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<td></td>
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<td>The Greenhouse Effect</td>
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<td>4</td>
<td>Feb. 10, 17, 19</td>
<td>Understanding Weather &amp; Climate</td>
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<td><strong>Exam</strong></td>
<td>Feb. 12</td>
<td><strong>1. Exam Chapter 1-3</strong></td>
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<td>5</td>
<td>Feb. 24, 26</td>
<td>Revealing Ancient Climates</td>
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<td>Methods to Analyze Past Climates</td>
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<td>6</td>
<td>Mar. 5, 17</td>
<td>Paleoclimate - Climate History</td>
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<td><strong>Exam</strong></td>
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<td><strong>SPRING BREAK</strong></td>
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<td>7</td>
<td>Mar. 19, 24, 26</td>
<td>Climate Change Projections and</td>
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<td>Global Impact of Climate Change</td>
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<td>8</td>
<td>Mar. 31</td>
<td>Climate Change Policy &amp; UN Protocols</td>
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<td>Apr. 2</td>
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<td>9</td>
<td>Apr. 7, 14, 16</td>
<td>The Energy Crisis, Future Energy Concept</td>
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<td><strong>Exam</strong></td>
<td>April 9</td>
<td><strong>3. Exam Chapter 6-8</strong></td>
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<td>10</td>
<td>Apr. 21, 23</td>
<td>Sustainable Concepts in Transportation</td>
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<td>April 16</td>
<td><strong>Signature Project Due 11:59 pm</strong></td>
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<td><strong>Submission as pdf via save assign</strong></td>
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<td>11</td>
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<td>Strategies to Mitigate Climate Change</td>
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<td>1-11</td>
<td>May 5, 7</td>
<td>Review of Lecture Material</td>
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<td><strong>Final Exam</strong></td>
<td>Thurs. May 14</td>
<td><strong>Final Exam All Chapters</strong></td>
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<td><strong>11:00 am - 1:30 pm GS 104</strong></td>
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