

Syllabus GEOL1330 Global Warming - Spring 2017



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: Tyler Fincannon

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Office Hours: Tuesday & Thursday 1:30 pm -3:00 pm or after appointment

Section Information:

Lecture: GEOL1350-001

Labs: GEOL1350-011, GEOL1350-012

Time and Place of Class Meetings:

Lecture 001: Tuesday & Thursday 9:30 – 10:20 Geosciences Room 104

Lab 011: Thursday, 11:00 am – 12:20 pm, Geosciences Room 246

Lab 012: Tuesday, 11:00 am – 12:20 pm, Geosciences Room 246

Required Textbook:

David Kitchen, 2013, Global Climate Change: Turning Knowledge Into Action, Pearson, 456 pp, ISBN-10: 0321634128

Recommended reading:

John Houghton, 2009, Global Warming The Complete Briefing, 4th Edition, Cambridge University Press, 456 pp.

David Archer, 2012, Global Warming Understanding The Forecast, 2nd Edition, Wiley Publishing, 203 pp.

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 covers 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 have enhanced 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 students 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 what they are currently used for.
- Assess the historic and projected emissions of greenhouse gases from fossil fuels.
- Describe the global carbon cycle and the interactions between its 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 projections including expected regional trends in mean climate and climate extremes in temperature and the hydrological cycle.
- Discuss projected socioeconomic impacts by climate change by droughts, flooding and other severe weather conditions.
- Analyze how health conditions change and diseases may propagate.
- Identify alternative strategies for future energy resources and innovations to improve environmental sustainability.

Students will gain a fundamental knowledge in scientific problems and a better understanding of impacts of future climate change.

Grading:

Grading calculation:

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

Lecture Portion: Pop Quizzes (4)	5% of course (2.5 % each, 2 best out of 4)
Exams (3)	45% of course (15% each)
Final Exam	20% of course
Lab Portion: Lab exercises (9)	20% of course (2.22% each)
Signature project	10% of course

Final grade calculation:

$0.20 \times \text{lab} + 0.10 \times \text{project} + 0.45 \times \text{exams} + 0.20 \times \text{final exam} + 0.05 \times \text{pop quizzes}$
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.

Exams:

Exams will be mostly multiple-choice questions, but will also contain essay questions. No early exams are permitted. Exams must be taken at the scheduled time.

Make-up Exams:

Make-up exams can be only taken in cases of illness or family emergency. A 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 2 best quizzes out of 4 will be counted towards the total grade. There are no make-up quizzes.

Extra Credits:

Participation in lecture tool quizzes will count as max. 3% extra credit towards the final lecture grade. Other extra credit opportunities will be announced during the lecture.

Homework:

Nine homework assignments as part of the lab section will be given throughout the semester. Maximum average grade of all labs will be no more than 100%. Late homework will lead to point deductions (10% per day).

Teamwork:

Teamwork is encouraged to stimulate scientific discussion in lecture and lab. Teamwork is allowed in the lab and project with **maximum team size is three students**. In oral presentations, **each** team member needs to present the material. **It is the student's responsibility to form a team and coordinate with other team members.**

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 skills, 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 paper length for each team will be four pages**, letter size, single-spaced, 12 pt times new roman font including graphs and references (at least two; also cited in the text). Each team member will individually present their project part. Total length of team presentation will be a **4-minute presentation per student**. 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: Electronic submission (pdf format) to blackboard assignment.

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, homework, etc.

Grade Grievances:

Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current University Catalog:

<http://catalog.uta.edu/academicregulations/grades/#undergraduatetext>

for graduate courses, see

<http://catalog.uta.edu/academicregulations/grades/#graduatetext>.

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://www.uta.edu/aao/fao/>).

Disability Accommodations:

UT 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)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. 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 disability. Students are responsible for providing the instructor with official notification in the form of a **letter certified** by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

The Office for Students with Disabilities, (OSD) www.uta.edu/disability or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability.

Counseling and Psychological Services, (CAPS) www.uta.edu/caps/ or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

Non-Discrimination Policy:

The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos.

Title IX Policy:

The University of Texas at Arlington ("University") is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit www.uta.edu/titleIX or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or jmhood@uta.edu.*

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 in their courses by 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. Additional information is available at <https://www.uta.edu/conduct/>.

Lab Safety Training:

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., Fall through Summer II) 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>.

Campus Carry:

Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

Student Feedback Survey:

At the end of each term, students enrolled in face-to-face and online classes categorized as “lecture,” “seminar,” or “laboratory” are 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 via the SFS database is aggregated with that of other students enrolled in the course. Students’ anonymity will be protected to the extent that the law allows. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

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 by following the exit signs. 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.

Students should also be encouraged to subscribe to the MavAlert system that will send information in case of an emergency to their cell phones or email accounts. Anyone can subscribe at <https://mavalert.uta.edu/> or <https://mavalert.uta.edu/register.php>

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 <http://www.uta.edu/universitycollege/resources/index.php>.

The IDEAS Center (2nd Floor of Central Library) offers **free** tutoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. To schedule an appointment with a peer tutor or mentor email IDEAS@uta.edu or call (817) 272-6593.

The English Writing Center (411LIBR):

The Writing Center Offers free tutoring in 20-, 40-, or 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Our hours are 9 am to 8 pm Mon.-Thurs., 9 am-3 pm Fri. and Noon-6 pm Sat. and Sun. Register and make appointments online at <http://uta.mywconline.com>. Classroom Visits, workshops, and specialized services for graduate students are also available. Please see www.uta.edu/owl for detailed information on all our programs and services.

The Library's 2nd floor Academic Plaza offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the library's hours of operation. <http://library.uta.edu/academic-plaza>

<p>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. Non-emergency number 817-272-3381</p>

Library Home Page library.uta.edu

Librarian to Contact: Andy Herzog,
Ph.: 817-272-7517, Email: amherzog@uta.edu, Office: Central Library, 516B

Resources for Students

Academic Help

Academic Plaza Consultation Services library.uta.edu/academic-plaza

Ask Us ask.uta.edu/

Library Tutorials library.uta.edu/how-to

Subject and Course Research Guides libguides.uta.edu

Subject Librarians library.uta.edu/subject-librarians

Resources

A to Z List of Library Databases libguides.uta.edu/az.php

Course Reserves pulse.uta.edu/vwebv/enterCourseReserve.do

FabLab fablab.uta.edu/

Special Collections library.uta.edu/special-collections

Study Room Reservations openroom.uta.edu/

Teaching & Learning Services for Faculty

Copyright Consultation library-sc@listserv.uta.edu

Course Research Guide Development, Andy Herzog amherzog@uta.edu or your subject librarian

Data Visualization Instruction, Peace Ossom-Williamson peace@uta.edu

Digital Humanities Instruction, Rafia Mirza rafia@uta.edu

Graduate Student Research Skills Instruction, Andy Herzog amherzog@uta.edu or your subject librarian

Project or Problem-Based Instruction, Gretchen Trkay gtrkay@uta.edu

Undergraduate Research Skills Instruction, Gretchen Trkay gtrkay@uta.edu or your subject librarian.

SYLLABUS GEO 1330 Global Warming, Spring 2017; 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

Chapter	Days	Topics and Readings	Reading Ch. Kitchen
1	Jan. 17, 19, 24	Introduction to Weather and Climate	1
2	Jan. 26, 31	Evidence of Climate Change	2
3	Feb. 2, 7	Energy and Earth Climate The Greenhouse Effect	3
Exam	Feb. 9	1. Exam Chapter 1-3	
4	Feb. 14, 16	Understanding Weather & Climate	4
5	Feb. 21, 23	Revealing Ancient Climates Methods to Analyze Past Climates	5
6	Feb. 28, Mar. 2	Paleoclimate - Climate History	6
Exam	Mar. 7	2. Exam Chapter 4-6	
7	Mar. 9, 21, 23	Climate Change Projections and Global Impact of Climate Change	7
	Mar. 13-17	SPRING RECESSION	
8	Mar. 28, 30	Climate Change Policy and UN Protocols	8
9	Apr. 4, 6, 13	The Energy Crisis, Future Energy Concept	9
Exam	April 11	3. Exam Chapter 7-8	
Paper	April 21	Signature Project Due 11:59 pm Submission as pdf to Blackboard	
10	Apr. 18	Sustainable Concepts in Transportation	9/10
11	Apr. 20, 25, 27	Strategies to Mitigate Climate Change Climate Intervention	10
1-11	May 2, 4	Review of Lecture Material	All Chapters
Final Exam	Thurs. May 11	Final Exam All Chapters 8:00 am - 1:30 pm GS 104	