



GEOL/ENVR 1330 GLOBAL WARMING

Spring 2019

Instructor: Dr. Cornelia Winguth

TuTh 9:30– 10:20 a.m., Geosciences 104

This course satisfies the University of Texas at Arlington core curriculum requirement in Life and Physical Sciences.

Office Hours: Monday 1-2 p.m., Thursday 12:30-2 p.m., or by appointment, Geosciences 233A

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Teaching Assistants: Wolfe, Kristina (kristina.wolfe@mavs.uta.edu)
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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 (3 credit hours with required lab).

Student Learning Outcomes: After completion of this class, students will have enhanced their 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 processes. The students will be able to:

- Describe the Earth's energy balance and feedbacks in the climate system.
- Understand how major fossil fuel resources have been formed and what they are currently being 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 of climate change by droughts, flooding and other severe weather conditions
- Analyze how health conditions may change
- Identify alternative strategies for future energy resources and innovations to improve environmental sustainability

Required Textbook: Global Climate Change, by D.E. Kitchen. Routledge or Pearson; ISBN10: 0-321-63412-8, ISBN13: 978-0-321-63412-2 (2014)

Course Material Available via Blackboard (<https://elearn.uta.edu/webapps/login/>, login with your NetID and password)

Classroom Experiments (to be Completed in Lecture):

Several hands-on demonstrations related to class topics, designed to stimulate critical thinking skills, team skills, communication and empirical and quantitative skills, will be performed by student groups in the lecture setting. Students are expected to familiarize themselves with the experiment they signed up for and should be able to perform it in class and explain the scientific implications to their peers. Students will also summarize their experiment and the scientific background and context in a group paper, to be submitted to the instructor by email (cwinguth@uta.edu) before the class demonstration. In addition, students will be given the opportunity to take their experiments out of the classroom and perform and explain them in a different setting (other classes at UTA, local high schools, UTA Earth Day etc.) for extra credit.

Signature Assignment and Other Exercised (to be Completed in Lab):

A signature research assignment in the area of climate change is part of the core curriculum assessment. A list of research topics will be handed out at the beginning of the semester, however, students can also propose their own topics to the instructor. A research paper of a maximum total length of 6 pages, 1.5 line-spaced, 12 pt Times New Roman font, including graphs and references (at least two; also cited in the text), will be submitted electronically through Blackboard. Each team member will individually present their project part (4-minute presentation per student). Plagiarism will result in a grade of 0.

Other Exercises:

Additional lab exercises will be assigned on the topics of climate change and human health, sea-level change, climate modeling, and energy sources, which address the core objectives of critical thinking skills and empirical and quantitative skills.

Exams:

Exams will be multiple choice, “fill-in-the-blank”, or some short answer questions. Exams must be taken at the scheduled time. Make-up exams only in case of illness or family emergency with supporting documentation. Students who do not take an exam receive zero points as a grade on that exam.

Quizzes:

Quizzes will be unannounced and will cover the material of the last two lectures. 4 quizzes will be given, only the best 3 quizzes will count for every student. **No make-up quizzes.**

No use of cell phones or other electronic devices during exams/quizzes.

Grading and Grade Calculation:

<u>Grading:</u>	Lecture Portion:	72% of course
	Lab Portion:	28% of course

Lecture Portion:

Quizzes	12% of lecture (4% each)
Group Experiment	18% of lecture
Exams	48% of lecture (16% each)
Final Exam	22% of lecture

Lab Portion:

Lab Exercises	72% of lab (8% each)
Signature Project	28% of lab

Attendance:

At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. Each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, I strongly recommend attendance and will count it as extra credit. However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients "begin attendance in a course." UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Blackboard. This date is reported to the Department of Education for federal financial aid recipients.

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://web.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 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. Michelle Willbanks, Title IX Coordinator at (817) 272-4585 or titleix@uta.edu*

Academic Integrity:

Academic dishonesty (such as cheating, plagiarism, taking an exam for another person, etc.) will not be tolerated in any form and will be disciplined in accordance with University regulations and procedures. All students enrolled in this course 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/>.

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 classes shall be directed to complete a 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 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. 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.

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.

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. One exit is located in the middle of the lecture hall (to the left), and two exits are located to the left and right of the lecture hall main entrance. 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 handicapped individuals.

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

Class Schedule

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. –Cornelia Winguth

Sessions	Topics*	Textbook Chapters
Jan. 15	Introduction to Weather and Climate	1
Jan. 17, 22	Evidence of Climate Change	2
Jan. 24, 29, 31	Energy and Earth's Climate <ul style="list-style-type: none"> • Changes in insolation • Greenhouse gas effect • Energy balance/radiative forcing 	3
Feb. 5	1st Exam	
Feb. 7, 12, 14, 19, 21	Climate System <ul style="list-style-type: none"> • Atmospheric Circulation • Ocean Circulation • ENSO 	4
Feb. 26, 28, Mar. 5	Climate Records <ul style="list-style-type: none"> • Lithological indicators • Isotopes • Trees, Coral, Ice Cores 	5
Mar. 7	2nd Exam	
Mar. 19, 21	Climate in Earth's Past <ul style="list-style-type: none"> • Lithological indicators • Isotopes 	6
Mar. 26, 28, Apr. 2	Recent, Current, Future Climate Change	6, 1
Apr. 4, 9	Global Impact of Climate Change	7
Apr. 11	3rd Exam	
Apr. 16	Climate Policy	8
Apr. 18	Energy Sources <ul style="list-style-type: none"> • Fossil fuels vs. renewables 	9
Apr. 23, 25	Mitigation and Adaptation Strategies	10
Apr. 30, May 2	Review	
May 9, 11:00am -1:30pm	FINAL EXAM	

* Schedule of topics is tentative.