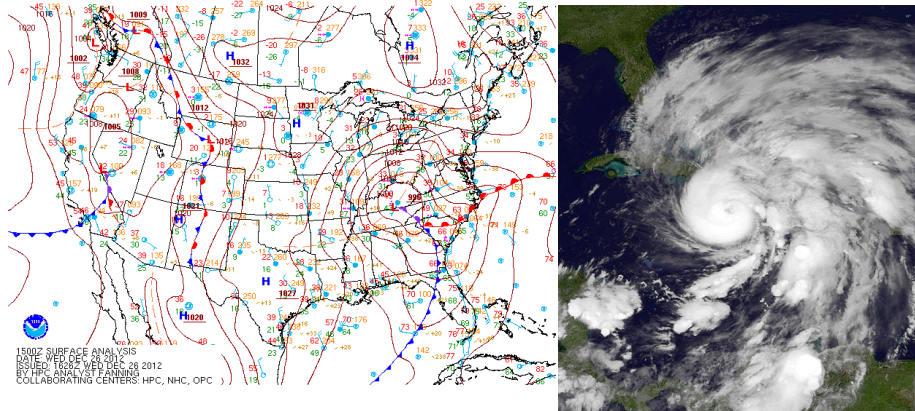


GEOL 4405/5405 METEOROLOGY AND CLIMATOLOGY (3-3)

Syllabus Fall 2014



White Christmas in North Texas 2012 and Hurricane Sandy 2012

Instructor: Arne Winguth, Associate Professor

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Teaching Assistant: Taylor Hughlett

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Office Hours: Tuesday & Thursday 13:30 -14:00 or with appointment

Section Information:

Lecture GEOL 4405/5405 -001

Lab GEOL 4405/5405 -011

Time and Place of Class Meetings:

Lecture: Tuesday & Thursday 9:30 – 10:50 Geosciences Room 109

Lab: Tuesday, 11:00 – 12:00, Geosciences Room 233

Description of Course Content: A quantitative approach to the study of the structure, energy, and motions of the atmosphere

Student Learning Outcomes: After completion of this class, students will be familiar with the key terminology pertaining to the atmosphere and will have a well-rounded understanding of the major atmospheric processes of the atmosphere including thermodynamics, radiative transfer, atmospheric chemistry, cloud physics, dynamics, weather and climate prediction as boundary layer processes and urban heat island. This knowledge will enable them to have a fundamental knowledge in scientific problems and a better understanding of great societal important topics, such as severe weather,

hurricanes, future climate change, meso to large-scale pollution, and environmental sustainability.

Required Textbooks and Other Course Materials: Required Textbooks:

Wallace, J.M., and Hobbs, P.V. Atmospheric Science, Academic Press, 2009, 2nd Edition, ISBN 13: 978-0-12-732951-2. (provided in pdf on blackboard)

Complementary Textbook: Moran, J.M., Weather Studies, Introduction to Atmospheric Sciences, 5th edition, American Meteorological Society, ISBN: 1-878220-96-9.

Descriptions of major assignments and examinations: Major course requirements are weekly homework assignments in which students present the results, examinations, and quizzes.

Attendance: Attendance at class meetings is required. Lecture tool quizzes during the lecture and lab count towards the final grades.

Grading:

Exams will be multiple-choice questions and problem solving questions. No early exams are permitted.

Exams must be taken at the scheduled time. Lab policies will be distributed in the first week of class.

Grading and Grade Calculation:

Total Grade: Lecture Portion: 75% of course + Lab Portion: 25% of course

Grading:	Lab Portion:	25% of course
	Lecture Portion:	75% of course
	Lecture Portion:	
	Lecture tool quizzes	5% of course
	Quizzes (2)	10% of course (5% each)
	Exams(2)	30% of course (15% each)
	Final Exam	30% of course

Final grade calculation:

$0.25 \times \text{lab} + 0.15 \times \text{quizzes} + 0.30 \times \text{exams} + 0.30 \times \text{final exam}$

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.

Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels; see "Student Support Services," below.

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

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://www.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 for laboratory courses in the Colleges of Engineering and Science] 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/.

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

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

Other important library information

Library Home Page	http://www.uta.edu/library
Subject Guides.....	http://libguides.uta.edu
Subject Librarians	http://www.uta.edu/library/help/subject-librarians.php
Database List	http://www.uta.edu/library/databases/index.php
Course Reserves	http://pulse.uta.edu/vwebv/enterCourseReserve.do
Library Tutorials	http://www.uta.edu/library/help/tutorials.php
Connecting from Off- Campus	http://libguides.uta.edu/offcampus
Ask A Librarian.....	http://ask.uta.edu

Course 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.” – Arne M.E. Winguth

Week	Days	Topics and Readings	Reading Chapter ¹	Lab Section
1	Aug. 21, 26	Introduction	1	Introduction Aug. 21
2	Aug. 28 Sept. 2, 4	The Earth System	2	#1 Earth System Sept. 2
3	Sept. 9, 11	Atmospheric Thermodynamics	3	#2 Thermodynamics Sept. 9
4	Sept. 16, 18	Radiative Transfer	4	#3 Radiative Transfer Sept. 16
5	Sept. 23, 25	Atmospheric Chemistry	5	#4 Atmospheric Chemistry Sept. 23
1. Exam	Sept. 30	Chapter 1-5		
6	Oct. 2, 7	Cloud Microphysics	6	#5 Cloud Lab Oct. 7
7	Oct. 9, 14	Atmospheric Dynamics	7	#6 Atm. Dynamics Oct. 14
8	Oct. 16, 21	Weather Systems I	8	#7 Weather Lab I Oct. 21
9	Oct. 23, 28	Weather Systems II	8	#8 Weather Lab II Oct. 28
2. Exam	Oct. 30	Chapter 6-9		
10	Nov. 4, 6	Atmospheric Boundary Layer	9	#9 Boundary Layer Nov. 4
11	Nov. 11, 13	Climate Dynamics	10	#10 Climate Lab Nov. 11
12	Nov. 18, 20, Nov. 25	Climate Change	2, 10 2)	
13	Dec. 2	Review	1-10 2)	
FINAL	Thurs. Dec. 11 8:00 am -10:30 pm	Chapter 1 to 10 + material covered in class		

1) Note Text: “Atmospheric Science”.

2) Web: IPCC 2013, <http://www.uta.edu/blackboard>