Syllabus
Introduction to Atmospheric Science
ATMO 1300 (Honors)
Fall 2022

General Information

Meeting time: M/W/F 2:00 - 2:50
Classroom: MCOM 269
Textbook: *Understanding Weather and Climate* by Aguado and Burt, 7th Edition
Instructor: Dr. Brian Ancell
Office: MCOM 1216 (Tower)
Office Hours: M/W/F 3:00 – 4:00 (or by appointment)
Email: brian.ancell@ttu.edu
Phone: (806)834-3143
Class Website: http://www.atmo.ttu.edu/bancell/atmo1300.html

Core Curriculum

ATMO 1300 is a Core Curriculum course in the Natural Sciences. The objective of the study of the natural sciences component of a core curriculum is to enable the student to understand, construct, and evaluate relationships in the natural sciences, and to enable the student to understand the bases for building and testing theories. The natural sciences investigate the phenomena of the physical world.

Course Purpose

This course presents a survey of atmospheric properties and physical processes that determine current weather and long-term climate trends. The purpose of ATMO 1300 is to enhance the student's general knowledge in the realm of natural science. Students graduating from Texas Tech University should be able to explain some of the major concepts in the natural sciences and demonstrate an understanding of scientific approaches to problem solving, including ethics. This course satisfies the Core Curriculum (graduation requirement) in Natural Sciences.

Expected Learning Outcomes & Methods for Assessing Outcomes

Upon completion of this course, students will be able to:

1. Demonstrate knowledge of the tools and methods used by scientists to study the natural world.
   Method for Assessment: Graded exams, worksheets, pre- and post- course survey
2. Identify the primary elements that compose the atmosphere.
   Method for Assessment: Graded exams, worksheets, pre- and post- course survey
3. Describe the vertical structure of the atmosphere.
   Method for Assessment: Graded exams, worksheets, pre- and post- course survey

4. Describe the factors affecting incoming solar radiation and outgoing terrestrial radiation in relation to the overall energy balance of the earth/atmosphere system.
   Method for Assessment: Graded exams, worksheets, pre- and post- course survey
5. Explain how the forces of motion act together to produce winds in the atmosphere.
   Method for Assessment: Graded exams, worksheets, pre- and post- course survey
6. Describe the processes related to cloud formation and precipitation including the role of atmospheric stability.
   Method for Assessment: Graded exams, worksheets, pre- and post- course survey
7. Explain the existence of general atmospheric circulation patterns such as the jet stream, trade winds, and monsoonal flows.
   Method for Assessment: Graded exams, worksheets, pre- and post- course survey
8. Identify characteristics of different air masses and describe the structure of fronts and mid-latitude cyclones.
   Method for Assessment: Graded exams, worksheets, pre- and post- course survey
9. Describe the basic characteristics of thunderstorms and hurricanes and identify the hazardous phenomena associated with each.
   Method for Assessment: Graded exams, worksheets, pre- and post- course survey
10. Describe how forecasts are made and the factors that determine their accuracy.
    Method for Assessment: Graded exams, worksheets, pre- and post- course survey

Grading

Three exams will be given for this course, each covering roughly one-third of the material covered over the semester. Questions on the exams will cover material in the textbook, lectures, class demonstrations, in-class worksheets, and weather discussions.

The final grade will be composed of the three exams (33% each), although various activities will be presented during the semester as extra credit opportunities. The final overall course grade will be based on the following scale:

A = 89.5 or above
B = 79.5 - 89.4
C = 69.5 – 79.4
D = 59.5 – 69.4
F = below 59.5

Final grades WILL NOT be adjusted.

Makeup Exams

If you must be absent on an exam day due to an approved university function or religious observance you must schedule a time with the instructor to take a makeup exam. Absence on exam day due to illness or other reasons must be discussed with the instructor within two (2) days following the scheduled exam date. Makeup exams must be taken within 5 days (not counting weekends) following the scheduled exam date unless prior

arrangements are made. The questions on makeup exams may differ from those on the exam given in class.

Class Attendance

Class attendance is highly encouraged but no method of taking attendance is used. If you miss a class, you are responsible for any handouts or material covered in that class period.

Weather Discussion

A weather discussion (~15 minutes) will be given every Friday. These discussions will cover current local and U.S. weather events and forecasts and will focus on revealing how the principles learned in lecture occur in the real atmosphere.

Students with Disabilities

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806-742-2405.

Academic Integrity

Academic integrity is taking responsibility for one's own class and/or course work, being individually accountable, and demonstrating intellectual honesty and ethical behavior. Academic integrity is a personal choice to abide by the standards of intellectual honesty and responsibility. Because education is a shared effort to achieve learning through the exchange of ideas, students, faculty, and staff have the collective responsibility to build mutual trust and respect. Ethical behavior and independent thought are essential for the highest level of academic achievement, which then must be measured. Academic achievement includes scholarship, teaching, and learning, all of which are shared endeavors. Grades are a device used to quantify the successful accumulation of knowledge through learning. Adhering to the standards of academic integrity ensures grades are earned honestly. Academic integrity is the foundation upon which students, faculty, and staff build their educational and professional careers. [Texas Tech University (“University”) Quality Enhancement Plan, Academic Integrity Task Force, 2010].

Religious Holy Days

"Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code §11.20. A student who intends

to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. A student who is excused under section 2 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

Discrimination, Harassment, and Sexual Violence

Texas Tech University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from gender and/or sex discrimination of any kind. Sexual assault, discrimination, harassment, and other Title IX violations are not tolerated by the University. Report any incidents to the Office for Student Rights & Resolution, (806)-742-SAFE (7233) or file a report online at titleix.ttu.edu/students. Faculty and staff members at TTU are committed to connecting you to resources on campus. Some of these available resources are: TTU Student Counseling Center, 806- 742-3674, https://www.depts.ttu.edu/scc/(Provides confidential support on campus.) TTU 24-hour Crisis Helpline, 806-742-5555, (Assists students who are experiencing a mental health or interpersonal violence crisis. If you call the helpline, you will speak with a mental health counselor.) Voice of Hope Lubbock Rape Crisis Center, 806-763-7273, voiceofhopelubbock.org (24-hour hotline that provides support for survivors of sexual violence.) The Risk, Intervention, Safety and Education (RISE) Office, 806-742-2110, https://www.depts.ttu.edu/rise/ (Provides a range of resources and support options focused on prevention education and student wellness.) Texas Tech Police Department, 806-742- 3931, http://www.depts.ttu.edu/ttpd/ (To report criminal activity that occurs on or near Texas Tech campus.)

Civility in the Classroom

Texas Tech University is a community of faculty, students, and staff that enjoys an expectation of cooperation, professionalism, and civility during the conduct of all forms of university business, including the conduct of student–student and student–faculty interactions in and out of the classroom. Further, the classroom is a setting in which an exchange of ideas and creative thinking should be encouraged and where intellectual growth and development are fostered. Students who disrupt this classroom mission by rude, sarcastic, threatening, abusive or obscene language and/or behavior will be subject to appropriate sanctions according to university policy. Likewise, faculty members are expected to maintain the highest standards of professionalism in all interactions with all constituents of the university (www.depts.ttu.edu/ethics/matadorchallenge/ethicalprinciples.php).

Plagiarism

Texas Tech University expects students to "understand the principles of academic integrity and abide by them in all class and/or course work at the University" (OP 34.12.5). Plagiarism is a form of academic misconduct that involves (1) the

representation of words, ideas, illustrations, structure, computer code, other expression, or media of another as one's own and/or failing to properly cite direct, paraphrased, or summarized materials; or (2) self-plagiarism, which involves the submission of the same academic work more than once without the prior permission of the instructor and/or failure to correctly cite previous work written by the same student. This video, retrieved from the University of Kansas Libraries website, provides an example of a plagiarism definition as well as examples of plagiarism and how to avoid it. Please review Section B of the TTU Student Handbook for more information related to other forms of academic misconduct, and contact your instructor if you have questions about plagiarism or other academic concerns in your courses. To learn more about the importance of academic integrity and practical tips for avoiding plagiarism, explore the resources provided by the TTU Library and the School of Law.

LGBTQIA Support Statement

Office of LGBTQIA, Student Union Building Room 201, www.lgbtqia.ttu.edu, 806.742.5433

Within the Center for Campus Life, the Office serves the Texas Tech community through facilitation and leadership of programming and advocacy efforts. This work is aimed at strengthening the lesbian, gay, bisexual, transgender, queer, intersex, and asexual (LGBTQIA) community and sustaining an inclusive campus that welcomes people of all sexual orientations, gender identities, and gender expressions.

Food Insecurity

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. Furthermore, please notify the professor if you are comfortable in doing so. The TTU Food Pantry is in Doak Hall 117. Please visit the website for hours of operation at https://www.depts.ttu.edu/dos/foodpantry.php.

COVID-19 Information

The University will continue to monitor CDC, State, and TTU System guidelines concerning COVID-19. Any changes affecting class policies or temporary changes to delivery modality will be in accordance with those guidelines and announced as soon as possible. Students will not be required to purchase specialized technology to support a temporary modality change, though students are expected to have access to a computer to access course content and course-specific messaging.

This is where students can find information about COVID testing, vaccinations, isolation, and quarantine. https://www.depts.ttu.edu/communications/emergency/coronavirus/.

If you test positive for COVID-19, report your positive test through TTU's reporting system: https://www.depts.ttu.edu/communications/emergency/coronavirus/. Once you

report a positive test, the portal will automatically generate a letter that you can distribute to your professors and instructors.

Class Schedule

The following schedule should be used as a guide and is subject to change during the course of the semester (although exams and days of no class are set in stone):

DATE	TOPIC
8/26	Introduction, Weather Discussion, Pre-course Survey
8/29	Chapter 1 - Composition and Structure of the Atmosphere
8/31	Chapter 1
9/2	Chapter 1, Weather Discussion
9/5	**No Class, Labor Day**
9/7	Chapter 1
9/9	Chapter 2- Solar Radiation and the Seasons, Weather Discussion
9/12	Chapter 2
9/14	Chapter 2
9/16	Chapter 3 – Energy Balance and Temperature, Climate, Weather Discussion
9/19	Chapter 3
9/21	Chapter 3
9/23	Weather Discussion, Chapter 3
9/26	Chapter 3, Exam 1 Review
9/28	**Exam 1**
9/30	Chapter 4 – Atmospheric Pressure and Wind, Weather Discussion
10/3	Go Over Exam 1
10/5	Chapter 4
10/7	Chapter 4, Weather Discussion
10/10	Chapter 5 – Atmospheric Moisture
10/12	Chapter 5
10/14	Chapter 6 Cloud Development and Forms, Weather Discussion
10/17	Chapter 6
10/19	Chapter 7 – Precipitation Processes
10/21	Chapter 7, Weather Discussion
10/24	Chapter 7, Exam 2 Review
10/26	**Exam 2**
10/28	Chapter 8 – Atmospheric Circulation and Pressure Distributions, Weather Discussion
10/31	Chapter 8
11/2	Chapter 9 – Air Masses and Fronts
11/4	Chapter 9, Chapter 10 – Midlatitude Cyclones, Weather Discussion
11/7	Chapter 10
11/9	Chapter 11 – Lightning, Thunder, and Tornadoes
11/11	Chapter 11, Weather Discussion
11/14	Chapter 12 – Tropical Cyclones and Hurricanes

11/16	Chapter 12, Exam 3 Review
11/18	**Exam 3**
11/21	Go Over Exam 3
11/23	**No Class, Thanksgiving Holiday**
11/25	**No Class, Thanksgiving Holiday**
11/28	Chapter 13 – Weather Forecasting and Analysis
11/30	Weather Jeopardy!
12/2	Chapter 13, Weather Discussion
12/5	Post-course Survey