

ATMOSSC 2940: Basic Meteorology (10973)

Introduction to the underlying physics of the atmosphere: basic equations of thermodynamics, and dynamics are presented and used to explain selected atmospheric phenomena.

Prerequisites: Math 1151 and Physics 1250. Not open to students with credit for 230 or 5900 (520).

Course Description: The basic objective of this course is to introduce students to the study of the atmosphere and the processes governing its behavior. We will cover a variety of topics in meteorology, including the structure and behavior of the atmosphere, physical laws and processes applied to the understanding of atmospheric phenomena, global energy balance and transfer, atmospheric circulation, precipitation processes, weather systems and severe weather. This course will emphasize the interactions between the atmosphere, hydrosphere, biosphere and lithosphere and will illustrate how the movement of matter and energy between these “spheres” is responsible for the weather, climate and environments we experience on Earth. The increased comprehension of important physical processes will improve students’ ability to analyze and to forecast the state of the atmosphere, and enable students to understand more clearly atmospheric phenomena on many temporal and spatial scales.

Science GEC Course: Natural Science coursework fosters students’ understanding of the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world. Listed below are the 4 outcomes of the Natural Science GEC courses and how this course will achieve them:

1. Students understand the basic facts, principles, theories and methods of modern science.
 - a. Discussions in class, readings and course assignments will provide students with opportunities to learn about and the basic facts, principles and theories of meteorology and climatology
 - b. Labs will demonstrate and give hands on experience with basic methods, and reinforce understanding of principles with experiments
2. Students learn key events in the history of science.
 - a. References will be made in readings and class discussions to the progression of our understanding of the atmosphere over time from both meteorological and climatological perspectives
3. Students provide examples of the inter-dependence of scientific and technological developments.
 - a. Lab exercises will reinforce how technology infuses understanding, and how instrumentation to measure atmospheric phenomena has changed over time
 - b. Class discussions and readings will highlight specific examples of how technology has enhanced theoretical understanding and vice versa.
4. Students discuss social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.
 - a. Through class discussions and readings about climate change and severe weather students will engage with the social implications of scientific discovery and the range of social responses to environmental hazards.

Lecturer: Ben Gelber

About: <https://www.nbc4i.com/author/ben-gelber/>

Email: bgelber@wcmh.com

Office Hours: Zoom By Appointment / prefer Sundays 7-8 p.m.

<https://nexstar.zoom.us/j/96103410522?pwd=LzYwN0xKWUJ6c0ZmWGFaWGd6c2RNZz09>

Zoom Password: 1900

Do not use Carmen messaging functionality! That inbox is not monitored.

Lecture Class Session

GEOG 2940 (10973) Tuesday 4:00 p.m. - 6:50 p.m.

Agricultural Administration Building, 2120 Fyffe Rd., Room 246

Student Evaluation- All graded components of the course:

30% 1 Midterm

40% 1 Final

30% Pop quizzes and/or problem assignments

**Missed quizzes/assignments must be made up within 1 week and arranged with the lecturer.

Course Materials

- Textbook: Aguado, E. and J. E. Burt, 2012. Understanding Weather and Climate, 7th edition. Pearson Education, Inc. Upper Saddle River, NJ. (ISBN: 9780321769633) (*Suggested*)
- <https://www.pearson.com/store/p/understanding-weather-and-climate/P100000631272/9780133943641>
- Website: The Carmen course management system <http://carmen.osu.edu>

External Weather Resources

<https://www.weather.gov/iln/>

<https://www.spc.noaa.gov/>

<https://weather.cfaes.osu.edu/?id=14>

<https://www.wpc.ncep.noaa.gov/#page=ovw>

Tentative Lecture Schedule

Date	Lecture	Textbook Chapter
11-Jan	Intro to the Course, Atmosphere	1
18-Jan	Radiation Balance	2
25-Jan	Energy, Temperature	3
1-Feb	Thermodynamics	4,5
8-Feb	Clouds and Precipitation	6,7
15-Feb	Atmospheric Dynamics and Circulation	8
22-Feb	Air Masses, Fronts, Mid-latitude Cyclones	9,10
1-Mar	Lightning, Thunderstorms, Tornadoes	11
8-Mar	Midterm	
15-Mar	SPRING BREAK	-
22-Mar	Tropical Systems	12
29-Mar	Weather Forecasting	13
5-Apr	Human/Urban Influences on Climate	14
12-Apr	World Climates	15
19-Apr	Earth's Climate History	16
TBA	Final	-

*Lecture schedule subject to change. I will let you know via Carmen and/or email if a change in lecture topic is necessary.

University Policies

Disability Services

The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process (slds.osu.edu/covid-19-info/covid-related-accommodation-requests/), managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Academic Misconduct

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's Code of Student Conduct, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's Code of Student Conduct and this syllabus may constitute Academic Misconduct.

The Ohio State University's Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: Any activity that tends to compromise the academic integrity of the University, or subvert the educational process. Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's Code of Student Conduct is never considered an excuse for academic misconduct, so I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Getting a ride home

Lyft Ride Smart at Ohio State (<https://ttm.osu.edu/ride-smart>) offers eligible students discounted rides, inside the university-designated service area, from 9 p.m. to 3 a.m. Each month, 10,000 discounted rides will be made available on a first-come, first-served basis with the average cost expected to be \$2 or less. Prices may be impacted by distance, traffic, time of day, special events and prime time surcharges. To qualify for program discounts, users must select "shared ride" when booking in the Lyft

app. When using ride sharing, remember to visually confirm vehicle info/descriptions in the company app and ask the driver to say who they are picking up.

Grievances

According to University Policies, if you have a problem with this class, you should seek to resolve the grievance concerning a grade or academic practice by speaking first with the instructor or professor. Then, if necessary, take your case to the department chairperson, college dean or associate dean, and to the provost, in that order. Specific procedures are outlined in Faculty Rule 3335-8-23. Grievances against graduate, research, and teaching assistants should be submitted first to the supervising instructor, then to the chairperson of the assistant's department.

Harassment, discrimination, sexual misconduct

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

Online reporting form at equity.osu.edu,
Call 614-247-5838 or TTY 614-688-8605,
Or Email equity@osu.edu

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.

The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

Mental Health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more

about the broad range of confidential mental health services available on campus via the Office of Student Life Counseling and Consultation Services (CCS) by visiting ccs.osu.edu or calling (614) 292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-(800)-273-TALK or at suicidepreventionlifeline.org