Master Course Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: https://catalog.uvu.edu/

Semester: Spring
Year: 2025
Course Prefix: METO
Course and Section #: 1010-X01
Course Title: Introduction to Meteorology
Credits: 3

Course Description

This course provides an introduction to meteorology and atmospheric sciences, covering the tools and techniques used to observe and interpret weather patterns. Topics include atmospheric composition, heat energy transfer, temperature variations, water in the atmosphere, pressure and wind systems, mid-latitude and tropical weather phenomena, severe weather, and human impacts on climate. Students will also learn to analyze weather data, interpret remote sensing imagery, and become informed weather consumers capable of evaluating forecasts and their accuracy.

Course Attributes

This course has the following attributes:

☒ General Education Requirements
☐ Global/Intercultural Graduation Requirements
☐ Writing Enriched Graduation Requirements
☐ Discipline Core Requirements in Program
☒ Elective Core Requirements in Program
☒ Open Elective
Other: *Click here to enter text.*

Instructor Information

Instructor Name: Alessandro Zanazzi

Student Learning Outcomes

At the end of this course students will be able to:

- Understand atmospheric basics: Explain the composition of the atmosphere, temperature scales, time zones, and key meteorological tools and concepts.
- Analyze heat energy processes: Describe how radiation, conduction, and convection influence the Earth's energy balance and climate.
- Interpret weather data: Read and analyze isoplethed maps, station models, radar imagery, and satellite data.
- Explain atmospheric phenomena: Describe the formation of weather patterns, including air masses, fronts, cyclones, and severe weather events like thunderstorms and hurricanes.
- Discuss the role of water: Understand phase changes, relative humidity, cloud formation, and the hydrological cycle in weather and climate systems.
- Evaluate human impacts: Assess anthropogenic and natural influences on climate and their implications for weather patterns and global warming.
- Identify tropical weather systems: Explain tropical phenomena like the Hadley circulation, El Niño/La Niña, and monsoons.

- Enhance forecasting literacy: Evaluate weather forecasts, understand sources of error, and identify reliable information sources.

Course Materials and Texts

Penn State Department of Meteorology and Atmospheric Science. *Introduction to Meteorology* (METEO 3). Penn State's College of Earth and Mineral Sciences. Accessed December 29, 2024. https://www.e-education.psu.edu/meteo3/.

Note: This textbook is an Open Educational Resource (OER) and is freely available online.

Course Requirements

Course Assignments, Assessments, and Grading Policy

Assessment:

Your final grade will be determined based on these components:

- Quizzes 20%
- Labs 20%
- Midterm exams 20%
- Cumulative final exam 20%
- Final Project 20%

Course averages are normalized to a percentage. Final grades will be based on the following scale:

- A = 92-100%
- A- = 88-92%
- B+ = 85-88%
- B = 81-85%
- B- = 78-81%
- C+ = 74-78%
- C = 71-74%
- C- = 67-71%
- D+ = 64-67%
- D = 60-64%
- D- = 57-60%
- E< 57%

- Quizzes will consist of multiple-choice questions on the material of each module. Quizzes will be graded directly by CANVAS. Quizzes are **"open book and open notes"**, and you will have unlimited time. You will have **two attempts** and keep the higher of the two scores.
- Labs will consist in the analysis of current weather data. Labs will be graded by me or by my IA's. Labs are also **"open book and open notes"**. You will have unlimited time and **only one attempt**.
- Midterm exams will consist of fifty multiple choice questions on everything covered since the previous exam. Midterm exams will be graded directly by CANVAS. Midterm exams are **"closed book and closed notes"**. You will have **75 minutes** available to complete them and you will have **only one attempt**. Midterm exams will be remotely proctored by Proctorio.
- The cumulative final exam will consist of one hundred multiple choice questions on everything covered during the semester. The final exam will be graded directly by CANVAS. The final exam is **"closed book and closed notes"**. You will have **150 minutes** available to complete it and you will have **only one attempt**. The final exam will be remotely proctored by Proctorio.
- The final project will involve analyzing current weather in groups of three. I will assign the groups and notify the class at least three weeks before the project is due.
- The following grades will be dropped from your final grade:
    - The lowest grade of the quizzes
    - The lowest grade of the labs

- The lowest grade of the midterm exams

Required or Recommended Reading Assignments

See below.

General Description of the Subject Matter of Each Lecture or Discussion

Date	Day	Module Number	Module Title	Reading	Assignments**
Jan. 10	F		Orientation		Orientation Quiz Orientation Discussion
Jan. 17	F	1	A Meteorologist's Toolbox	Lesson 1	Lab 1 Quiz 1
Jan. 24	F	2	The Global Ledger of Heat Energy	Lesson 2	Lab 2 Quiz 2
Jan. 31	F	3	Global and Local Controllers of Temperature	Lesson 3	Lab 3 Quiz 3 Practice Exam***
Feb. 7	F	4	The Role of Water in Weather	Lesson 4	Lab 4 Quiz 4 **Exam 1**
Feb. 14	F	5	Remote Sensing of the Atmosphere	Lesson 5	Lab 5 Quiz 5
Feb. 21	F	6	Surface Patterns of Pressure and Wind	Lesson 6	Lab 6 Quiz 6
Feb. 28	F	7	Mid-Latitude Weather Systems	Lesson 7	Lab 7 Quiz 7
Mar. 7	F	8	The Role of Stability in Thunderstorm Formation	Lesson 8	Lab 8 Quiz 8 **Exam 2**
Mar. 14			**Spring Break**		
Mar. 21	F	9	Severe Wether	Lesson 9	Lab 9 Quiz 9
Mar. 28	F	10	The Human Impact on Weather and Climate	Lesson 10	Lab 10 Quiz 10
Apr. 4	F	11	Patterns of Wind, Water, and Weather in the Tropics	Lesson 11	Lab 11 Quiz 11
Apr. 11	F	12	Hurricanes	Lesson 12	Lab 12 Quiz 12 **Exam 3**
Apr. 18	F	13	Becoming a Savy Weather Consumer	Lesson 13	Lab 13 Quiz 13
Apr. 25	F				**Final Project** **Cumulative Final Exam**

Required Course Syllabus Statements

Generative AI

UVU and the Department of Earth Science take plagiarism and other forms of cheating **very seriously**. The penalty for the first offense will be a negative grade for the assignment that is even in part plagiarized or fabricated (i.e., if an assignment was worth 10 points, the student will score -10 points, thereby demonstrating that this act is even worse than simply not doing your work). The penalty for the second offense will be an E in the course. After the second offense, you will also be reported to Student Rights and Accountability by the faculty member. The conflict resolution process could lead to greater actions, such as expulsion from the University. The department wants you to learn and to learn you need to submit and get feedback on your own work. Cheating disrupts learning and takes away from your education. Please do not participate or support nefarious websites. **Many websites like Course Hero can seem useful, but they may lead you to violate the student code of conduct and may ruin your educational experience**.

Using Remote Testing Software

☐ This course does not use remote testing software.

☒ This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

Required University Syllabus Statements

Accommodations/Students with Disabilities

Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU Accessibility Services at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

Academic Integrity

At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in UVU Policy 541: *Student Code of Conduct*.

Equity and Title IX

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

Religious Accommodation

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.

To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a specially dedicated space for meditation, prayer, reflection, or other forms of religious expression.