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-X51
Course Title: Introduction to Meteorology
Credits: 3

Course Description

Click here to enter text.

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

The overarching learning objective for this course is for the students to understand the principles and laws that govern the functioning of the atmosphere. More specifically, at the end of this course students will be able to:

- Convert meteorological variables among different units and report their value in scientific notation
- Recall the chemical composition and thermal structure of the atmosphere
- Apply the laws of radiations to compare and contrast the radiative properties of different bodies
- Explain the heating mechanisms for the atmosphere, the greenhouse effect, and the heat budget of the Earth
- Discuss the factors that affect the temporal and spatial variations in temperature on the Earth's surface
- Define humidity and atmospheric stability and identify atmospheric stability conditions
- Compare and contrast the different measurements of humidity
- Define and describe the different forms of condensation and precipitation
- Identify the forces that affect the direction and strength of surface winds and winds aloft
- Interpret weather maps
- Recall global wind and pressure belts
- Describe the characteristics of mid-latitude cyclones and their stages of development
- Describe the steps involved in a weather forecast
- Apply the scientific method to analyze and evaluate weather data and problems outside the classroom
- Understand the process of science

Course Materials and Texts

Textbook #1 (Optional):
Lutgens, F.K., Tarbuck, E.J., Tasa, D., The Atmosphere: An Introduction to Meteorology. Prentice Hall, New Jersey.

Any edition from the11th to the newest is fine.
11th edition ISBN-13: 978-0321587336
12th edition ISBN-13: 978-0321756312
13th edition ISBN-13: 978-0321984623
14th edition ISBN-13: 978-0134758589

You can also use the electronic version of this textbook. The eText has embedded videos, animations, study tools, self-reading, highlighting options and more

Textbook #2 (Required):
Carpi, A., Egger, A.E., 2011. The Process of Science. Revised Edition. Vision Learning.
ISBN-13: 978-0557614394
This textbook is freely available at the Vision Learning website.

Course Requirements

Course Assignments, Assessments, and Grading Policy

Your final grade will be determined based on these components:

- Quizzes 20%
- Labs 20%
- Midterm exams 30%
- Process of Science Quizzes 10%
- Cumulative final exam 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. These quizzes will mostly test your quantitative and critical thinking skills. 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.
- The Process of Science Quizzes will consist of 5 multiple-choice questions on each chapter of the book "The Process of Science" by Carpi and Egger. These quizzes will be graded directly by CANVAS, 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 for the most part of problem sets and questions involving the analysis of real weather data. Labs will be graded by me or by my IA and will mostly test your quantitative skills. 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 and will mostly test your content knowledge. 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 and will mostly test your content knowledge. 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 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
    - The lowest grade of the Process of Science quizzes

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	Background	Pages vii-22 Carpi & Egger	Lab 1 Quiz 1 PS Quiz 1
Jan. 24	F	2	Introduction	Chapter 1 Lutgens et al., Pages 23-46 Carpi & Egger	Lab 2 Quiz 2 PS Quiz 2
Jan. 31	F	3	Heating the Earth and the Atmosphere 1	Chapter 2 Lutgens et al., Pages 47-72 Carpi & Egger	Lab 3 Quiz 3 PS Quiz 3 Practice Exam***
Feb. 7	F	4	Heating the Earth and the Atmosphere 2	Chapter 2 Lutgens et al.	Lab 4 Quiz 4 **Exam 1**
Feb. 14	F	5	Temperature	Chapter 3 Lutgens et al., Pages 73-102 Carpi & Egger	Lab 5 Quiz 5 PS Quiz 4
Feb. 21	F	6	Humidity and Atmospheric Stability 1	Chapter 4 Lutgens et al., Pages 103-128 Carpi & Egger	Lab 6 Quiz 6 PS Quiz 5
Feb. 28	F	7	Humidity and Atmospheric Stability 2	Chapter 4 Lutgens et al., Pages 129-158 Carpi & Egger	Lab 7 Quiz 7 PS Quiz 6
Mar. 7	F	8	Condensation and Precipitation	Chapter 5 Lutgens et al.	Lab 8 Quiz 8 **Exam 2**
Mar. 14	F		**Spring Break**		
Mar. 21	F	9	Atmospheric Pressure and Winds 1	Chapter 6 Lutgens et al., Pages 159-186 Carpi & Egger	Lab 9 Quiz 9 PS Quiz 7
Mar. 28	F	10	Atmospheric Pressure and Winds 2	Chapter 6 Lutgens et al., Pages 187-212 Carpi & Egger	Lab 10 Quiz 10 PS Quiz 8
Apr. 4	F	11	Atmospheric Circulation	Chapter 7 Lutgens et al.	Lab 11 Quiz 11 **Exam 3**
Apr. 11	F	12	Air Masses and Mid-Latitude Cyclones	Chapters 8 and 9 Lutgens et al., Pages 213-234 Carpi & Egger	Lab 12 Quiz 12 PS Quiz 9
Apr. 18	F	13	Weather Forecasting	Chapter 12 Lutgens et al., Pages 235-264 Carpi & Egger	Lab 13 Quiz 13 PS Quiz 10
Apr. 25	F				**Cumulative Final Exam**

Required Course Syllabus Statements

Generative AI

You may use AI programs (e.g. ChatGPT) to help generate ideas and brainstorm. However, you should note that the material generated by these programs may be inaccurate, incomplete, or otherwise problematic (especially when analyzing weather

data). For example, AI-generated language programs are known to "hallucinate", i.e. create references to non-existent resources. Beware that use of AI may also stifle your own independent thinking and creativity.
You may not submit any work generated by an AI program as your own. If you include material generated by an AI program, it should be cited like any other reference material (with due consideration for the quality of the reference, which may be poor).

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.