

INTRODUCTION TO METEOROLOGY

ATMS 103.001

FALL 2022

The science of meteorology explores the ever-changing atmosphere that affects all of our lives, from the mundane choice of what to wear to the devastating impacts of tornadoes and hurricanes. Over the next few months, you will develop an appreciation for the beauty and complexity displayed by the atmosphere every day. We'll begin by learning about the physical processes that govern our atmosphere, laying the groundwork necessary for a few death-and-destruction topics later in the semester. Before the year is out, you will be able to locate and interpret your own sources of weather information and not only understand the meteorologists on television, but explain to your friends and family the scientific principles behind current weather events. Ask lots of questions and enjoy!



PROFESSOR

Dr. Christopher Godfrey

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Office hours: Via virtual meetings through Google Meet on **Tuesdays 4:45–5:45 p.m.** and **Thursdays 10:00–11:00 a.m.**, or by appointment. You may call my office (it bounces to my cell phone) during regular business hours. You may send me as many email messages as you wish. Check Moodle for the Google Meet link.

CLASS INFORMATION

Meeting times: TR 1:20–2:35 p.m.

Location: Online via Moodle and Zoom (<http://learnonline.unca.edu>)

Required text: Ahrens, C. D., and R. Henson, 2017: *Essentials of Meteorology: An Invitation to the Atmosphere*. 8th ed. Cengage Learning, 509 pp. (ISBN-13: 978-1305628458). Older editions are acceptable, but the page numbers may differ from those listed here.

Website: <http://www.atms.unca.edu/cgodfrey/courses/atms103/>

- » Class will start and end on time. Please arrive on time and stay for the entire class.
- » This course satisfies the scientific perspectives requirement within the Liberal Arts Core (LAC)
- » When combined with ATMS 111, this course satisfies the laboratory science requirement within the LAC.
- » Please visit <http://www.atms.unca.edu/slos.shtml> for a list of the student learning outcomes for the Department of Atmospheric Sciences.

GETTING QUESTIONS ANSWERED

I will be available on Google Meet during scheduled office hours. Just drop in. If at any other time you have a question, you are more than welcome to call me or send me an email. E-mail is by far the best way to reach me and you will usually get a speedy reply. You may also schedule an appointment with me for a virtual meeting. Please don't hesitate to ask questions about class, other coursework, or the stresses of college life whenever the need arises.

PREREQUISITES

There are no prerequisites for this course, but I will present a few simple equations that you should be able to manipulate using techniques learned in your high school algebra class. Please see me if this sounds scary and we'll go from there.

IMPORTANT DATES

| | | |
|----------------------------|-------------|---------------------------------|
| Tuesday, 27 September 2022 | Exam I | 1:20–2:35 p.m. via Moodle |
| Thursday, 20 October 2022 | Exam II | 1:20–2:35 p.m. via Moodle |
| Thursday, 1 December 2022 | Final Exam* | 11:30 a.m.–2:00 p.m. via Moodle |

*Graduating seniors may not take the final exam at an earlier date or time.

COURSE SCHEDULE

With the exception of examination dates, this course schedule is approximate and subject to modifications.

| Date | Topic | Reading | Homework |
|--------------|---|--------------------------------------|----------------------|
| 16 August | Geography, Describing the atmosphere | Chapter 1 | Memorize U.S. States |
| 18 August | Describing the atmosphere (States quiz) | Chapter 1 | #1 Assigned |
| 23 August | Energy | Chapter 2 | |
| 25 August | Radiation, Earth's energy budget | Chapter 2 | |
| 30 August | Greenhouse effect, Seasons | Chapter 2 | #1 Due |
| 1 September | Water vapor in the atmosphere | Chapter 4 | #2 Assigned |
| 6 September | Water vapor, Observations | Ch. 4, pp. 140–141, 243–247, 468–469 | |
| 8 September | Atmospheric motion | Chapter 6 | |
| 13 September | Atmospheric motion | Chapter 6 | #2 Due |
| 15 September | Pressure systems, Radar | pp. 141–143, 311–314 | #3 Assigned |
| 20 September | Radar, Satellites | pp. 106–110 | |
| 22 September | Stability | pp. 115–126 | #3 Due |
| 27 September | Exam I | | |
| 29 September | Air masses | Chapter 8 | #4 Assigned |
| 4 October | Fall Break–No class | | |
| 6 October | Fronts | Chapter 8 | |
| 11 October | Midlatitude cyclones | Chapter 8 | |
| 13 October | Thunderstorms | pp. 174–175, 273–280 | #4 Due |
| 18 October | Mesoscale complexes, Supercells | pp. 280–286 | |
| 20 October | Exam II | | |
| 25 October | Watches, warnings, and advisories; SPC | pp. 255–256, 300–302 | |
| 27 October | Lightning | pp. 290–296 | |
| 1 November | Hail | pp. 138–140 | #5 Assigned |
| 3 November | Tornadoes | pp. 296–314 | |
| 8 November | Tornadoes | pp. 296–314 | |
| 10 November | General circulation, El Niño | pp. 188–206 | |
| 15 November | Hurricanes | Chapter 11 | #5 Due |
| 17 November | Hurricanes | Chapter 11 | |
| 22 November | UGR Symposium–No class | | |
| 24 November | Thanksgiving–No class | | |
| 29 November | Climate and climate change | Chapters 12 and 13 | |
| 1 December | Final Exam | 11:30 – 2:00 p.m. | |

EVALUATION

There will be two preliminary exams and a comprehensive final exam to assess your progress through the semester. The preliminary exams will take place via Moodle during regular class meeting times. Five problem sets will strengthen your skills and reinforce the lecture material and will be due on the dates indicated above. Five to ten quizzes will be given via Moodle at irregular intervals throughout the semester. Attendance is not explicitly required, so these online quizzes will help to gauge your understanding of the material and will provide you and me with some feedback. Since life happens, I will drop the lowest two quiz grades.

There will be no opportunities for make-up quizzes or exams. Exams must be taken on the scheduled date and at the scheduled time. If you miss the exam, you miss the grade. The *only* exceptions to this rule are: (1) serious medical condition (illness or injury) of you or an immediate family member; (2) University excused absence; (3) jury duty; or (4) military orders. Only in such instances will an exam or another quiz be dropped or rescheduled

depending on your best interests, but *only if I am notified at least 24 hours in advance*. Except under the circumstances described above, **homework is due at 5:00 p.m.** on the date listed in the syllabus. I will accept homework up to 24 hours late (5:00 p.m. the following day) for a 50% late penalty. *Homework more than 24 hours late will not be graded.* In the event of an unforeseen circumstance that causes you to miss an exam, quiz, or homework due date, *you must notify me by phone or e-mail within 24 hours of the event.* Appropriate documentation must accompany any excused absence from an exam or quiz and should be attached to a late homework assignment. Please review the guidelines for submitting homework, available on Moodle, prior to submitting your first assignment.

GRADING

| | | |
|----------------------|-----|---------------------------|
| Preliminary Exams | 30% | |
| Quizzes | 20% | Lowest two grades dropped |
| Homework Assignments | 35% | |
| Final Exam | 15% | |

I reserve the option to curve the final grades upward at my discretion. However, you are guaranteed *at least* the following based on your final score before applying any curve:

| | | | |
|----|------------|----|------------|
| A | ≥92.0% | C | 72.0–77.9% |
| A- | 90.0–91.9% | C- | 70.0–71.9% |
| B+ | 88.0–89.9% | D+ | 68.0–69.9% |
| B | 82.0–87.9% | D | 60.0–67.9% |
| B- | 80.0–81.9% | F | <60.0 |
| C+ | 78.0–79.9% | | |

Final grades are not negotiable. If you see a problem with a quiz, exam, or homework grade, you may plead your case no later than 14 days from the date I return the assignment to the class. I do make mistakes. Under no circumstances will your grade be *lower* if you see me with a question.

ACADEMIC INTEGRITY

Since the point of this or any class is to learn, you may collaborate on homework assignments, but *you absolutely must make sure that you hand in your own work and that you understand the material.* Copying your friend's answers will not only be obvious to me, but will result in both of you sharing the credit for that answer. For example, if you do a fantastic job on the homework assignment and then let three of your friends copy *any part of it*, you will each receive a maximum grade of 25% for the assignment. Any collaboration on exams and quizzes is simply cheating. **Even though they are online, exams and quizzes are closed-book. I expect that you will not consult your notes, textbook, lecture videos, friends, or the Internet during quizzes and exams.** I have zero tolerance for academic misconduct and will deal with the problem by immediately filing charges through the regular University channels.

PARTICIPATION

I expect full participation via Zoom. I do not take attendance, but I do notice who attends class and who does not. Experience indicates that those who attend class and participate fully, with cameras on, earn much higher grades than those who do not. Turning your camera on during meetings is not a requirement, though I certainly appreciate those who do. An online classroom full of lively faces is much more exciting than lecturing to a grid of blank squares. If you can tolerate it, please turn on your camera. Either way, please jump in and ask questions with your microphone or via the chat feature.

NOTES

University of North Carolina at Asheville is committed to making courses, programs and activities accessible to persons with documented disabilities. Students requesting accommodations and/or academic adjustments must do so through the Office of Academic Accessibility and may be required to provide supporting documentation. All information provided will remain confidential. For more information, please contact the Office of Academic Accessibility at (828) 232-5050 or academicaccess@unca.edu or visit them in the Academic Success Center.