

Introduction to Meteorology
11:670:101 Section 01 - Fall 2021
Dr. John Krasting

Rutgers University
School of Environmental and Biological Sciences
Department of Environmental Science

Course Description

This course provides an overview of current weather maps; the structure of the atmosphere; the role of moisture in the development of dew, clouds, and precipitation; air masses, fronts, cyclones, thunderstorms, tornadoes, and hurricanes; and elements of weather forecasting, instrumentation and communication.

- Prerequisites: None
- Credits: 3 hours
- Satisfies: Gen Ed for Physical Sciences (Area II) for SEBS student, SAS core curriculum for Natural Sciences (Area II) for SAS students

Course Meeting Times, Contact Information

This hybrid course combines elements of [both synchronous and asynchronous learning](#) at Rutgers. There will be pre-recorded lectures, reading assignments, and additional materials for you to complete on your own schedule. Additionally, the class will have one in-person meeting (Tuesdays 5:00 - 6:20 PM) and one online meeting (Thursdays 5:00 - 6:20 PM) per week.

The in-person class on Tuesdays will be held in Tillett Hall 232 on the Livingston Campus. The class will begin with a brief real-time weather discussion to reinforce key concepts followed by a shorter review-style lecture to recap key points and provide time for questions and answers. The in-person class will adhere to Rutgers policies related to COVID-19 (see special section below).

The online class on Thursdays will be held through Zoom. This class meeting will typically involve short breakout activities to explore the course content in more depth with your classmates. The breakout activities will require you to work collaboratively with your classmates to create content that will be shared with the whole class.

Please contact the instructor through this canvas site or via email at John.Krasting@rutgers.edu. **Office hours are virtual and by appointment only.**

Course Learning Goals

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

1. Exhibit critical thinking when confronting new information
2. Interpret basic weather forecasts as presented on television/radio/Internet
3. Explain basic atmospheric phenomena from a physical perspective
4. Apply the physical foundations of meteorology to solve problems using analytical methods
5. Know whether they might enjoy pursuing further study in the atmospheric sciences

This course also satisfies these SAS Core Curriculum Learning Goals:

II: Areas of Inquiry

A: Natural Sciences

- (e) Understand and apply basic principles and concepts in the physical and biological sciences.
- (f) Explain and be able to assess the relationship among assumptions, method, evidence, arguments, and theory in scientific analysis.
- (z) ITR (technology)

Learning Resources

Required Textbook:

[Ahrens, D.C. Essentials of Meteorology: An Invitation to the Atmosphere - 7th edition.](#) (Both older and newer editions may vary slightly. Study guide not required.) In a remote learning environment, completing the reading assignments is essential to performing well in this course. There will be a reading assignment for each lecture that should be completed prior to coming to the live class.

Webpage:

Canvas will be used for the course website. From Canvas you can obtain Exam grades, resources, announcements, chat room, etc. <https://canvas.rutgers.edu/>

Pre-recorded Lectures and Live Class Meetings:

Pre-recorded lectures will be assigned prior to the live class meetings. It is essential that you watch the full lectures prior to the Tuesday in-person class meetings. The lectures are traditional "voice-over-slides" format and available through YouTube. It is suggested to take notes while viewing the lecture and come prepared to the live class meeting with questions you may have about the material.

In-person Class Meetings:

The format of the recap lectures will be open and students are highly encouraged to think critically about the course material, ask questions, share their thoughts and opinions, and participate in discussions.

Each live class meeting will begin with a short weather discussion based on real-time observations, satellite, radar, and computer model data. The weather discussions are intended to show how the concepts taught in the course play out in the real world. The discussions are an opportunity to talk about current weather events and show how meteorology impacts the natural world and human society.

Hybrid Online Class Meetings:

There will be a breakout activity during most online class meetings. The students will be randomly assigned a breakout group to discuss a topic, work on a small collaborative assignment, and present their work back to the rest of the class.

Extra Assistance:

Students may arrange office hours with the instructor by request. Students may also form study groups and are encouraged to study together.

How You Will Be Evaluated

Exams:

There will be two (2) exams, contributing 40% to your total course average. The exams will be based on the materials presented in the lectures and in the course textbook. The exams are "stand-alone" and are not cumulative.

The exams will be multiple-choice format. Students are required to have a calculator for the exams, but "smart phones" are strictly prohibited. The exams will be conducted online through the Canvas website during the scheduled lecture period. LockDown Browser is required to take the exams. [Instructions for downloading and using LockDown Browser are available here.](#)

There are no make-up or rescheduled exams.

Final Paper:

There will be a final paper that will be due at the end of the semester. The paper will be one of the primary ways to assess your mastery of the course material. The final paper will account for 30% of your total course grade. The assignment details for the final paper will be made available in early October.

Breakout Sessions:

There will be 9 breakout activities throughout the course of the semester. Your participation and performance in the breakout sessions will account for 20% of your course grade. These activities will require you to work collaboratively with your classmates to discuss a topic related to the course material and create a short presentation to summarize the main points of your discussion to share back with the rest of the class. It is expected that you will be a positive and supportive participant in these activities. In the event of unforeseen circumstances, *you will be allowed to miss two of the activities for any reason.*

Quizzes:

Throughout the semester there will be five (5) quizzes that will account for 10% of your course grade. The quizzes will be online and administered through the Canvas website.

Homework:

There are no graded homework assignments for the course, but additional learning outside of the classroom is expected. It will be difficult to perform well on the exams without additional preparation and review of the course materials. Students should be able to answer the study questions at the end of each chapter in the text. Any questions that are too difficult can be discussed in office hours or over email.

Extra Credit:

There are no extra credit assignments available for this course. However, there will be several opportunities during lecture to earn extra credit points that will be applied to the exams.

Course Grade Breakdown

	Weighting Value
Exam 1	20%
Exam 2	20%

Final Paper	30%
Breakout Activities	20%
Quizzes	10%
COURSE TOTAL	100%

Grading Scale

This course will follow the standard Rutgers grading scale:

A	>= 90
B+	85-89
B	80-84
C+	75-79
C	70-74
D	60-69
F	Below 60

Course Policies

Classroom Courtesy

You are expected to be respectful of fellow students and me. Examples of courtesy include:

- Making every effort to attend lectures
- Doing the reading assignments ahead of time
- Coming to class prepared to discuss the materials

Academic Integrity:

The University policy about academic integrity can be found at website <http://academicintegrity.rutgers.edu/>. Academic dishonesty in this course is not acceptable.

Special Needs:

To ensure that disability-related concerns are properly addressed from the beginning, students with disabilities who require reasonable accommodations to participate in this class are asked to see the instructor as soon as possible with the appropriate documentation. For more information, contact the [Rutgers Office of Disability Services](#).

Special COVID-19 Pandemic Information

Masking, Vaccine, and Social Distancing Policy:

Rutgers requires that all students be vaccinated for COVID-19 and upload proof of vaccination to the University. Masks are required to be worn inside all Rutgers facilities regardless of vaccination status. The class will be held in a large room with ample room to maintain social distance. This is a large lecture course and it is especially important for the health and safety of everyone that we adhere to these policies. I am comfortable sharing my fully-vaccinated status with you. I received my second dose of the Moderna mRNA vaccine in March and intend to obtain a booster shot based on the CDC's recommended timeline.

Attendance:

If you have ANY question that you could have encountered COVID or are not feeling well, please stay home. To encourage this policy, attendance is not mandatory for this course. Furthermore, all in-person class sessions will be simulcast (but not recorded) via Zoom. In cases when community-wide COVID transmission rates are high, I may poll the class the day prior to gauge in-person attendance for Tuesday's lecture. In the event that a quorum of 25% of the class is not reached in the polling, the in-person class meeting may be converted to an online class meeting for that week. Please be mindful of the distinction between *attendance* and *participation*. Your participation in the course is essential to success in the course and you are expected to demonstrate ethical learning behavior as this demonstrates respect for the course material, your fellow classmates, and the instructor.

Internet Connectivity

It is necessary to have internet connectivity, access to the Rutgers Canvas Website, Zoom Videoconferencing Software, and the LockDown Browser to participate in this course. Interruptions in connectivity that hinder your performance in this course should be reported to the instructor immediately once connectivity is restored.

Please be mindful that students in the class come from a variety of backgrounds and situations. Please avoid distracting backgrounds or inappropriate clothing/outfits while participating in the video chat portion of this class. Treat the video conferencing element as if it were an in-person class meeting.

Frequently Asked Questions

What if I or a close family member/relative becomes ill?

Please contact the instructor as soon as possible to discuss your situation. You may miss up to two of the breakout sessions without any consequences. In the event of an issue concerning quizzes or the exams, it is important to let the instructor know as soon as possible that you will be unable to meet the requirements. Every effort will be made to be accommodating given these unusual circumstances, however the final discretion on all matters lies with the instructor.

What if the instructor becomes ill?

Arrangements will be made with the department of environmental sciences to find another instructor to temporarily cover the course. The exams and quizzes will be pre-programmed to open automatically at their schedule times on the canvas course site and will continue as scheduled in the event of an instructor illness. The main lectures for the course are pre-recorded and will remain available. Depending on the circumstances, an alternate class meeting may be scheduled for the opportunity to ask questions about the course material and review concepts that were scheduled to be covered during the missed lecture.

What if class is canceled due to a closure at the University?

In the event that the university closes on the account of unforeseen circumstances, guidance provided from the University will be followed. Every effort will be made to reschedule course meetings where appropriate.