

11:670:334

Severe Weather Forecasting Field Trip

Summer 2020 (Session I, Sec. A) – 3 Credits

Purpose

The purpose of this course is to provide students with experience forecasting and observing severe convection in the field. By verifying their forecasts with their own eyes, students will better understand the dynamics and thermodynamics that lead to some of the most beautiful yet complex atmospheric circulations on Earth.

Enrollment Particulars

This course requires a minimum enrollment of 13 (or 9) students. Additionally, at least 5 (or 3) students will need to become certified drivers by taking the Rutgers Defensive Driving¹ one-day course prior to or during the Spring 2020 semester. If these minimums are not met, the course will be cancelled. The maximum enrollment is 17 students.

See <https://summersession.rutgers.edu/> for general information regarding Summer Session procedures.

Prerequisites

The prerequisites for this course are Meteorological Analysis and permission of the instructor. I will grant such permission in the order prescribed below until course minimums are met:

Permission to this group...	Will be distributed on this date...
Students who have taken or are currently taking 11:670:434	February 14
Graduate students	February 17
Meteorology alumni in Class of 2019	February 19
Students who have taken or are currently taking 11:670:324	February 21
Students currently taking 11:670:212	February 24
Students who have taken 11:670:211	February 26
Non-Rutgers students who meet equivalent requirements	February 28
All other meteorology alumni	March 3
Students who have previously taken this course	March 5

If a particular group would cause me to exceed 17 permission numbers, I will prioritize first based on whether the student is a certified driver, and second based on the number

¹ See <https://ipo.rutgers.edu/publicsafety/defensive-driving> to register for the defensive driving course. You must be 21 as of May 27, 2020 to serve as a driver.

of grade points (cumulative GPA \times degree credits) that the student has earned. All participants will need to sign liability waivers and must have health insurance.

Students with less of a background in mesoscale meteorology will be able to get up to speed by reading course notes during the long drive to the Plains.

Timeline

Orientation	May 26
Field Trip	May 27–June 9 or May 28–June 10
Final Presentations	June 18

The course fee has been budgeted to allow for a 14-day trip, but if expenses are unusually high, or if the weather at the end of the trip is not promising, the trip may end early.

Costs

	In-state	Out-of-state
Tuition	\$1353	\$3255
Student Fee	\$162	\$162
Course Fee	\$1250	\$1250
Grand Total	\$2765	\$4667

Students will be responsible for their own food purchases as well of the cost of incidentals (e.g., laundry, souvenirs). All other costs (e.g., transportation, lodging, equipment) are included in the course fee. (Unspent course fees will be refunded at the end of the trip. For reference, the per-student trip costs totaled \$1100 in 2017.)

Note that the student fee is \$162 regardless of the number of Summer Session courses you take². It is thus not a direct cost for this course *per se*, but is included for completeness.

Field Trip Activities

Students will be grouped into forecast teams of two and/or three. During the orientation, a rotation will be drawn up at random. The rotation will determine which forecast team is in charge of choosing our target for each day of the trip. The ideal target is a location where isolated supercells are forecast to occur collocated with a dense road network, few trees, far from urban areas, and near where severe convection is forecast for the subsequent day. The field trip is scheduled for the climatological period when these considerations are easiest to meet (see map at end), although we can make no guarantees! Often some of these ideals will need to be compromised, but this is the challenge set forth to each forecast team. Regardless of whose turn it is to be on the forecast team, all students will keep field trip diaries documenting their experiences and

² Although you wouldn't be able to take additional courses during Session I, the field trip will be over in time for you to take as many Session II and/or Session III courses as you wish.

will perform other duties (e.g., two-way radio operator, meteorological instrumentation operator, navigator).

Should the team's forecast prove accurate and we observe interesting weather on that team's day, that team will move out of the rotation, and they will deliver a presentation and write a chase report regarding that particular day. Some teams, by luck of the draw and uncooperative weather, may never have interesting weather on their days. In that case, the team will be charged with picking one of their days to write about and present what went wrong, what they learned, why conditions were unfavorable, etc.

In the event of a long stretch of inactive weather, we will include alternate activities such as visits to the Storm Prediction Center and National Severe Storms Laboratory in Norman, Oklahoma; or the Atmospheric Radiation Measurement Southern Great Plains site near Lamont, Oklahoma.

Grading

Participation and Punctuality	30%
Final Presentation	30%
Diary	25%
Final Paper	15%
Eligible Driver	5% extra credit
Trained Spotter ³	5% extra credit

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

Safety

Putting ourselves near severe weather is inherently a dangerous activity. Even so, the greatest danger participants in this course will face is the fact that we will be driving 7000 miles across the country. Statistics dictate that the risk of getting in a car accident is much greater than the risk presented by the severe weather itself. We minimize this risk by ensuring all drivers are aware of defensive driving practices. The largest severe weather risk is due to lightning, with flash flooding / washed-out roads being second, and tornadoes being a distant third. We will mitigate these risks by approaching no

³ The NWS office in Mt. Holly will offer spotter training at various locations in New Jersey throughout the spring.

closer than five miles from any tornado in progress and by always leaving at least two escape routes from our current position. Often, five miles southeast of the wall cloud/tornado is precipitation and lightning free. Indeed, spectacular success can be had and tornadoes can be seen without ever needing to turn on the windshield wipers.

