

SYLLABUS

METR 4433

SPRING 2010

Mesoscale Meteorology

- Time and Place:** MWF 9:00 – 9:50 am, Room 1350 National Weather Center
- Instructor:** Dr. Fred Carr
Room 5919 NWC Phone: 325-2990
E-mail: fcarr@ou.edu
- Office hours:** MWF 1:30-2:30 pm; TR 10:00-11:00 am. (Please e-mail me or call Marcia in my office at 325-6561 to confirm appointment.)
- Prerequisites:** C or better in METR 4133, METR 4424
- Grader:** Todd Kluber, 5325 NWC
E-mail: Todd.Kluber@ou.edu
Office hours: MWF 10:00-11:00; TR 12:30-1:30 pm; or by appointment.
- Required Text:** **Markowski and Richardson, 2010: *Mesoscale Meteorology in Midlatitudes*; Wiley-Blackwell**
- Other References:** List to be provided
- Additional handouts and reading assignments as required.

Exams and Grades:

The grading policy will be as follows:

3 in-class exams - 25% each – lowest score will be dropped: 50%

Homework (problem sets): 20%

Final Exam (30%) Mon., May 10, 8:00-10:00 am; or Tues., May 11, 10:30-12:30

Exam Policies:

1. No make-up exams will be given. (A missed exam will count as the dropped exam.) Please see instructor in case of a family or medical emergency.
2. Exams are closed book
3. No calculators or other electronic devices are allowed during exams
4. Final Exam is comprehensive

Homework Policies:

1. Problem sets are collected at the start of class on the day they are due. Late homework is not accepted except in cases of family or medical emergency.
2. Homework should be done neatly, with clear explanations of your logic. That is, please explain your reasoning, state the assumptions, and proceed in a logical order. More guidelines on writing expectations will be provided later.
3. Discussion of homework problems with your classmates is acceptable, but copying is not. Please turn in our own work. Information on what constitutes proper and improper collaboration is provided at <http://www.ou.edu/provost/integrity/>

Course Objectives:

This will be primarily a lecture course on mesoscale observations and dynamics. A few map or “lab” exercises may be included in the homework. The emphasis will be on the physical understanding of mesoscale phenomena. I believe very strongly in the connection between dynamics and observations, so I will attempt to show a weather chart of some kind every lecture that illustrates the concepts, equations or phenomena discussed in that day’s lecture. This includes an emphasis on the physical interpretation of the equations, so that you will see that they are “talking to you” about the relevant physics. We will also try to take advantage of daily weather situations to illustrate the course material.

Course Topics:

1. What is the mesoscale?
2. Review of basic equations, soundings and hodographs
3. Mesoscale instabilities - Static, centrifugal, inertial, symmetric, shear

4. Review of the planetary boundary layer; low-level jet
5. Boundaries - fronts, drylines, outflow, differential heating
6. Gravity waves
7. Convective initiation
8. Convective storms - single cell, multicell, supercell
9. Mesoscale convective systems – squall lines, MCCs
10. Tornadoes, hail, flash floods
11. Orographic phenomena - mountain waves; downslope windstorms
12. Hurricanes

Web site:

This class will be using the Desire2Learn course management software, located at <http://learn.ou.edu>. Announcements, lectures and other related information will be posted here. I may also send e-mails outside of D2L.

The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course are requested to speak with the professor as early in the semester as possible. Students with disabilities must be registered with the Office of Disability Services prior to receiving accommodations in this course. The Office of Disability Services is located in Goddard Health Center, Suite 166, phone 405/325-3852 or fax only 405/325-4173.

All students are expected to be familiar with and abide by the OU Academic Misconduct Code. Information on this code is at <http://www.ou.edu/provost/pronew/content/integritymenu.html>