

Geography 433/533 – Advanced Synoptic Meteorology

Indiana University – Spring 2013

Class Meetings: Tuesday and Thursday, ☺ 8:00–9:15, SB 220

Instructor: Dr. Cody Kirkpatrick
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Office Hours: M & W, 10–noon
Feel free to stop by any time the door is open.
I can also make appointments for other days, if that's more convenient.

Course Prerequisite: Either G304 or G339, or consent of the instructor.

Course Goal: By the end of G433, students will be able to demonstrate a physical understanding of synoptic-scale meteorological processes and phenomena, through the synthesis of meteorological data in the preparation and delivery of a 1-2 day forecast.

Learning Outcomes:

- Describe weather phenomena and processes that operate at the synoptic scale, using scientifically correct language
- Interpret selected meteorological processes and variables using mathematical definitions
- Synthesize a variety of weather data in order to predict likely winter precipitation types
- Describe the fundamentals of quasi-geostrophic theory, and apply them to infer large-scale regions of upward and downward motion
- Distinguish the various ways that atmosphere processes affect the development and evolution of midlatitude cyclones
- Demonstrate this integrated knowledge through the preparation and delivery of a 1-2 day weather forecast

Textbook: *Midlatitude Synoptic Meteorology*, by Gary Lackmann. I will provide handouts and we will answer several questions from the G339 textbook (the purple one by Tim Vasquez), so if you still have that book please keep it handy.

Additional Materials: Please pick up a small box of colored pencils. You'll need them for map assignments and the exams.

A word of warning: just like G339, our meetings of G433/533 may feel disjointed or disorganized on some days. This is natural—the best way to learn about the atmosphere is to study it in real time, and sometimes we are just stuck with the “boring” sunny weather that the atmosphere gives us. I will do my best to keep things interesting, even on those days!

Grading (same for both G433 and G533)

Assignments	50%
Midterm exam (Tuesday, March 5)	20%
Final exam (Thursday, May 2, 10:15 a.m.)	20%
Two in-class presentations/weather briefings	10%

Assignments: All homework, in-class graded exercises, and quizzes will be included under this section, with all assignments weighted based on the amount of effort required. (Consider that in the past, quizzes have been about 5 points each in value, and homework assignments about 30 points each.) Your semester-long result in the National Forecast Contest will also count as a homework grade.

Presentations: Twice during the (second part of the) semester, in teams of two you will present a summary of the past, present, and future weather conditions across the United States. Maximum allotted time 15 minutes. The best idea is to focus on what's interesting—if it is warm and sunny in Bloomington, look somewhere else. The WxChallenge city is probably worth some of your time, also. The order of presentations will be determined by random draw. *Presentations will lead off each class period beginning Tuesday, March 19, and continue through the end of the semester.* More details and a sample presentation will be provided in February.

Forecast Contest: Participation in the “WxChallenge” national forecast contest will be required. A separate handout will be provided with information about the contest.

Graduate students: Assignments and exams for graduate students may be different in scope, quality, and quantity.

Graduate Student Research Paper: All graduate students will be expected to complete a “research paper” that will be worth 10% of the course grade (with their assignment percentage reduced from 50% to 40%). More details will be given later, but here I can tell you that the paper will be due at 0000 UTC on 23 April 2013.

Late or missed assignments: There are no make-ups for missed quizzes or in-class assignments—grades must be negotiated. Out-of-class assignments are due by the start of class (unless stated otherwise), but will be accepted late at a penalty of 10% per business day, maximum 3 business days. I don't anticipate any “drop” grades, so every point counts and you are encouraged to submit and get feedback on your work even if it is incomplete. A make-up midterm exam is permitted only after written documentation (note from the clinic, approved University absence, etc.), and may be substantially different than the exam given at the usual class time (one

possibility: oral exam in front of the whiteboard). Final exam absences will follow IU policy, and the final exam cannot be given early.

Cancellations: If any class is canceled by the University (bad weather, etc.), all deadlines, due dates, and assignments for that day—even the exam—are moved to the next class period.

Technology in the Classroom: I have no problem with you bringing laptops, iPads, or whatever to class, *as long as you are using them for a classroom purpose*. Texting the girlfriend or checking Facebook or ESPN usually won't qualify. If I find students abusing this policy, I reserve the right to ban individuals from using these devices, to ban certain devices, or to ban them entirely. "Please use responsibly." My only other rule on this is – no headphones and no sounds/ringtones, please.

Reasonable Accommodation: It is the policy of Indiana University to provide reasonable accommodations or academic adjustments as needed. These accommodations and adjustments will be made in a timely manner and on an individualized and flexible basis. Please review the University's ADA Policy and/or come speak to me so we can make the necessary arrangements.

Academic Misconduct: For information about policies and procedures, including due process requirements, see the "Indiana University Code of Student Rights, Responsibilities, and Conduct". The code is accessible on the internet at <http://www.iu.edu/~code/>.

Disclaimer: In cases of *force majeure*, I reserve the right to deviate from this syllabus. I will notify you as soon as I realize this is necessary, and I will document all changes with the department office.