Instructor: Bill Gallus  
Office: 3025 Agronomy  
Office Hours: 1:00 - 3 pm Wednesday  
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TA: Mike Klocke-Sullivan - 3029 Agronomy; email klockesm@iastate.edu  
TA Office Hours: 12:30 - 2 pm Thursday

**Class meetings**  
Lecture period T 2:10-3:15 pm, Weather Discussions MW 3:05-3:30 pm, and Thursday 2:10-2:35 pm (also possibly on some Tuesdays). Lab periods T 3:15-4:30 and Thursday 2:35-4:30. (Many labs will be done in-class, often on Thursday, but sometimes on Tuesday or both days depending on the weather. Take-home portions will usually be due the Thursday of the following week. Lab periods also will be used for occasional forecasting “quizzes”.)

**Texts**  
Required: 417/517 Course Notes “Mesoscale Forecasting Manual” (available in University bookstore).  
Web page with supplemental material: http://www.meteor.iastate.edu/classes/mt417/  
Also helpful “Severe and Hazardous Weather” (your 311 book), Bluestein’s “Synoptic-Dynamic Meteorology in Midlatitudes” (in library).  
Additional supplemental material may be distributed in class when appropriate.

**Course Objectives**  
This course is designed to hone the forecasting skills developed in previous synoptic labs, and expose students to mesoscale analysis and forecasting. Although the first few classes will explore mesoscale aspects of winter storms, the majority of the course will explore convective storms and the forecasting of small-scale severe weather. After completion of this course, students should be able to explain in a physically meaningful and consistent way both the synoptic-scale and mesoscale features of any weather situation.

**Syllabus**  
January 12, 14: Course organization; Forecasting heavy snowstorms. (pp 1-16)  
January 19, 21: Cold-air damming and lake-effect snowstorms. (pp 17-30)  
January 26, 28: CSI and internal gravity waves. (pp 31-51)  

February 2, 4: Verification methods; Basic thunderstorm structure, outflow boundaries, other mesoscale boundaries. PROBABLE TAKE-HOME LAB (pp 52-54)  
February 9, 11: Mesoscale analysis and interpretation. GUEST instructor on 2/9 (pp 55-64)  
February 16, 18: Mesoscale sounding and stability analysis. (pp 143-158)  
February 23, 25: Wind shear analyses, hodographs, helicity, using skew-Ts to predict severe weather. (pp 143-158)
March 2, 4: Storm type: Air mass thunderstorms, multicells and supercells. (pp 99-142)

March 9: Mid-term review.

March 11: MIDTERM (material through Feb 25).

March 15, 17: Spring Break - NO CLASSES

March 23, 25: Mesoscale convective systems - description, diagnosis. TAKE-HOME LAB (pp 204-229)

**March 25-27: National Weather Association Severe Storms and Doppler Radar Conference in Des Moines (students are encouraged to attend)**

March 30, April 1: Synoptic conditions favorable for severe storms, SPC IN-CLASS LAB. (pp 65-98)

April 6, 8: Use of weather radar for severe weather forecasting and warnings. (pp 159-177)

April 13, 15: Tornadogenesis dynamics and tornado forecasting (IN-CLASS CHASE LAB). (pp 178-203)

April 20, 22: Flash floods, persistent convective events. (pp 230-247)

April 27: Forecasting check lists for heavy precipitation and severe weather, miscellaneous topics.

April 29: Review

May 3: FINAL (2:15-4:15pm)

**Grading:**

- 40% class exercises
- 10% forecast contest, weather briefings and nowcast/forecast exercises
- 23% mid-term exam
- 27% final exam

**NOTE ABOUT DISABILITIES:** If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet with me soon. Please request that a Disability Resources staff send a SAAR form verifying your disability and specifying the accommodation you will need.

**NOTE ABOUT ACADEMIC DISHONESTY:** In this course, you will be permitted to do some of the weekly lab exercises outside of class. Although I understand it can be helpful to work with others in doing the lab exercises, I caution you to be sure to do your own work. Traditionally, many students receive far worse grades on the exams in this course than on the laboratory exercises, which usually indicates that the students relied too much on others when doing the labs. If I receive lab exercises from two or more students that are basically identical, I will regard it as cheating. All cases of such academic dishonesty will be reported to the Dean of Students. In addition, if problems persist on the lab exercises, I may have to require that they be done in-class.