ESCI 4216 – Synoptic Meteorology **Course Syllabus**
MWF, 9:10-10:05 a.m., JN 222 **Fall 2014**

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Office Hours
10:15 a.m.-11:15 a.m. Mon-Wed
and by appointment

I encourage you to talk to me individually whenever you need to discuss your progress in the course or whenever you have a topic of special interest you want to discuss individually.

COURSE WEBSITE

elearn.memphis.edu (eCourseware)

COURSE TEXTBOOK

None.

This course is based on notes from a variety of textbooks, National Weather Service Manuals, and online modules (e.g., www.meted.ucar.edu).

ABOUT THE COURSE

This course examines the atmospheric systems found at the synoptic (regional) scale. A working knowledge of the physical processes of the atmosphere will be presented. This theory will then be applied to the analysis and interpretation of synoptic scale atmospheric systems by using weather maps, upper-air soundings, satellite imagery, radar imagery, and computer model output. Students will participate in map discussions as part of their grade and be introduced to techniques used in weather forecasting. Prerequisites: ESCI 1010, MATH 1710, and PHYS 2010 or permission of the instructor.

GRADES

Your grade at the end of the semester will be determined based on your scores on 1) the mid-term and final exams, 2) seven exercises, 3) participating in the map discussions toward the end of the semester, and 4) any extra credit. Final grades will be determined from a total of 440 points:

Grade	Points Needed	Average Percentage
A	396	90%
B	352	80%
C	308	70%
D	264	60%

Exams:

Two exams are scheduled for this course—a mid-term and a final. Each exam is worth 100 points, and will take the format of fill-in-the-blank and discussion questions. While each

chapter can build on previous chapters, exams only cover the new material presented. In other words, material on the mid-term exam will not show up on the final exam.

Exams can be made up, but you must have a legitimate, verifiable, and an unavoidable reason. If you know you are going to be absent, then please make arrangements for a makeup before the exam. If you miss an exam because of an unforeseen emergency, arrangements to make it up must be made as soon as you return to campus. Please note that while makeup exams will be in the same format and cover the same material, they may not ask the same questions. The last day to makeup an exam is Study Day, 4 December 2014.

Exercises:

There will be seven exercises worth 20 points each, and are due at the beginning of class on the date listed. You may work on these exercises in groups if you wish, but each student must turn in their own set of answers.

It is better to hand in exercises late than not at all. Any exercises turned in late, however, are subject to a grade penalty. The later an exercise is, the more stiff the penalty. For each class period that an exercise is late, 10% of the maximum points will be subtracted. Please note, the last day to turn in late exercises is Study Day, 4 December 2014.

Map Discussions:

All students will participate in map discussions that begin on 10 November 2014 and continue each class meeting for two weeks. I will lead the first map discussion. After that, each student will lead one discussion. Attention and participation in other discussions will be noted and graded. These discussions are meant to give you the opportunity to show what you have learned about meteorology. Your map discussion should include each of the following weather analysis and forecasting questions as they relate to the area around the Mid-South:

- What happened over the last 24 hours?
- Why did it happen?
- What is happening currently?
- Why is it happening?
- What is going to happen over the next 24 hours?
- Why it is going to happen?

You may discuss any weather occurring across the globe, but you must talk specifically about Memphis weather, and why you made the forecast you did for that particular day. Your discussion should last around 10 minutes with an additional 5 minutes for comments. A sign-up sheet for the day you will lead a discussion will be distributed on 27 October 2014. The map discussions component of the course is worth a total of 100 points. The map discussion you lead is worth 75 points. An additional 25 points is earned for listening and participating in the remainder of the discussions.

Extra Credit:

I often find extra credit to be a valuable resource, and an additional 20 points can be added to your final point total by researching a significant synoptic-scale weather event of interest to you. This could be a winter storm, a large outbreak of severe thunderstorms, a hurricane, a drought, etc. Research this event and write a 2-3 page summary of the event. What were the meteorological conditions that came together? What impacts occurred?

You may only do one extra credit. Please turn in your summary typed (double spaced using 12 point font or lower). You may upload these summaries to Dropbox on eCourseware. Extra credit can be turned in at any time up through Study Day, 4 December 2014.

Attendance:

I will not call roll. I am assuming that you can make your own decisions about class attendance and how it might influence your performance. However, it is in your own best interest to attend class for a couple of reasons. First, this is an applied 4000-level course and there is no textbook, so the way to get the information and see how it all fits together is to come to class. Second, I will memorize your names and faces and will know who comes to class regularly. I may use such information to give the benefit of doubt to borderline grade situations. My experience has shown students who miss a number of days, do not perform as well on exams as they could have had they attended class.

STUDENT CONDUCT

Academic Dishonesty:

Cheating, plagiarism, or any other form of academic dishonesty will not be tolerated. Cases of academic dishonesty will be dealt with in accordance with the policies set forth in the University's Code of Student Rights and Responsibilities available at http://www.memphis.edu/studentconduct/pdfs/csrr.pdf. It is your responsibility to understand these policies. A lack of understanding is not an adequate defense against a charge of academic dishonesty.

Cell Phones, Laptops, Tablets:

The use of cell phones, laptops, or tablet computers for purposes other than note taking is not allowed during class. Flagrant violation of this policy will result in you being dismissed from class.

STUDENTS WITH DISABILITIES

Any student who may need class or test accommodation based on the impact of a disability will need to contact Student Disability Services (SDS) at 110 Wilder Tower, 678-2880. SDS coordinates accommodations for students with documented disabilities. Once you receive your documentation from SDS, you are encouraged to schedule a meeting with me to provide me with the paperwork and discuss any accommodations needed for examinations and class materials.

COURSE SCHEDULE

Note: There is always a chance that this schedule could change. Any changes will be announced in class and updated in this syllabus on the course website.

Date	Topic
25 August	Introduction to Synoptic Meteorology
27 August	Variables, Units, and Coordinate Systems
29 August	Coordinate Systems / Atmospheric Circulation
1 September	No Class – Labor Day
3 September	Atmospheric Circulation / Vorticity

5 September	Jet Streams and Jet Streaks
8 September	Atmospheric Thermodynamics
10 September	Skew-T/Log-P Diagrams
12 September	Skew-T/Log-P Diagrams
15 September	Air Masses and Fronts
17 September	Mid-Latitude Cyclone Model Theory
19 September	Weather System Evolution and Tilt
22 September	Winter Storms
24 September	Winter Storms / Severe Thunderstorm Environments
26 September	Severe Thunderstorm Environments
29 September	Tropical Cyclones
1 October	Blocking Patterns
3 October	Teleconnections
6 October	Reanalysis and Computer Tools (IDV, GrADS)
8 October	KNMI Climate Explorer / Mid-Term Review
10 October	***Mid-Term Exam***
13 October	No Class – Fall Break
15 October	Surface Observations
17 October	METARs
20 October	Surface Analysis
22 October	Upper Air Charts
24 October	Upper Air Charts
27 October	Upper Air Analysis
29 October	Satellite Meteorology
31 October	Satellite Interpretation
3 November	Satellite Interpretation

5 November	Radar Meteorology
7 November	Radar Interpretation
10 November	Radar Interpretation Map Discussion
12 November	Numerical Weather Prediction Map Discussion
14 November	Numerical Weather Prediction Map Discussion
17 November	Numerical Weather Prediction Map Discussion
19 November	Weather Forecasting Map Discussion
21 November	Weather Forecasting Map Discussion
24 November	Weather Forecasting Map Discussion
26 November	No Class – Thanksgiving Break
28 November	No Class – Thanksgiving Break
1 December	Graduate Student Presentations
3 December	Graduate Student Presentations
5 December (10:30 a.m. – 12:30 p.m.)	***Final Exam***

***Note: 4 December 2014 is the last day to makeup missed exams, turn in late exercises, and turn in extra credit**