

**Syllabus for ATMS 316 – Mesoscale Meteorology – Spring 2007**

Date	Topic	Reading/Homework*
W 17 Jan 2007	Introduction/ Overview	
M 22 Jan	Scale of Atmos. Motions	
W 24 Jan	“	Project#1 due
M 29 Jan	Lake-effect snowstorms	Hjelmfeldt (1990)
W 31 Jan	“	Quiz#1
M 5 Feb	Cold fronts	Bond & Fleagle (1985)
W 7 Feb	“	Quiz#2
M 12 Feb	Symmetric stability	Jascourt et al. (1988)
W 14 Feb	“	Quiz#3
M 19 Feb	Polar lows	Nordeng & Rasmussen (1992)
W 21 Feb	“	Quiz#4
M 26 Feb	Lee cyclogenesis	Tosi et al. (1983)
W 28 Feb	“	Quiz#5
M 12 Mar	Presentations, Round#1	Presentation#1 due
W 14 Mar	“	
M 19 Mar	Lecture/Review	
W 21 Mar	<b>Exam I</b>	17 Jan – 20 Mar material
M 26 Mar	Mountain waves	Durran (1986)
W 28 Mar	“	Quiz#6
M 2 Apr	Cold air damming	Bell & Bosart (1988)
W 4 Apr	“	Quiz#7
M 9 Apr	Downslope winds	Smith (1987)
W 11 Apr	“	Quiz#8
M 16 Apr	MCCs	Maddox (1983)
W 18 Apr	“	Quiz#9
M 23 Apr	Tornadoes	Davies-Jones (1986)
W 25 Apr	“	Quiz#10
M 30 Apr	Presentations, Round#2	Presentation#2 due
Final Exam Period	“, <b>Exam II</b>	

\*assignment completed before class meets on this date

**Description**

“The devil is in the details.”

A quote intended to convey the importance of paying attention to the details. The saying can be applied in our career as a weather forecaster. If we have an understanding of the large scale (synoptic-scale) weather, but ignore how local effects can modulate the large-scale weather, we will find ourselves making a bad local weather forecast. The local weather effects quite often fall under the general category of “Mesoscale Meteorology.” This course is intended to give the student an appreciation of how middle-scale (mesoscale) effects can modulate the large-scale weather and we’ll examine several

## Description (continued)

specific scenarios in which this modulation occurs. An outcome of this course is for the student to consider how adjustments to a local weather forecast might need to be made when impacted by mesoscale effects.

## Outline

- Introduction
  - Overview of course
- Scales of Atmospheric Motions
- Lake-effect snow
- Fronts
  - Cold fronts
  - Symmetric stability
- Polar lows
- Lee cyclogenesis
- Mountain waves
- Cold air damming
- Downslope winds
- Mesoscale convective complexes
- Tornadoes
- Coastal jets {time permitting}

## Grading

Projects	10%
Quizzes	10%
MesoNews [2]	10%
Exam I	20%
Exam II	20%
Presentations [2]	30%
<b>Total</b>	<b>100%</b>

92% < total score ≤ 100%	A
90% < total score ≤ 92%	A-
88% < total score ≤ 90%	B+
82% < total score ≤ 88%	B
80% < total score ≤ 82%	B-
78% < total score ≤ 80%	C+
72% < total score ≤ 78%	C
70% < total score ≤ 72%	C-
68% < total score ≤ 70%	D+
60% < total score ≤ 68%	D
total score ≤ 60%	F

## **Projects**

Projects (both in-class and at-home) will be assigned throughout the semester and are intended to aid in improving your understanding of the course material contained in the lecture and reading assignments. Projects will be defined as *individual* or *group* assignments. When an assignment is designated for a *group*, each individual within the group will receive an identical grade.

## **Quizzes**

Quizzes will be given weekly, at the end of the class period on Wednesdays during those weeks when we are reviewing a paper. Quizzes are given to help the student gauge their understanding of the weekly material from the assigned paper. The lowest quiz score will be *dropped* and not count toward the final course grade.

## **MesoNews**

Each student will have two opportunities during the semester to find a significant mesoscale-influenced weather event over the past week and present the case study to the class. The presentation should be no longer than **FIVE** minutes and should consist of a synoptic discussion (SLP, 850, 700, 500, and 300 mb maps), show image loops (radar and/or satellite), and discuss how mesoscale effects might have played a role in the weather event. The MesoNews presentations will take place weekly at the beginning of class on Mondays.

## **Exams I and II**

The mid-term exams (I and II) will be primarily testing new material introduced since the previous exam or since the start of the semester. Exam II will be taken during Final Exams week and will test the material given during the second half of the semester.

## **Presentations**

Each student will have two opportunities to be part of a research team responsible for finding a published journal article within the past 10 years (1997 – present) that cites one of the papers read in this course and present the important information from the recent article during a 20 minute oral presentation. A one-page study guide will also be a requirement which describes the MOST IMPORTANT findings of the paper. The information from this study guide will be testable material on the mid-term exams and will be shared with all students in the class.

## **Extra Credit**

Even though published journal articles have been through a rigorous review process, there still are editorial errors that make their way into the final copy. If you happen to find an editorial error that Prof. Miller has already found in the journal article, you will receive one extra credit point on the upcoming mid-term exam. However, if you happen to find an editorial error that Prof. Miller has NOT already found in the journal article, you will receive three extra credit points on the upcoming mid-term exam.

### **Assignment/Quiz/Exam Policy**

Assignments are to be handed in before the start of lecture on the date they are due. Assignments handed in after the start of lecture are considered late until 5:00 pm on the date they are due and will have an automatic 10% deduction from their final score. Assignments handed in after 5:00 pm on the date they are due will receive no credit.

Quizzes and Exams are written tests and will be taken on the date they are scheduled, unless circumstances (e.g. medical or loss in the family) warrant. Make-up quizzes and exams for unexcused absences will consist of an individual oral graded question and answer session at a mutually agreed upon time outside of the usual class meeting time.

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### **Instructor**

Doug Miller  
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### **Textbook**

None required

Various articles on reserve in library at:

[http://wncln.wncln.org/search/ratms316/ratms316/-3,0,0,B/frameset~2591622&FF=ratms+316+unca+spring+2007&1,1,](http://wncln.wncln.org/search/ratms316/ratms316/-3,0,0,B/frameset~2591622&FF=ratms+316+unca+spring+2007&1,1)

### **Reference**

“Mesoscale Meteorology and Forecasting” Edited by Peter S. Ray

### **Disabilities**

Contact Prof. Miller early in the course if you have a disability that requires special accommodation.

### **Academic Integrity**

Cheating or plagiarism results in a failed assignment, quiz, or exam on the first infraction. A second infraction results in course failure and a report to the UNCA administration. See <http://www.unca.edu/catalog/academicregs.html> under “Student Responsibilities” for a refresher on the UNCA policy.