Syllabus for ATMS 410 – Synoptic Meteorology I – Fall 2017

Date	Topic	Reading/Homework*
T 22 Aug 2017	Introduction	Lecture packet (LP) #1
R 24 Aug	General Circulation	LP#2
T 29 Aug	"	
R 31 Aug	"	Project#1
T 5 Sep	"	Quiz#1
R 7 Sep	Atmospheric oscillations	LP#3, Project#2
T 12 Sep	"	
R 14 Sep	Teleconnections	LP#4, Project#3
T 19 Sep	"	Quiz#2
R 21 Sep	"	Project#4
T 26 Sep	Lecture/ review	
R 28 Sep	Exam I	22 Aug – 26 Sep material
T 3 Oct	Kinematics and dynamics	LP#5
R 5 Oct	"	Project#5
R 12 Oct	"	
T 17 Oct	Mid-latitude cyclone development	LP#6 Quiz#3
R 19 Oct	"	Project#6
T 24 Oct	"	
R 26 Oct	"	Project#7
T 31 Oct	"	Quiz#4
R 2 Nov	"	Project#8
T 7 Nov	Lecture/ review	
R 9 Nov	Exam II	3 Oct – 7 Nov material
T 14 Nov	Mid-latitude cyclone development	Project#9
R 16 Nov	"	
T 21 Nov	Three-dimensional structure of mid-latitude cyclones	LP#7
T 28 Nov	"	
R 30 Nov	Group presentations	Final Project Report

*assignment completed before class meets on this date

Description

A course which examines the causes and effects of mid-latitude synoptic-scale (~2000 km horizontal wavelength) cyclones, the predominant feature on TV weather maps, with a two-fold purpose; (1) to unify the many concepts you have learned while in the atmospheric sciences program and (2) to provide the necessary skills for being a knowledgeable weather forecaster. Although today's computer weather models are beyond the human forecast capabilities, the human is still a necessary component in the weather forecast loop who can know when the computer models are likely to be in error and use their experience and pattern recognition capabilities to improve the overall operational weather forecast product.

Student Learning Outcomes

- generate an accurate conceptual model of atmospheric structure and evolution valid on the synoptic-scale
- improve problem-solving skills by applying knowledge to actual weather case studies
- develop an ability to make a significant contribution to a team-based research effort

Outline

Introduction
General circulation {Carlson, Ch. 5}
Atmospheric oscillations {course notes}
Teleconnections {course notes}
Kinematics and dynamics {Carlson, Ch. 1, 2, 3}
Mid-latitude cyclone development {Carlson, Ch. 4, 10}
Three-dimensional structure of mid-latitude cyclones {Carlson, Ch. 12.1-12.4}

Grading

Projects	15%
Quizzes	5%
Exam I	20%
Exam II	20%
Final Exam	25%
Final Project	15%
Total	**100%**

$92\% < \text{total score} \leq 100\%$	A
$90\% < \text{total score} \leq 92\%$	A-
$88\% < \text{total score} \leq 90\%$	B+
$82\% < \text{total score} \leq 88\%$	B
$80\% < \text{total score} \leq 82\%$	B-
$78\% < \text{total score} \leq 80\%$	C+
$72\% < \text{total score} \leq 78\%$	C
$70\% < \text{total score} \leq 72\%$	C-
$68\% < \text{total score} \leq 70\%$	D+
$60\% < \text{total score} \leq 68\%$	D
$\text{total score} \leq 60\%$	F

Projects

Projects 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. The first part of each project will involve the analysis of a weather event or scenario using GARP or web tools and will require group coordination and response. The second part of each project will involve a "work 'em out" task whose answers each student will hand in individually. Each group member is ***strongly encouraged*** to work individually on the weather event or scenario analysis. Students in the past have failed exams because they let others do the work on group projects.

Quizzes

Quizzes will be given bi-weekly, at the beginning of the class period on Tuesdays during those weeks when we are in the midst of lecture material (non-exam weeks). Quizzes are given to help the student gauge their understanding of the weekly lecture material and the individual "work 'em out" questions on the projects. The lowest quiz score will be *dropped* and not count toward the final course grade.

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.

Final Exam

The final exam is a *comprehensive* exam in which all the material contained in the entire course is testable.

Final Project

The final project consists of a group project in which each group will serve as a private forecasting company to determine the optimal route for a ship making a hazardous ocean crossing. The project will consist of a written analysis report as well as a presentation defining the optimal route determined by your forecasting company.

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 4:30 pm on the day they are due and will be have an automatic 10% deduction from their final score. Assignments handed in after 4:30 pm on the day 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 special circumstances may consist of an individual oral graded question and answer session at a mutually agreed upon time outside of the usual class meeting time.

Extra Credit

Participate in the national weather challenge forecast competition (details will be announced soon) and earn *five* points on the ATMS 410 final exam. "Win" the forecast contest for all students enrolled in Synoptic I and earn *seven* points on the final exam. Sign up to give a "Five for Five" discussion and earn *three* points on the ATMS 410 final exam.

Instructor

Doug Miller http://www.atms.unca.edu/dmiller/
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Textbook

"Mid-Latitude Weather Systems" by T. N. Carlson © 1998.
References are used extensively and are given on the final page of each lecture packet.

Accommodating Students with Disabilities

UNC-Asheville values the diversity of our student body as a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources. Students who experience a barrier to full access to this class should let the professor know and make an appointment to meet with the Office of Academic Accessibility as soon as possible. You can make an appointment by calling 828.232.5050; by emailing academicaccess@unca.edu; by clicking on https://uncaoaaintake.youcanbook.me/; or by dropping by the Academic Accessibility Office, room 005 in the One Stop suite (lower level of Ramsey Library). You can access further information here: https://oaa.unca.edu/

Students who receive Letters of Accommodation are strongly encouraged to request, obtain, and present these to their professors as early in the semester as possible so that accommodations

can be made in a timely manner. It is the student's responsibility to follow this process each semester.

Preventing Sexual Harassment

Title IX of the Education Amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds. The act is intended to eliminate sex discrimination in education. Title IX covers discrimination in programs, admissions, activities, and student-to-student sexual harassment. UNC Asheville's policy against sexual harassment extends not only to employees of the University but to students as well. If you encounter unlawful sexual harassment or gender based discrimination, please talk to any University Responsible Employee – which includes most faculty and staff -- who will report the incident; contact Dr. Jill Moffitt, UNC Asheville's Title IX Administrator, at (828) 232-5658; or report anonymously at https://police.unca.edu/anonymous-report. For more information regarding Title IX and resources concerning sexual harassment and its prevention please visit https://police.unca.edu/title-ix

Understanding Academic Alerts

Faculty at UNCA are encouraged to use the university's Academic Alert system to communicate with students about their progress in courses. Academic Alerts can reflect that a student's performance is satisfactory at the time the alert is submitted, or they can indicate concerns (e.g., academic difficulty, attendance problems, or other concerns). Professors use the alert system because they are invested in student success and want to encourage open conversations about how students can improve their learning, and students who respond to alerts quickly are consistently more likely to earn credit for the course. *Please note, professors of 100-level courses are required to submit at least one alert about each student on or before the fifth week of classes.*

When a faculty member submits an alert that expresses a concern, the student receives an email from Academic Advising notifying them of the alert and subsequent registration hold on their account. To clear the hold, the student must complete a short Google Response Form included in the alert e-mail; the results will be shared with their instructor and advising staff. Instructors may also request to meet with the student to discuss the alert.

Questions about the Academic Alert system can be directed to Anne Marie Roberts (amrober1@unca.edu) in OneStop Advising and Learning Support.

Academic Integity

As a community of scholars dedicated to learning and the pursuit of knowledge, UNC Asheville relies on the honesty and academic integrity of all the members of its community. Any act of plagiarism, cheating, or use of unauthorized materials or assistance is academic dishonesty. A person who knowingly assists another in academic dishonesty is likewise guilty of dishonesty. A student committing a first offense of dishonesty will receive a failing grade or a grade of zero for the assignment or test. A student committing a second offense of dishonesty will receive a failing grade in the course and be reported to the Senior Director of Student Success.

In all situations where a student has been disciplined for academic dishonesty, the instructor must submit a brief statement of the case to the Senior Director of Student Success with a copy to the student. The Senior Director maintains records of academic dishonesty incidents and notifies the instructor when a student is found to have multiple offenses. Depending upon the severity and/or repetition of the offense, the Senior Director and/or instructor may recommend that the Provost impose an additional penalty, such as cancellation of graduation with honors, cancellation

of scholarships, or dismissal from the university. If the Provost decides that additional penalties are warranted, the student will be notified in writing.

If a student feels that he or she has been unjustly accused of academic dishonesty, the student has ten (10) class days from the date of the instructor's written notification to the student to respond in writing. This response is to be sent to both the instructor and the Senior Director of Student Success. The instructor should then meet with the student to discuss the charges within five (5) class days. If needed, the student may then contact the Senior Director for assistance in identifying options for possible resolution. If needed, the Faculty Conciliator will be contacted to mediate and/or convene the Academic Appeals Board.