

METR 4205 / ESCI 5205, Climate Dynamics, Spring 2017

Place and Times: Tuesday and Thursday, 3.30pm – 4.45pm, McEniry 203

Final Exam: Thursday May 11, 2.00pm – 4.30pm

Prerequisites: ESCI 3101 (Global Environmental Change), METR 3250 (Dynamics), METR 4105 (Meteorological Computer Applications), or permission of instructor

Instructor: Dr. Brian Magi, McEniry 232, 704-687-5917, brian.magi@uncc.edu

Office Hours: Tuesday, Wednesday, Thursday, 12pm – 1:30pm, and by appointment

Primary Textbook: *Climate Change and Climate Modeling*, J. D. Neelin,
<http://web.atmos.ucla.edu/neelin/climatebook/climbook.html>

Supplemental Textbooks: *Atmospheric Sciences: An Introductory Survey*, 2nd Edition, J. M. Wallace and P. V. Hobbs; *Global Physical Climatology*, D. Hartmann.

Teaching Assistant: None

Website: canvas

Description

Climate dynamics deals with the climate system and the natural variability that causes global climate change but also affects seasonal weather patterns in different ways around the world. El Nino Southern Oscillation is perhaps to most well-known phenomenon that is classified as a source of natural variability in the climate system. Part of the course is learning about how to talk about this natural variability, but another part of the course will explicitly cover statistical/quantitative methods to diagnose the natural variability via analytical diagnostics. The course is a balance between learning about climate, climate variability, climate diagnostics, and what they all mean for weather patterns.

Objectives

1. Develop an understanding of the diagnostics used to evaluate natural processes affecting global climate
2. Determine how natural climate variability affects global weather

Course Components

Participation Class participation can completely alter your classroom and university experience. Be a part of the experience!

Project and Presentation All students will be responsible for a class project and presentation near the end of the semester. Details will be provided within the first weeks of the course. Undergraduate students will work to study how ENSO affects weather using data-based approach. Graduate students will work together on an ENSO-based project, and an individual climate diagnostics project related to how weather is affected by another mode of climate variability such as NAO, PDO, PNA, or AO.

Problem Sets, Quizzes, and Response Papers Problem Sets are designed to help you successfully synthesize lecture materials with analytical thinking. Problem sets may be combined with lecture. Some lectures may include a short Quiz to re-visit previous material. Response Papers are short informal writing assignments that will be assigned and completed via the course webpage on canvas. These are intended to prompt reading prior to the discussion in lecture on a similar topic, and are “informal” because there is no right or wrong answer and I will not correct grammar and spelling. The goal of these is to show me you are following along. Overall, the synthesis between Problem Sets, Response Papers, and lecture material is a key component of your success on the Presentation/Project and the Exams.

Exams There will be 2 mid-term exams and a cumulative final exam. The dates for the mid-term exams will be set early in the semester. The final exam is set by UNC Charlotte.

Grades

Letter grades will be assigned according to the percentage of points earned for the course components listed below. Percentage categories for METR 4205 are 90-100, 80-89, 70-79, 60-69, 0-59 and earn A, B, C, D, F, respectively. Percentage categories for ESCI 5205 are 90-100, 80-89, 70-79, 0-69 and earn A, B, C, or U, respectively. Assignments must be turned in on time and exams must be taken as scheduled.

<i>Description</i>	<i>METR 4205</i>	<i>ESCI 5205</i>
Participation	5%	N/A
Project/Presentation	30%	50%
Problem Sets/Response Papers/Quizzes	35%	20%
Mid-term Exams	20%	20%
Final exam	10%	10%

Course Outline

This schedule is subject to change and is intended to provide a general framework for the course.

<i>Weeks</i>	<i>Topics</i>
1-4	Global climate system
5-12	Climate variability and diagnostics
13-14	Climate and weather
15-16	Presentations

Class Policies

No mobile devices of any sort may be used during class. If you use a mobile device without my prior consent, I will ask you to stop and you will not receive any of your participation points. If you continue to use a mobile device, you will lose points from other components of the course. I will not offer any warning regarding this.

University Policies

Academic Integrity Students are responsible for knowing and following The Code of Student Academic Integrity and The Code of Student Responsibility. These can be found at <http://www.legal.uncc.edu/policies/ps-105.html> and <http://www.legal.uncc.edu/policies/ps-104.html> respectively. Standards of academic integrity will be enforced in this course.

Accommodations UNCC abides by interpretations of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973 that stipulates no student shall be denied the benefits of an education “solely by reason of a handicap.” Disabilities covered by law include, but are not limited to, learning disabilities, hearing, sight or mobility impairments, and other health related impairments. This course will gladly provide accommodations for students with documented needs. If you feel you need an accommodation, please contact the Office of Disability Services, Fretwell 230, Phone 704-687-4355 for the necessary evaluation and documentation.

Diversity The University of North Carolina at Charlotte is committed to equality of educational opportunity and does not discriminate against applicants, students, or employees based on race, color, national origin, religion, sex, sexual orientation, age or disability.