

# GEOGRAPHY 3205/5205

## Regional and Global Climates

GEOG 3205/5205- 001  
3 credit hours

### FALL SEMESTER 2016 SYLLABUS

Class Meetings: 10:45 AM -12:05 PM TUESDAY, THURSDAY

- Instructor: Larry Coats
- Office telephone number: 587-9325
- Office location: Old Law Building (Bldg. 73) Room 214
- E-mail: [larry.coats@geog.utah.edu](mailto:larry.coats@geog.utah.edu)

Office hours: 9:00-10:00 AM Tuesday, 12:30-1:30 PM Thursday, or by appointment

**Required Text:** *Climatology: An Atmospheric Science 3<sup>rd</sup> Edition*, by John J. Hidore, John E. Oliver, Mary Snow, and Rich Snow, Prentice Hall Copyright: 2010. ISBN: 978-0-321-60205-3

### SMARTPHONES OFF, PLEASE!

#### Catalog Description of Course

**Regional and Global Climates** (3) In this course we explore the distribution of climates around the world. We will investigate energy and moisture in the atmosphere, atmospheric circulation, controls of regional and microclimates, applied climatology, climatic variations, and consider past and future climates. This course is elemental for understanding the impacts of climate change on life on our planet. GEOG 3205/5205 meets University of Utah General Education requirement Intellectual Explorations- Physical and Life Sciences (SF).

#### Introduction

This course provides an introductory examination of the major components of the climate system including: the impact of mass energy on wind motion, atmosphere/ocean interactions, synoptic weather systems, local and urban climates, air pollution episodes, ice cores and ice ages, global warming and climate extremes including drought, storms and floods. One emphasis will be on understanding how future weather and climates can be modeled. This course will investigate current climate and climate change within a regional framework and provide detailed examination of the climates of high, middle and low latitude regions. At the end of the course the student should be able to understand the physical processes that create climates and comprehend model outputs aimed at forecasting the direction and severity of human-induced climate change. The student will also explore critical issues such as the varying adaptive capacity, vulnerability and risk of regions and societies to extreme weather events. GEOG 5205 is a required class for the Department of Geography [Climate Change Certificate](#) and [Climate Change Emphasis](#) (requires registration for the certificate).

#### Course Suggestions and Objectives

This class is intended as an introduction to the Earth's climate system, intended to provide sufficient background for continuing study in global climate change, meteorology, or paleoclimatology. In addition to learning discipline-specific information, I hope you will practice all your well-developed academic skills including the following: 1) using critical thinking skills to assess the validity of information, 2) taking good quality notes, 3) getting the most out of what you read in the textbook and assigned readings, 4) preparing well for tests, 5) finding information on your own, and possibly most importantly 6) how to think about the world with a geographic understanding. For some of you, this class may be your first (or only) science course, and studying for science may emphasize different skills than those with which you are most familiar. Geography is, for the most part, an observable discipline - it is with us and around us all the time. Because of this, you can often picture the various concepts. I believe that if you can draw or map the various concepts, etc., you will automatically understand it too. If something is difficult to comprehend, remember, or convey, try drawing it. Draw it, label the various parts, and annotate it - this provides a picture of the subject that should be in your mind even during "exam blackout"!

### Learning Outcomes

By the end of *GEOG 3205/5205 Regional and Global Climates* students will be able to identify and explain the primary forcing elements of the climate system, and summarize how those elements combine to create the unique climate zones of the planet. Students are expected to integrate data on anthropogenic impacts on the atmosphere and calculate how those impacts should play out into future climate change. To facilitate the learning process, a series of Climate Benchmarks will be provided for each unit, pinpointing the key elements to be mastered before moving on to new material. Students will demonstrate the accomplishment of these outcomes by correctly answering quiz and test questions that require definitions for key concepts (recalling information), explanations for important processes (restating in your own words), interpretations of climatic datasets (analysis of scientific data), and evaluation of multiple lines of evidence to synthesize unique viewpoints on climate solutions (problem solving). In addition, students will perform a data-collection exercise, analyze their own data, interpret their findings graphically and in text, and explain how their data fit into the historical climate patterns of their region of interest. The overarching goal of this class is to produce a cadre of citizens well educated on climate operation and climate change that can form their own opinions about the validity of climate information in the media, and make well informed decisions about future actions regarding human activities and climate change.

### RECOMMENDATIONS FOR SUCCESS IN THIS CLASS:

1. Take notes!
2. Study figures carefully, annotate them, make your own.
3. Don't multi-task!

### Grading- 3000 Level

Final grades are earned on the basis of the overall accumulated points. There will be more than five (5) unannounced quizzes and homework assignments, two equally weighted exams, and one cumulative final exam.

Quizzes & Homework	100 points
Exam #1	88 points
Exam #2	88 points
<u>Final exam (cumulative)</u>	<u>100 points</u>
Total	376 points

### Grading- 5000 Level

Students taking the course for 5000 level credit will be held to a higher standard on the exams. The higher standard includes a greater level of understanding as well as answering additional questions that give the exams a higher point value than those taking the class at 3000 level.

Quizzes & Homework	100 points
Exam #1	100 points
Exam #2	100 points
<u>Final exam (cumulative)</u>	<u>124 points</u>
Total	424 points

NO EXTRA CREDIT is offered in this course, with the possible exception of bonus questions on exams. I DO NOT accept late work, unless prior arrangements have been made.

If you ever have questions or problems relating to this course (or other classes for that matter!), please see me at your earliest convenience. **Most of these situations can be positively handled if discussed early!**

\*\* The instructor reserves the right to make additions, deletions, and modifications to the following syllabus and course requirements with notification to the students enrolled in the class.

***"Climate is an angry beast and we are poking at it with sticks"***

Wallace Broecker, ocean circulation researcher, Lamont-Doherty Earth Observatory, Columbia University

## TENTATIVE SEMESTER SCHEDULE

DAY	DATE	DISCUSSION TOPIC	READINGS
T	8/23	Introduction	Ch. 1
Th	8/25	Mass components of the climate system	Ch. 1
T	8/30	Energy & the climate system	Ch. 2
Th	9/1	Atmospheric temperatures	Ch. 3
F	9/2	<i>Last day to drop/delete</i>	
M	9/5	<b>LABOR DAY HOLIDAY</b>	
T	9/6	Moisture in the atmosphere	Ch. 4
Th	9/8	Moisture & the atmosphere (cont.)	Ch. 4
T	9/13	Wind & circulation patterns	Ch. 5
Th	9/15	Wind & circulation patterns (cont.)	Ch. 5
T	9/20	Atmosphere-ocean interactions	Ch. 6
Th	9/22	Atmosphere-ocean interactions (cont.)	Ch. 6
T	9/27	<b>*Exam #1*</b>	
Th	9/29	Atmosphere-ocean interactions (cont.)	Ch. 6
S	10/1	<b>*Homework exercise data collection begins</b>	
T	10/4	Atmosphere-ocean interactions (cont.)	Ch. 6
Th	10/6	Air masses & synoptic climatology	Ch. 7
T	10/11	<b>FALL BREAK- NO CLASS</b>	
Th	10/13	<b>FALL BREAK- NO CLASS</b>	
T	10/18	Climatology of storms- hurricanes	Ch. 8
Th	10/20	Climatology of storms-hurricanes (cont.)	Ch. 8
F	10/21	<i>Last day to withdraw from classes</i>	
T	10/25	Climatology of storms- tornadoes	Ch. 8
Th	10/27	Climatology of storms- tornadoes (cont.)	Ch. 8
M	10/31	<b>*Homework exercise data collection ends</b>	
T	11/1	Natural causes of climate change	Ch. 9
Th	11/3	Climate change- natural causes (cont.)	Ch. 9
T	11/8	Reconstructing past climates	Ch. 10
Th	11/10	<b>*Exam #2*</b>	
T	11/15	Reconstructing past climates (cont.)	Ch. 10
Th	11/17	Greenhouse gases & global warming	Ch. 11
T	11/22	Global warming & physical environment	Ch. 12
		<b>*Homework exercise DUE</b>	
Th/Fr	11/24-11/27	<b>THANKSGIVING BREAK</b>	
T	11/29	Global warming & physical environment (cont.)	Ch. 12
Th	12/1	Regional climates	Ch. 15
T	12/6	Tropical climates	Ch. 16
Th	12/8	Polar & highland climates	Ch. 17
F	12/9	UU READING DAY	

**\*FINAL EXAM:** FRIDAY, DECEMBER 16, 10:30 AM in this classroom.

## University of Utah Attendance Policy

The University expects regular attendance at all class meetings. **You are not automatically dropped from your classes if you do not attend.** You must officially drop your classes by the published deadline to avoid a "W" on your record.

You are responsible for satisfying the entire range of academic objectives, requirements and prerequisites as defined by the instructor. If you miss the first 2 class meetings, or if you have not taken the appropriate requisites, you may be required to withdraw from the course.

If you are absent from class to participate in officially sanctioned University activities (e.g. band, debate, student government, intercollegiate athletics), religious obligations, or with instructors approval, you will be permitted to make up both assignments and examinations.

## University of Utah Standards of Academic Conduct

In order to ensure that the highest standards of academic conduct are promoted and supported at the University, students must adhere to generally accepted standards of academic honesty, including but not limited to refraining from cheating, plagiarizing, research misconduct, misrepresenting one's work, and/or inappropriately collaborating.

University of Utah definition: "Plagiarism" means the intentional unacknowledged use or incorporation of any other person's work in, or as a basis for, one's own work offered for academic consideration or credit or for public presentation. Plagiarism includes, but is not limited to, representing as one's own, without attribution, any other individual's words, phrasing, ideas, sequence of ideas, information or any other mode or content of expression. Assignments will be submitted through Turnitin.com© to check for originality.

## University of Utah Center for Disability Services

The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services (<http://disability.utah.edu/index.htm>), 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services.