GEOGRAPHY 202: INTRODUCTION TO WEATHER AND CLIMATE
FALL 2011

Instructor: Greg Carbone
Mailbox: Room 127 Callcott
Phone: 777-0238
Email: greg.carbone@sc.edu (please put "Geog202" in subject line)

Office Hours: Wednesdays 10:00a-noon, or by appointment.

Lectures: Tuesday and Thursday 2:00-3:15PM; Callcott 112

Required Texts: Aguado, E. and Burt, J.E. (2010) *Understanding Weather and Climate, 5th ed.*, Prentice Hall.

Carbone, G. (2010) *Exercises for Weather and Climate, 7th ed.*, Prentice Hall.

Course web page: http://people.cas.sc.edu/carbone/202/

Course Objectives:

This course seeks to explain the processes which influence weather and climate patterns on the earth. Through participation in lectures, readings, lab exercises, and personal observations, successful students should be able to do the following by the end of the semester:

- Demonstrate an understanding of the earth's energy budget.
- Explain the relationship between different measures of atmospheric moisture, explain the concept of saturation, and understand basic cloud-forming and precipitation processes.
- Apply the scientific method to observe the state of the atmosphere, to shape inquiry about its phenomena, and to formulate hypotheses and conduct experimentation to explain local atmospheric processes.
- Describe the earth's major pressure and wind patterns and explain the processes that cause them.
- Explain the structure and basic dynamics of mid-latitude cyclones, thunderstorms, tornadoes, and hurricanes.
- Produce your own weather forecasts using current prediction tools
- Evaluate theories about natural and anthropogenic climate change.
- Develop sound reasoning to explain the daily weather that you experience.

SCHEDULE

Date		Topic	Text Reading
Aug.	18	Introduction and overview, Vertical structure of the atmosphere	13-18
	23	Atmospheric origin and composition	1-12; 19-31
	25	Earth-sun geometry	44-50
	30	Solar radiation	32-54
Sep.	1	Energy balance	58-74
	6	Temperature	75-97
	8	**Exam 1**	
	13	Atmospheric moisture	132-153
	15	Condensation, adiabatic processes	153-167
	20	Cloud development, atmospheric stability, cloud types	168-199
	22	Cloud droplet growth, precipitation forms	200-225
	27	Atmospheric Optics	538-548
	29	**Exam 2**	
Oct.	4	Atmospheric pressure and wind	100-129
	6	General circulation, Local winds	226-271
	11	Air masses and fronts	272-295
	13	Mid-latitude cyclones	298-304
	18	Mid-latitude cyclones	304-325
	20	FALL BREAK – NO CLASSES	
	25	**Exam 3**	
	27	Thunderstorms and Tornadoes	326-369
Nov.	1	Hurricanes	370-409
	3	Weather forecasting and analysis	410-449
	8	Climate controls	474-477
	10	World Climates	477-495
	15	Climatic change	496-516

	17	Climatic change	527-532
	22	Climate exercise	
	24	THANKSGIVING – NO CLASSES	
	29	Human impacts - CO_2	67-75, 516-527
Dec.	1	Review	

Final Exams (lecture and lab): Wednesday, December 7 - 2:00pm, Callcott Room 112

EVALUATION

Exercises, Quizzes, Wx. Journal	200 pts.	20%
Exam 1	150 pts.	15%
Exam 2	150 pts.	15%
Exam 3	150 pts.	15%
Exam 4 (final)	150 pts.	15%
Laboratory	200 pts.	20%
Total	**1000 pts.**	**100%**

Exercises and Quizzes: You will have regular exercises and quizzes during the semester. The quizzes will be given in class; your attendance for these is essential since there are no make-ups. While they will not be announced, quizzes will be based on material recently covered in lecture, the textbook, or lab. The exercises will be short take-home assignments covering current course material.

Exams: There will be four exams during the semester. Material covered on each will be derived primarily from lectures and the textbook. A few questions will come from lab or take-home exercises. Exams will consist of objective questions (e.g. multiple choice, true and false, matching) and short answer/essay questions. The final is not cumulative.

Laboratory: Your lab grade will be determined by weekly quizzes and 4 exams.

Attendance: You are expected to attend every lecture and lab session. Please have cell phone turned off and put away during lecture and lab periods.

Make-up Policy: Make-up lecture or lab exams will be given only under unusual cases of illness or family hardship. When documented with a written excuse, a student who misses an exam will be allowed to make up points by completing an essay exam and completing a special project on a topic covered in the scheduled exam. There are no make-ups for lecture or lab quizzes.

Academic Responsibility: In the Academic Responsibility Code found in the Carolina Community: USC Columbia Student Handbook and Policy Guide, misrepresentation of your own work either through plagiarism, collusion, or data distortion is a serious breech of this code. Plagiarism is the taking of ideas, concepts, and written (published) words and representing them as your own. This includes materials that are published in hard copy form such as books and journals (or someone else's term paper) as well as material downloaded from the Internet, without appropriate attribution and referencing of the copied passages (e.g. placing the copied material in quotation marks and providing the reference including the exact page number of the copied material). Plagiarism infringes on copyright protections and also is considered theft of intellectual property. In addition to being illegal, plagiarism is morally wrong. Collusion occurs when someone else writes (or dictates) portions of the assignment for you and you represent this as your own work. Data distortion is the intentional misrepresentation of data either through falsification, fabrication, or omission. Plagiarism, cheating, and other forms of academic misconduct will not be tolerated in this course and will be treated seriously when discovered. If you have questions about what constitutes academic misconduct, ask the instructor or see the university's student handbook, Carolina Community: <http://www.sc.edu/policies/staf625.pdf>

Weather Journal

Objective: This project is designed to have you observe the weather more closely and to write about it. It also offers an opportunity to synthesize your understanding of textbook and lecture material and relate class topics to the weather that you encounter daily.

Form: You should make regular entries in a journal (at least 4 days each week), discussing the weather that you observe, or recent class material. When possible, relate your observations to some aspect of a recent lecture, textbook reading, or laboratory exercise. Feel free to raise questions or simply to demonstrate your understanding of class concepts. Use your creativity and talents. If you have a scientific bent, you might want to put your observations into the context of scientific principles. If you are a poet, write poetry. Photography is welcome. You should occasionally include graphics from the internet or other sources (please provide information about any sources that you use). Use the form with which you feel most comfortable, but as the semester progresses, your writing should become more technical and should include greater explanation incorporating things you've learned in class. You will do your weather journal digitally, using Blackboard. When you click on "Assignments" on Blackboard, you will see a folder called "Weather Journals". Click on your name to make an entry.

Evaluation: I will read journals regularly throughout the semester. Therefore, your journal is always "due", and you need to write often. You will receive grades during the

semester worth a total of approximately 100 points.