ATOC 1050: Weather and the Atmosphere
Severe and Hazardous Weather
Section 001; Spring 2011

Course Goals
We all experience the weather and the weather impacts our activities. If it is cold we need to wear a jacket on the way to class. If a big winter storm impacts Colorado it might make for great skiing in the mountains, but it also makes the roads slick and dangerous and increases the risk of avalanches. Thunderstorms can ruin our plans for a hike in the mountains and the lightning and other severe weather associated with thunderstorms can present a life threatening risk. Large storms can snarl the transportation network across the country and delay us as we travel for a vacation or to visit friends and family.

This class is designed to provide you with the knowledge to understand the processes responsible for creating the weather that you experience on a daily basis. During this semester you will be asked to observe the weather around you, to find weather data on the internet, and to relate these weather observations to the topics covered in the class.

The first half of this class will provide a qualitative description of how the atmosphere works and will look at the types of weather observations that are made by meteorologists around the world. The second half of the class will focus on specific weather phenomena such as mid-latitude cyclones, blizzards, thunderstorms, and hurricanes. Throughout the class examples of historical and current weather events will be used to illustrate the concepts that are being discussed. At the end of the semester you should be able to read standard weather maps, interpret satellite images, find meteorological data and forecasts on the internet, and have an understanding of the processes that are responsible for creating the weather that you experience. Hopefully you will leave this class with a newfound appreciation for the beauty and power of the weather.

Contact Information and Office Hours
Professor: Dr. Sarah Tessendorf
Classroom: Duane Physics Room G1B30
Meeting Time: T/TH 9:30-10:45AM
Class web site: http://atoc.colorado.edu/~saraht/atoc1050
Office: Stadium 255-25 (inside ATOC Office, gate 7)
Office Hours: Tuesdays 8:30-9:30AM, Thursdays 10:45-11:45AM
e-mail: saraht@colorado.edu
phone: 303-735-3129 (Note: I'm only in the office during office hours, best to reach me by email)

Feel free to contact me if you have any questions or concerns regarding this class. I will have two regularly scheduled office hours per week and you can also contact me via e-mail or by calling my office phone number. If you need to talk to me at a time other than during my regularly scheduled office hours please e-mail me to setup an appointment.

If you discuss any items with me before or after class please follow up with an e-mail to confirm our conversation.

Teaching Assistants
There will be one TA for this class whose office hours will be posted on the class web site. The TA will help with grading and will be available to answer your questions about the class, as well as hold a review session prior to each exam.

Class web site
The class web site contains a copy of the course syllabus, an electronic version of the lecture notes, a schedule of class lectures, downloadable homework assignments, guidelines for the weather notebook assignment, links to a number of weather web sites, honor code policies, and student grades for the

class. In addition important class announcements will be posted on the web site, so make sure to check the web site at least once per week for any important information.

Textbook and Required Materials
The required textbook for this class is *Severe and Hazardous Weather: An Introduction to High Impact Meteorology*, Third Edition, by Robert Rauber, John Walsh, and Donna Charlevoix.

You will also be required to purchase an i>clicker for this class. These clickers are available at the bookstore, and can be used for multiple classes on campus. The clickers will be used in lectures and clicker responses will count towards your final grade in this class. Check the class web page for more details on using clickers. **You must register your clicker for this class by following the *Clicker Info* link on the class web site.**

Prerequisites
This is an introductory course primarily, but not exclusively, for non-science majors. There are no formal college level prerequisites for this class. Simple numerical evaluations and some high school algebra will be used on occasion.

Course Requirements
Students are expected to read the textbook and to attend the class lectures. The lectures will cover some, but not all of the material in the textbook, and will also present information not contained in the textbook. Exams will be based on information from the textbook, the class lectures, and the homework assignments. Lecture notes will be posted on the class web site. Students may wish to print these notes prior to a given lecture and use the printed lecture notes as an outline for taking notes during the class. *Reading the online lecture notes is not a substitute for attending the class lectures, since these notes will only serve as an outline for the material presented in class.* During the semester you are encouraged to observe the weather around you, to apply the material learned in class to understanding the weather you observe, and to ask questions based on what you see.

Grading
Your final grade in this course will be made up of:

Two in-class multiple-choice exams and one final exam (20% each = 60% of final grade)
Approximately ten in-class i>clicker quizzes (10% of final grade)
Two homework assignments (10% each = 20% of final grade)
One weather notebook assignment (10% of final grade)

The final grade will be calculated as:

Final grade = [(Exam average) x (0.60 – 0.06 x clicker grade / 100)] +
[(Clicker quiz average) x 0.10] + [(Weather Notebook grade) x 0.10] +
[(Homework average) x 0.20] + [(clicker grade) x 0.06]

Your final letter grade in this class will be determined from your final grade (as calculated above) and the following letter grade divisions:

A: Final grade greater than or equal to 95.0%
A-: Final grade from 90.0% to 94.9%
B+: Final grade from 86.7% to 89.9%
B: Final grade from 83.3% to 86.6%
B-: Final grade from 80.0% to 83.2%
C+: Final grade from 76.7% to 79.9%
C: Final grade from 73.3% to 76.6%
C-: Final grade from 70.0% to 73.2%
D+: Final grade from 67.5% to 69.9%
D: Final grade from 65.0% to 67.4%
F: Final grade less than 65.0%

The final course grades will not be curved or rounded.

Clickers and your grade
Approximately ten in-class clicker quizzes will be given throughout the semester. These quizzes will consist of several questions based on the assigned reading and lecture notes posted on the class web page, and will usually be given at the start of class. The quizzes will not be announced ahead of time and no make-ups of the quizzes will be offered. If you miss a quiz you will receive a grade of zero for that quiz. Your average grade on the clicker quizzes will count for 10% of your final class grade. Your lowest two clicker quiz grades will be dropped at the end of the semester.

Non-quiz clicker questions will also be asked throughout each lecture. Grades based on your answers to the non-quiz clicker questions will be used to replace up to 10% of your total exam grade (6% of your final class grade). Your grade for the non-quiz clicker questions will only be used to improve your final course grade, and will not decrease your final course grade. If you earn no non-quiz clicker points during the semester your exam average will count for 60% of your final grade. If you earn all of the clicker points during the semester your exam average will count for 54% of your final grade, and 6% of your final grade will be replaced with a grade of 100%. Additional information about the clickers can be found on the class web site.

Exams
Students are required to take both in-class exams and the final exam. Failure to take any of these exams will result in a drastically reduced final grade. The final exam will be given on Wednesday May 4th from 4:30 to 7:00PM. The final exam will not be comprehensive, and will only cover the material after Exam 2. **The final exam cannot be rescheduled and no make-up of the final exam will be offered. Students that miss the final exam will receive a grade of zero for the exam.**

Students will be required to show their student id when turning in their exams. Exams will not be accepted from any student that doesn't have their student id and the student will receive a grade of zero on that exam.

Students that need to miss one of the regularly scheduled in-class exams may take a make-up exam that will be offered on Thursday March 17th during the regular class meeting time. The make-up exam will be a comprehensive exam covering all of the material from exams 1 and 2. If you will miss one of the regularly scheduled exams **you must contact the instructor prior to missing an exam if you want to take the make-up exam.** Only those students that have contacted the instructor prior to missing an exam will be allowed to take the make-up exam. If you miss more than one exam during the semester you will receive a grade of zero on your second missed exam. The make up exam will only be offered on Thursday March 17th. **Please note that this make-up exam is scheduled for the class day before Spring Break and will not be rescheduled.** If you are unable to take the make up exam at this time you will receive a grade of zero for the missed exam.

Homework Assignments
Two homework assignments will be due during the semester. These homework assignments will explore concepts covered in class, and will require you to look at real weather data to complete the assignments. These assignments will be posted on the class web site during the semester.

The two homework assignments will be due at the start of class on Tuesday February 8th and Thursday March 10th. **No late homework assignments will be accepted.**

Weather Notebook Assignment
The weather notebook assignment is designed to increase your awareness of the weather that is happening around you, and to increase your familiarity with the vast wealth of weather data available on the internet. For each week of the weather notebook assignment period your weather notebook should contain a one-page summary of the week's weather, a one-page description of a new weather web page you have visited during the week, and a one-page printout from the web page that you have visited. The weekly weather summary should be based on the weather that you have observed during the week and weather observations from the internet, making note of interesting weather phenomena that you have observed and describing changes in the weather over the week. Be as specific as possible in your weekly

weather description. For the web page that you describe in your weekly weather notebook entry include information about the types of weather data you have found on the web site. All weather notebooks must be typed (printed on a computer). Handwritten weather notebook entries will be given a grade of zero. The weather notebooks must be free from spelling or grammatical errors. Poorly written weather notebooks will receive a reduced grade (or a grade of zero in extreme cases).

Your weather notebook will cover the period from Sunday April 3rd through Saturday April 16th and is due at the start of class on Tuesday April 19th. **No late weather notebook assignments will be accepted.**

Additional information on the weather notebook assignments and a sample weather notebook are available on the class web site.

Honor Code
All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-725-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found at

http://www.colorado.edu/policies/honor.html and at

http://www.colorado.edu/academics/honorcode/

Specific guidelines regarding violations of the Honor Code as relate to ATOC 1050 can be found on the class web site under the "Honor Code Policy" link. **All students in ATOC 1050 are expected to know and understand the policies listed on both the class web site and the Honor Code web site.**

Anyone caught violating the honor code in this class will receive a final class grade of F. There are no exceptions to this policy.

Students with Disabilities
If you qualify for accommodations because of a disability, please submit a letter to Professor Tessendorf from Disability Services in a timely manner (at least one week prior to the first exam) so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities. Contact: 303-492-8671, Willard 322, or http://www.Colorado.EDU/disabilityservices.

University of Colorado Policy on Discrimination and Sexual Harassment
The University of Colorado at Boulder policy on Discrimination and Harassment (http://www.colorado.edu/policies/discrimination.html), the University of Colorado policy on Sexual Harassment and the University of Colorado policy on Amorous Relationships applies to all students, staff and faculty. Any student, staff or faculty member who believes s/he has been the subject of discrimination or harassment based upon race, color, national origin, sex, age, disability, religion, sexual orientation, or veteran status should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Judicial Affairs at 303-492-5550. Information about the ODH and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at

http://www.colorado.edu/odh

Religious Observances
Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, please contact Professor Tessendorf at least one week prior to any scheduled exams or assignments if you have a conflict due to religious obligations. See full details at http://www.colorado.edu/policies/fac_relig.html

Classroom Behavior Policy
Students and faculty each have responsibility for maintaining an appropriate learning environment. Students who fail to adhere to such behavioral standards may be subject to discipline. Faculty have the professional responsibility to treat all students with understanding, dignity and respect, to guide classroom discussion and to set reasonable limits on the manner in which they and their students express opinions. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. See polices at

http://www.colorado.edu/policies/classbehavior.html

and at

http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code

During class I expect that students will not take part in disruptive behavior such as carrying on private conversations, sending text messages or e-mails, and reading newspapers or other materials not related to the class. I expect that students will silence their cell phones when they enter the classroom and will not use their phones for any purpose during the class. If I find that students are using their laptop computers for items other than those directly related to the class I will ban the use of laptop computers in the lecture. I expect that students will arrive at the classroom before the class begins and will stay in class until the end of the period. If you need to arrive late or leave early you will need to contact me via e-mail, ahead of time, to let me know. I expect that if you come to class that you are there to learn and pay attention. If you are unwilling or unable to do this then I suggest that you drop this class or not attend the class lectures (although you will then receive a zero on the in-class clicker quizzes and other clicker questions).

How to succeed in this class
- Read the appropriate sections of the textbook before each lecture
- Review the online lecture notes before each lecture
- Attend the lectures and answer the clicker questions
- Check the class web page at least once per week for updates, class news, and to check your class grades
- Complete all homework and weather notebook assignments on time and in a neat manner (Note that all assignments must be turned in in class. E-mailed versions of assignments will not be accepted.)
- Read and follow the instructions on the class web site for the homework and weather notebook assignments
- Turn in all homework and weather notebook assignments on time (at the start of class). Late assignments will not be accepted and you will receive a grade of zero for the assignment if it is not turned in on time.
- Do not miss exams
- Ask for help if you don’t understand something
- Contact Professor Tessendorf as soon as possible if you have any questions or concerns about the class

Lecture, Homework, and Exam Schedule

The following is a schedule of class lectures, due dates for homework and weather notebook assignments, and exam dates. The dates for the exams are fixed and will not change (unless class is cancelled for an unforeseen reason, in which case the exam will be given on the next class date). Any changes to this schedule will be posted on the class web site under the *Class News* link.

WEEK	Tuesday	Thursday
1	**Jan 11** Class Introduction	**Jan 13** Chapter 1: Atmosphere
2	**Jan 18** Chapter 1: Moisture	**Jan 20** Chapter 2: Measurements
3	**Jan 25** Chapter 3: Weather Maps Start HW1	**Jan 27** Chapter 3: Upper Air Maps
4	**Feb 1** Chapter 6: Atmospheric Stability	**Feb 3** Chapter 6: Stability/Clouds
5	**Feb 8** Local Weather HW1 Due	**Feb 10** Exam 1
6	**Feb 15** Chapter 7: Forces	**Feb 17** Chapter 7: Force Balances
7	**Feb 22** Chapter 8: High/Low pressure systems	**Feb 24** Chapter 8: Highs/Lows Start HW2
8	**Mar 1** Chapter 9: Air Masses/Fronts	**Mar 3** Chapter 10: Extratropical cyclones
9	**Mar 8** Chapter 10: Extratropical cyclones	**Mar 10** Chapter 15: Blizzards HW2 Due
10	**Mar 15** Exam 2	**Mar 17 (no regular class)** Make-up Exam
11	**Mar 22** **No Class**	**Mar 24** **No class**
12	**Mar 29** Chapter 16: Mountain Snowstorms	**Mar 31** Chapter 17: Mountain Winds Start Weather Notebook Sun Apr 3
13	**Apr 5** Chapter 18: Thunderstorms	**Apr 7** Chapter 18: Thunderstorms
14	**Apr 12** Chapter 19: Tornadoes	**Apr 14** Chapter 19: Tornadoes
15	**Apr 19** Chapter 21: Lightning Weather Notebook Due	**Apr 21** Chapter 24: Tropical cyclones
16	**Apr 26** Chapter 24: Tropical cyclones	**Apr 28** Review/Wrap-up

Final Exam: Wednesday May 4th 4:30-7:00PM

Exam 1: Chapters 1, 2, 3, and 6; Local Weather and HW#1	**Exam 2:** Chapters 7, 8, 9, 10, and 15; and HW#2
Make-up Exam: Chapters 1, 2, 3, 6, 7, 8, 9, 10, and 15; Local Weather, HW#1 and HW#2	**Final Exam:** Chapters 16, 17, 18, 19, 21, and 24