

# METR 3613: Meteorological Measurements



## Fall 2009: Syllabus\*

### Time and Location:

Lectures: M, W 1:00 - 1:50 PM, NWC 1350  
Help Sessions F 1:00 - 1:50 PM, NWC 1350 or NWC 5302

Labs: Section 011: T 9:30 - 11:30 AM, NWC 5302  
Section 012: W 2:00 - 4:00 PM, NWC 5302

**Instructors:** **Sean Arms** ([caver\\_sean@ou.edu](mailto:caver_sean@ou.edu))  
NWC 5335  
Office hours: M/W 2:15 – 3:00pm or by appointment

**Teaching Assistants:** **Brian Bridges** ([Brian.L.Bridges-1@ou.edu](mailto:Brian.L.Bridges-1@ou.edu))  
NWC 5335  
Office hours: T/R 12:00 – 1:00pm or by appointment

**Required Textbook:** ***METEOROLOGICAL MEASUREMENT SYSTEMS***,  
by Fred V. Brock and Scott J. Richardson, Oxford  
University Press, 2001

### Additional material:

Most of the course material, such as lecture notes, lab instructions and project descriptions, will be posted on Desire2Learn. **Please make yourself familiar with Desire2Learn and check it frequently for new material and announcements.** It is required that you download the lab instructions and read them before you come to the labs. **It is also strongly recommended that you purchase lab notebooks for taking notes during laboratory classes and to document your project studies.**

### Grading and Exams:

Labs (5), in total:	25%
Long-term Project	25%
Two In-Class Exams (September, November, each 25%):	50%
Final Comprehensive Exam (December):	25%

The lowest score of the 3 exams can be dropped. The lab grades and project grade cannot be dropped

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## **Purpose of this Course**

No matter what area of meteorology is of special interest to you, measurements of the atmospheric parameters will undoubtedly influence your work. In any area of science, it is our observations of nature that lead to new theories and new understanding. In meteorology, we cannot hope to make a successful weather prediction unless we have sufficient knowledge of the current state of the atmosphere. The maps we use give us a representation of this state. The models we use ingest this initial state and churn out a predicted state for the future. Thus, knowledge of the techniques used to obtain these measurements, the possible flaws in the data collected, and the manipulations performed on the data before they are used are essential to any meteorologist, whether a forecaster or a researcher; This course is designed to provide you with this knowledge.



## **Objective**

This course is designed for meteorology majors. The main objective is to provide you with an understanding of the concepts used in performing careful meteorological measurements and of the equipment used for these measurements. We will discuss the limitations of the instruments and identify major causes of errors in measurement output. Furthermore, we will teach to you basic procedures of data analysis and interpretation, and provide you several opportunities to work in a team, as commonly done in field work.

## **Methods**

To facilitate the learning process, this course will use a variety of settings. We will have a mix of **standard classroom lectures, hands-on labs, and a long-term, hands-on project with field trips**. Additionally, help sessions on different topics will be offered on most Fridays (see attached schedule). Participation in these Help Sessions is strongly recommended. It is a good practice to bring hard copies of the lecture notes that are posted on D2L to class. This will allow you to



easily take notes during the lectures. **It is expected that you review the material covered in class and read the relevant chapters of the textbook even when no formal reading assignments are given in class (unannounced quizzes covering the material from the previous lectures can be expected).**

In order to perform the laboratory experiments successfully and in a timely manner, **it is absolutely necessary that you read the lab description before coming to the lab classes. You need to download the description from Desire2Learn and bring a printed copy to the lab classes. At the beginning of each lab, a quiz will be given to check how well you are prepared to perform the lab exercises. If you fail to demonstrate that you are prepared, the lab instructor has the right to exclude you from**

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**the labs.** Formal lab reports must be submitted 2 weeks after completion of the experiments (see attached schedule for deadlines). An outline and instructions for the lab reports will be handed out and discussed at the beginning of the course and it is very important that you closely follow the instructions.

The long-term projects will provide you additional hands-on experience in working with meteorological instruments, and you will also learn to record and analyze meteorological data. In the design of the projects, we also put emphasis on demonstrating to you the sensitivity of meteorological data towards instrument and exposure errors. For a successful completion of the projects we expect you to participate in field trips and studies at field sites near/on the NWC and Lake Thunderbird Micronet. The number and dates for the field trips depends on the particular project. Please carefully check the attached schedule for the specific dates of each project. In the case of bad weather, **we reserve the right to re-schedule the field trips on a short notice.** We will present further details on the different types of projects during the first week of class. Please choose then your project according to your main interest and the schedule that fits best your plans in Fall 2009.

**Lab and project reports:** All semester long, you will work on your lab and project assignments in a team of 3-4 students (same team for both the labs and projects). The teams will be formed at the beginning of the semester and we expect them to remain unchanged until the end of the semester. It is in your own best interest that you cooperate well with your team members and effectively work together during the lab experiments. We also strongly encourage team work during the project studies, and in the analysis and discussion of your results. **However, we expect that each student prepares an independent write-up and submits his or her own laboratory and project report.** Any form of copying text from reports of other students, the laboratory and project descriptions posted on the web, or any other material publicly available without making references will be treated as academic misconduct, and actions will be taken according to the academic misconduct code further described below.

### **Web Sites**

You can find the main web site for this class on the Desire2Learn (D2L) system: <https://learn.ou.edu/index.asp>. All necessary course materials (lab descriptions, assignments, grades, etc.) and important announcements (e.g., directions to the field-trip sites) will be posted on this site. Please become familiar with this site and check it frequently. You have to submit all your lab and project reports to the drop box on D2L.

### **Attendance and Make-up Policy**

In this class, participation will be strongly encouraged. Note that some material will be available only during class, and unannounced quizzes will be given. For both of these reasons, we expect 100% attendance to be the norm. **Laboratory exercises and project related field trips absolutely require your attendance**

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and cannot be made up without PRIOR permission which will be granted on a case-by-case basis.

**IF YOU MISS A LAB, YOU MAY NOT USE SOMEONE ELSE'S DATA!!** Any attempt to do so without permission by the instructors will be treated as academic misconduct, and actions will be taken according to the academic misconduct code described further below.

Only under extraordinary circumstances make-ups will be given if an exam is missed. **You MUST notify the instructor BEFORE the exams. Sickness will be accepted as an excuse only if accompanied by a note from a physician.**

### **Other Important Policies**

**Reasonable Accommodation:** The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course are requested to speak with the professor as early in the semester as possible. **Students with disabilities must be registered with the Office of Disability Services prior to receiving accommodations in this course.** The Office of Disability Services is located in Goddard Health Center, Suite 166, phone 405/325-3852 or TDD only 405/325-4173.

**Academic Misconduct:** All provisions of the Norman Campus Academic Misconduct Code shall apply in cases of academic dishonesty. Academic misconduct is defined as “any act that improperly affects the evaluation of a student’s academic performance or achievement.” All faculty at the University of Oklahoma expect academic integrity from each student. Misconduct such as plagiarism, fabrication, and fraud, as well as attempting to commit such acts or assisting others in so doing, will not be tolerated. Students are responsible for knowing the academic misconduct code, which is included in the student code ([http://judicial.ou.edu/images/stories/student\\_codebook.pdf](http://judicial.ou.edu/images/stories/student_codebook.pdf)).

All instances of alleged academic misconduct will be thoroughly investigated and action will be taken according to the rights and responsibilities under the academic misconduct code described at <http://www.ou.edu/provost/integrity-rights/>.

### **Important Dates**

1st Hourly In-Class Exam:  
2nd Hourly In-Class Exam:  
Final Exam:

**Monday, September 28, 2009**  
**Wednesday, November 18, 2009**  
**Wednesday, December 16, 2009**  
**(8:00 – 10:00 AM)**

**For more information on other deadlines see also the attached detailed schedule.**

### **Tentative Schedule and list of course topics:**

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