

# METR 3613: Meteorological Measurements



Fall 2003: **Syllabus**\*

## Time and Location:

Lectures:

M, W 8:30 - 9:20 AM, SEC-N202

Labs and field trips:

F 1:30 - 3:30 AM, location varies, **regular** labs are given in SEC-1410, for more details check course schedule and **Blackboard** information

## Instructors:

**Dr. Petra Kastner-Klein** ([pkklein@ou.edu](mailto:pkklein@ou.edu))

SEC-1354, Phone 325-1631

Office hours: W 2:30 – 4:00pm or by appointment

**Dr. Evgeni Fedorovich** ([fedorovich@ou.edu](mailto:fedorovich@ou.edu))

SEC-1438, Phone 325-1197

Office hours: F 3:30 – 5:00pm or by appointment

## Teaching Assistants:

**Megan McHugh** ([megan.mchugh@noaa.gov](mailto:megan.mchugh@noaa.gov))

Office hours in SEC-1370: F 11:30am-12:30pm or by appointment

## Required Textbook:

**METEOROLOGICAL MEASUREMENT SYSTEMS**, by Fred V. Brook and Scott J. Richardson, Oxford University Press, 2001

## Additional material:

Some lecture notes and most laboratory documents will be posted on blackboard. **Make yourself familiar with blackboard and check blackboard frequently for new material and announcements.** It is required that you download the lab instructions and read them before you come to the labs.

**You are also required to purchase a lab book for taking notes during laboratory and tour classes.**

## Grading and Exams:

Lab (10), homework (X), and field-trip (4?) related assignments **all together**: 30%

Two In-Class Exams (October, November): 40%

Final Comprehensive Exam (December): 30%

### **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, **those are** 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.

### **Methods**

To facilitate the learning process, this course will use a variety of settings. We will have a mix of **lectures, hands-on labs, off campus tours, and guest speakers**. Reading will be assigned and you will be expected to read it **before** class (unannounced quizzes on the reading can be expected). In order to perform the laboratory experiments successfully and in a timely manner (you will have only one hour), **it is absolutely necessary that you read the lab description before coming to the lab classes. You need to download the description from Blackboard and bring a printed copy to the lab classes.**

### **Web Sites**

You can **find** the main web site for this class on the OU **Blackboard** system (<https://ou.blackboard.com/> ). 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.

**A second web site is on the SOM server: <http://weather.ou.edu/~metr3613/> . This site mainly provides links to **interesting and useful** data resources.**

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

In this class, participation will be strongly encouraged. **Note that** some material will be available only during class. For both of these reasons, we expect 100% attendance to be the norm (even though it is 8:30!). Laboratory exercises and field trips absolutely require your attendance 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!!**

Only under extraordinary circumstances make-ups will be given if an in-class exam is missed. The final exam is comprehensive and cannot be made up without documentation of severe illness or a death in the family. You **MUST** notify us **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://www.ou.edu/studentcode/67259\\_ou\\_student\\_a.pdf](http://www.ou.edu/studentcode/67259_ou_student_a.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:	<b>Friday, October 03, 2003</b>
2nd Hourly In-Class Exam:	<b>Friday, November 07, 2003</b>
Final Exam:	<b>Monday, December 15, 2003</b>

### **Tentative list of course topics**

1. Introduction to measurement systems and types of meteorological data.
2. Overview of major meteorological measurement systems (ASOS, MESONET, etc.).
3. Review of elementary electronics.

4. Basic statistical data analysis.
5. Measurement system problems.
6. Data sampling techniques.
7. Calibration techniques and static performance characteristics.
8. Thermometry.
9. Barometry.
10. Dynamic performance characteristics.
11. Anemometry.
12. Moisture measurements.
13. Radiation measurements.
14. Upper air measurements.
15. Quality assurance issues.
16. Presentation of data.

*\* The instructors reserve the rights to alter any or all stated policies if they feel it is in the best interests of students in this class. Any changes to the proposed syllabus will be announced in class.*