METR 3613: Meteorological Measurements

FALL 2013: SYLLABUS*

METR 3613 Lectures:

Time and Location: M, W, F 1:00 - 1:50 PM, NWC 1350
Help Sessions may be scheduled during the F class time.
See attached schedule for details.

Instructor: **Dr. Petra Klein (**pkklein@ou.edu)
NWC 5339, Phone 325-1631
Office hours: M/W 2:15 – 3:00pm or by appointment

METR 3613 Labs:

METR 3613_011: T 9:30 - 11:30 AM, NWC 5302
TAs:
Tim Bonin (tim.bonin@ou.edu), NWC 5422
and
Jennifer Newman (jennifer.newman@ou.edu)
NWC 5240

METR 3613_012: W 2:00 - 4:00 PM, NWC 5302
TA: Larissa Reames (lreames@ou.edu)
NWC 5104

Required Textbooks:

I. Emeis Stefan, 2010: Measurement Methods in Atmospheric Sciences – *In-situ and Remote,* Borntraeger Science Publishers.
II. Brock, Fred V. and Richardson, Scott J., 2001: *Meteorological Measurement Systems,* Oxford University Press.

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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 reports and homework solutions to drop boxes on D2L.**

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 compute 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

The 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 to provide an overview of state-of-the art instruments 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 you will learn to work effectively in a team.

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, help sessions followed by homework assignments and field trips**. Please review the attached schedule carefully as it provides details about the timing if various activities and related deadlines. It is a good practice to bring hard copies of the b/w 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. Each quiz will be graded as 10% of the grade corresponding to each lab exercise. If you fail to demonstrate that you are prepared, the lab instructor**

has the right to exclude you from 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. **You are also required to purchase lab books for taking notes during the labs.**

The homework assignments will provide you additional hands-on experience in working with meteorological data. In the design of these assignments, we focus on teaching, some basic data processing, statistical data analysis and data presentation skills using state-of-the-art software. We also put emphasis on demonstrating to you the sensitivity of meteorological data towards instrument and exposure errors. Preceding each homework assignment, important information about the assignments will be given in a help session. Please carefully check the attached schedule for the specific dates of these help sessions and related deadlines for the assignments.

Lab Reports:

All semester long, you will work on your lab assignments in a team of 3-5 students. 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, and in the analysis and discussion of your results. We also strongly encourage teamwork during the homework assignments. **However, we expect that each student prepares an independent write-up and submits his/her own lab report and homework solution.** Any form of copying text from reports of other students, the laboratory descriptions posted on the web, or any other material publicly available without making references will be treated as plagiarism, and actions will be taken according to the academic misconduct code further described below. See also http://www.ou.edu/provost/integrity/#3 for examples of plagiarism.

Grading and Exams:

5 Lab Assignments, in total:	25%
4 Graded Homework Assignments, in total:	20%
Two In-Class Exams (September, November, each 20%):	40%
Final Comprehensive Exam (December):	15%

Important Dates

1st Hourly In-Class Exam:	**Wednesday, September 25, 2013**
2nd Hourly In-Class Exam:	**Friday, November 01, 2013**
Final Exam:	**Monday, December 09, 2013**

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

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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, help sessions, and fieldtrips absolutely require your attendance and cannot be made up without PRIOR permission, which will be granted on a case-by-case basis, and under extraordinary circumstances.**

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 Disability Resource Center prior to receiving accommodations in this course.** The Disability Resource Center 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). 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/.

Tentative Schedule and list of course topics:

See tables on the next 5 pages.

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