

# Course Syllabus

Spring 2009

## ECE/METR 5683: Weather Radar Applications

- Instructor:** Prof. Phillip Chilson ([chilson@ou.edu](mailto:chilson@ou.edu))  
Office: NWC 4618, 325-5095  
Office Hours: Contact me about scheduling a time or simply come by whenever my door is open or
- Time:** MWF, 15:00-15:50
- Location:** NWC 5930
- Required Text:** *Doppler Radar and Weather Observations, 2nd Ed,*  
R. J. Doviak and D. S. Zrnice, 1993
- Recommended Text:** *Severe and Hazardous Weather, 2nd Ed,*  
(for ECE students) R. M. Rauber, J. E. Walsh, and D. J. Charlevoix, 2005
- References:** *Radar Meteorology*, Henri Sauvageot, 1992  
*Radar Observations of the Atmosphere*, Louis J. Battan, 1973  
*Radar Meteorology*, S. Raghavan, 2003  
*Weather Radar*, Peter Meischner (Ed), 2004  
*Radar in Meteorology*, D. Atlas (Ed), 1990  
*Radar and Atmospheric Science*,  
R. M. Wakimoto and R. C. Srivastava (Ed), 2003

## Course Information

**Overview:** This course continues to build on the concepts that were presented in *Weather Radar Theory and Practice (ECE/METR 5673)*. A variety of methods will be presented and discussed to assist the student in identifying meteorological structures using weather radars and related instruments. An introduction to the interactions of electromagnetic waves in a geophysical medium will be given. In particular, scatter from hydrometeors and refractive index variations will be explored. The course covers such topics as quantitative precipitation estimation and wind retrieval methods, fuzzy logic tools for radar data processing, and phased array applications. Current and archived data from NEXRAD and surface stations will be processed using various visualization and analysis tools. Students will also be introduced to the treatment of clear-air radar echoes and the retrieval of winds under non-precipitating conditions.

### Class Homepage

The class home page will be administered through Desire2Learn

<https://learn.ou.edu/>

Materials and announcements will be posted on the **combined page**

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*It is important that you check the web page regularly for new class material, postings, and other course related information.*

## Assignments

**Homework:** During the course of the semester, there will be three to four calculation-based homework assignments. For each assigned problem, students will be asked to include numerical solutions along with a short write up, in which the results are discussed.

**Modules:** Three to four programming-based modules will be assigned. These modules will focus on real-world applications and require data analysis completed using software such as MATLAB. For each module students will be asked to process the data, present and explain results, and provide any code used during the exercise.

**Project:** In addition to the homework and modules, students will complete a research project of their choosing and make an oral presentation during the end of the semester. A self-contained written report with references will be part of the project. More description of the project to be provided during the semester.

All assignments must be submitted on time in order to receive full credit. Since there is no final examination for this course, some assignments may be due during “dead week.”

## Grading

Homework: 25%  
Modules: 30%  
Project: 45%

## Policies / Administrative

**Academic Honesty:** Homework assignments are important for your understanding of the material. Occasional help from a classmate is fine but be sure that you actually understand the material. It will help tremendously for you to come visit me in my office hours. Realize that simply copying a homework assignment from any source is considered cheating and will definitely not help your understanding. If caught, such activity could result in a failing grade in the course and possible disciplinary action. You are responsible for knowing the University of Oklahoma Student Code which can be obtained at <http://www.ou.edu/studentcode/>.

**Religious Holidays:** It is the policy of the University to excuse absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required class work that may fall on religious holidays.

**Reasonable Accommodation Policy:** The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Those having such a need are requested to speak with Prof. Chilson as early in the semester as possible. Students with disabilities also must be registered with the Office of Disability Services (ODS) prior to receiving accommodations in this course. You may contact the ODS at Goddard Health Center, Suite 166, phone 405-325-3852 or TTD only at 405-325-4173.