Meteorology 5223: Atmospheric Radiation
Spring 2014

MWF 10:00am – 10:50am Room 5600 NWC

Instructor: Mark Morrissey

Course Description

Atmospheric radiation expands upon meteorology graduate students' knowledge of the basic principles of radiation with a strong emphasis on its role in our environment. Material presented includes the fundamentals of radiation, the sun, the atmosphere's effect on incoming solar radiation, emitted infrared radiation's effect on the atmosphere and, to put it all together, radiative transfer in the atmosphere with an emphasis on satellite remote sensing. Below is the course outline.

There will be two books for this course. The primary book is the s book: 'A First Course in Atmospheric Radiation 2nd ed" by G. Petty. The second supplementary book is 'Getting Started with Mathematica' 3rd Edition.

This class notes will be written in Mathematica although no apriori knowledge of Mathematica is required, it is encouraged. Students are welcomed to enhance their programming skills using this or any other software they wish although this is not required too. However, since the notes are in Mathematica the first week or so of the class will be dedicated to learning the basic syntax and notebook operations of Mathematica. Mathematica will allow one to focus on the physics in the notes and make homework problems a breeze (somewhat ☺) which we are primarily interested in (45%).

For those who simply want to 'read' my notes rather than use Mathematica go to http://www.wolfram.com/products/player/ and download 'Wolfram CDF Player'. This free software allows you to look at the notes and not use the software.

At the end of the semester each student will give a ~20 minute presentation which can include any 'radiation' oriented topic. This could be a summary of a journal, their research, etc.

Note: I will be out of town the week of the AMS meeting. I'll try to have someone in class.

My email address is mmorriss@ou.edu. Please don't hesitate to contact me or stop by Room 5321 for anything.

Exams: 1 mid-term: 25%, Week of March 10th (take home Exam)
1 final: 30%
Homework (includes class presentation): 45%

While attendance will not be graded I have yet to observe anyone in this receive an 'A' and show up only 50% of the time. Remember this is a core graduate course.

Course content (we will follow the notes closely and refer to Petty where appropriate):

1. Fundamentals of Radiation

2. Solar Radiation at the Top of the Atmosphere

3. Absorption and Scattering of Solar Radiation

4. Infrared Radiation Transfer in the Atmosphere

5. Radiation and Climate

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 fax only 405/325-4173.

Academic Misconduct:
All provisions of the Norman Campus Academic Misconduct Code shall apply in cases of academic dishonesty. ANY violation of the Academic Misconduct Code will result in your removal from this course, and a grade of F will be recorded for the course. Academic misconduct is defined as "any act that improperly affects the evaluation of a student's academic performance or achievement." At the University of Oklahoma, academic integrity is expected 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 OU Academic Code, which can be found at http://studentconduct.ou.edu/ and http://www.ou.edu/provost/integrity/