AT652 – Course Syllabus
Fall 2013

In-Class Meetings: T Th 9-9:50am; ACRC Classroom (212B)

Instructor: Chris O'Dell, odell@atmos.colostate.edu
Office: 203 ACRC (on the atmospheric science campus)
Office Hours: Mondays, Fridays 1-2pm, or by appointment.

Teaching Assistant: David Duncan, dduncan@atmos.colostate.edu
Office: 110 ACRC

Webpage: http://reef.atmos.colostate.edu/~odell/at652/index.html

Course Content and Goals

The purpose of this course is to give students a graduate-level introduction to modern atmospheric remote sensing techniques and existing data sets. Upon completion of the class, students will:

- Have basic knowledge of the properties atmospheric radiation as it pertains to remote sensing, in particular regarding thermal emission, solar radiation, radar and lidar backscatter, and polarization.
- Have a knowledge of the different kinds of atmospheric and surface quantities that can be measured from space using passive versus active techniques, and the parts of the spectrum responsible (UV, Vis, NIR, thermal IR, microwave, radio).
- Have introductory knowledge of different inverse techniques for retrievals from remote sensing data, and how they work.

References

Stephens, G.L., 1994: *Remote Sensing of the Lower Atmosphere*

Petty, G.W., 2004: *A first course in Atmospheric Radiation*
Liou, K.N., 2002: *Introduction to Atmospheric Radiation.*
Rodgers, C.D., 2000: *Inverse Methods for Atmospheric Soundings: Theory and Practice*
Kidder, S.Q. and Vonder Haar, T.H., 1995: *Satellite Meteorology: An Introduction*

Course Evaluation

- ***Projects***: There will be five projects for the class. These will generally require more time than a homework and will involve computer programming. Most tools will be provided in IDL or Fortran, but students are free to use whatever programming language they prefer (e.g. Matlab, IDL, Fortran, Python, etc). Students may collaborate on the general physics principles or coding tricks, but should do the projects and write-

ups themselves. Project write-ups are like "mini journal papers" and should include an introduction, methods section, all relevant charts & graphs, a discussion section, and summary/conclusions/future work. Code need not be included, but please consider including it if you think there is still a bug that is causing all your answers to be wrong or unreasonable.

- ***Final Presentation:*** Near the end of the class, each student will do a 15 minute presentation and submit a short (4-8 page) report on a remote sensing topic of their choice.

	Each	**Total**
Projects(x5)	16.6%	83.3%
Presentation	16.6%	16.6%

Expected Due Dates (subjected to change if need arises)

Projects will be due by 3pm on the assigned due date. Please turn in (via email attachment or hardcopy) the project write-ups to David Duncan.

Project 1, Turbidity at Mauna Loa	9/20/2013
Project 2	10/11/2013
Project 3	11/1/2013
Project 4	11/21/2013
Project 5	12/18/2013
Presentations:	12/3 and 12/5

Honor Code

This course will adhere to the CSU Academic Integrity Policy as found in the General Catalog (http://www.catalog.colostate.edu/Content/files/2012/FrontPDF/1.6POLICIES.pdf) and the Student Conduct Code (http://www.conflictresolution.colostate.edu/conduct-code). At a minimum, violations will result in a grading penalty in this course and a report to the Office of Conflict Resolution and Student Conduct Services.