Syllabus

PTYS517
Atmospheres and Remote Sensing
Spring 2010

Time: Tuesday and Thursday, 2:00-3:15 PM,
Location: Room 312, Space Science Building

Instructor: Roger Yelle
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Office hours by appointment

Text Book: *The Physics of Atmospheres* by John Houghton.

We will follow the book fairly closely, but we will expand on some of the material using notes provided by the instructor, additional readings, etc. Reading assignments will be given in class lectures. In general, you should read the chapters relevant to a particular class before the class.

Reference Books (on Reserve in LPL library)

The following books cover general aspects of planetary atmospheres and will be referred to from time-to-time in the course.

Atmospheric Physics by David Andrews
Atmospheric Thermodynamics by Bohren and Albrecht
Theory of Planetary Atmospheres by Chamberlain and Hunten
An Introduction to Dynamical Meteorology by James Holton
Atmospheric Radiation by Goody and Yung

Homework problems and other contemplations often require physical data on planets or materials. Most of this can be found in the following books, also on reserve or in the library reference section.

The Planetary Scientist's Companion by Lodders and Fegley
CRC Handbook of Chemistry and Physics.
Astrophysical Quantities by Allen

Class Web Site

There isn't one.

Objectives:

PTYS517 provides an overview of the physics and chemistry of planetary atmospheres including the thermodynamics, energetics, radiative processes, dynamic meteorology, and photochemistry and diffusion. The course describes how these physical processes are manifest in the diverse solar system atmospheres. The basic characteristics of the atmospheres in our solar system are also described. The instructional level is aimed at beginning graduate students with an adequate background comparable to that obtained from advance undergraduate courses in physics and chemistry. Knowledge of vector calculus and elementary differential equations is assumed. Successful students will be able to understand current research in planetary atmospheres and will be well prepared for more detailed studies of planetary atmospheres.

Requirements:

Homework problem sets will be required approximately every two weeks. These will be challenging and will likely require a significant amount of time to complete. Expect to spend 10-20 hours on each problem set. Students are encouraged to discuss the homework, but must do the problems on their own. This is not a group exercise, but an individual exercise. We will discuss the homework problems in one of our classes every two weeks.

There will be a final exam. The exam will be open book and notes. We will decide in class when to hold the final exam.

A term project is required. Guidelines for the project will be distributed in class.

Grading

Homework	50%
Final Exam	25%
Term Project	25%
Total	100%

Late Work:

Late work will not be accepted except in truly extraordinary circumstances. Absence from class, difficulty with the assignments, high work loads in other classes or research/teaching activities, etc. are not extraordinary circumstances.