CSI 661 / ASTR 530
Astrophysics
Syllabus

Spring 2009

**Prerequisites:** PHYS 303 (Classical Mechanics), PHYS 305 (Electromagnetic Theory), PHYS 308 (Modern Physics with Applications); MATH 214 (Elementary Differential Equations)

**Credits:** 3

**Date:** Wednesday  
**Time:** 7:20 PM to 10:00 PM  
**Place:** Innovation Hall 137

**Instructors:** Jie Zhang

**Contact Info:** (703)993-1998 (phone), jzhang7@gmu.edu (e-mail)

**Office Hour:** 3:00 PM to 4:00 PM, Thursday, or by appointment

**Office:** Room 351, Research Bldg 1

**Description:** The general purpose of this course is a survey of contemporary astrophysics. Topics include physical concepts, stellar spectra, Hertzsprung-Russell diagram, stellar atmospheres, stellar structure, interstellar matter, stellar evolution, high-energy phenomena, hydrodynamical processes in astrophysics, accretion disk formation, and shock formation. In this semester, it emphasizes stellar atmosphere, stellar structure and evolution.

**Content:**

- Basic Physical Principles  
- Overview of Stellar Evolution  
- Equation of State  
- Radiative Heat Transfer  
- Conductive Heat Transfer  
- Convective Heat Transfer  
- Stellar Energy Sources  
- Stellar Modelling  
- Overview of Stellar Atmosphere  
- Continuous and Line Absorption Coefficient  
- Model Photosphere

**Homework:** There will be 6 – 8 small assignments.

**Project:** There will be two projects. One is on the modeling of stellar structure, and the other is on the stellar atmosphere.

**Exams:** There will be one midterm and one final exam.
Grades: Homework (25%), Project (25%), Midterm (20%), Final Exam (30%)

Class URL: http://solar.gmu.edu/teaching/2008_CSI661/


Supplemental Text Books: