PHYSICS 160: Stellar Structure and Evolution

Instructor: Art Wolfe

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Office Hours: Fri. after 10:30 A. M., or by appointment

Main Text: Carroll & Ostlie *An Introduction to Modern Astrophysics, 2nd ed.*

Reserve Texts:

Shu *The Physical Universe*

Clayton *Principles of Stellar Evolution and Nucleosynthesis*

Schwarzschild *Structure and Evolution of the Stars*

Course Room: WLH 2205

Lecture Time: Tues. and Thurs. 9:30 A.M. to 10:50 A. M.
Review Session Time: TBA

Course Requirements:

(1) *Graded Homework Assignments*: 50 % of final grade
Homework assignments will be posted on the course website.
Students are encouraged to discuss assignments with each other. But you must write up your solutions on your own and not copy another student's work. In the past, students that copied the work of others in this class have been found guilty of academic dishonesty and received severe penalties.

(2) *Term Paper (and optional talk)*: 50 % of final grade
More details about the Term Paper will be placed on the course website later in the quarter.

TOPICS

We will focus on chapters 8 through 16 of Carroll and Ostlie. We will start with chapters 3 and 5 for a review of basic concepts. However, I will emphasize some topics more than others, and in many cases treat problems in a different manner than in this book.

- Overview: Introduction to the Universe
- Basic concepts: distance, magnitudes, spectra
- Stellar Spectra and the Hertzsprung-Russell Diagram
- Radiative Transfer
- Stellar Interiors: physics of nuclear burning
- The Sun
- Star Formation and Pre-Main Sequence Evolution
- Main Sequence and Post Main Sequence Evolution
- Element Synthesis in Stars
- Endpoints of Stellar Evolution