

Physics 390: Introduction to Astrophysics

Professor Barry Davids (davids@triumf.ca)

Lectures

MWF 8:30-9:20 beginning 9 Jan 2006

Office hours

M 9:30-12, C9042

Course Outline

This course is a quantitative introduction to the astrophysics of stars, galaxies, and the universe as a whole, emphasizing the physics of these systems as opposed to the techniques of astronomical observation. Some elementary physics will be reviewed.

Topics include the tools of astronomy, observational and theoretical Hertzsprung-Russell diagrams, stellar structure and evolution, binary stars, star clusters, end states of stellar evolution (white dwarfs, neutron stars, and black holes), galactic structure and evolution, quasars, galaxy clusters, and cosmology.

Grading will be based on one or more quizzes (20%), homework (30%), and a final exam (50%).

The recommended course textbook, available in the bookstore and on reserve in the library, is Bradley Carroll and Dale Ostlie's *An Introduction to Modern Astrophysics*. This text is useful and comprehensive, though very expensive. Useful supplementary texts include Steven Weinberg's *The First Three Minutes: A Modern View of the Universe* and Donald Clayton's *Principles of Stellar Evolution and Nucleosynthesis*. The particle data group webpage, http://pdg.lbl.gov/2005/reviews/contents_sports.html contains a great deal of information including physical and astrophysical constants, particle properties, and much more that may prove useful. I also highly recommend <http://scienceworld.wolfram.com/physics>, though it is not perfectly up-to-date. See <http://hubblesite.org/> for breathtaking astronomical images.

Rough Outline of the course:

1. Basic Physics
2. Stars
3. Galaxies
4. Cosmology