Course Description:

For millennia, people have wondered about the origins of the Earth, Sun, planets, stars, and the band of light called the Milky Way. While great progress has been made, how the Universe evolved with time (Cosmology) and how galaxies formed in the evolving Universe are questions remaining at the cutting edge of modern astronomy. In this course, these subjects are explored, once the necessary backgrounds in elementary astronomy and physics are developed. The only prerequisite is a work knowledge of elementary algebra.

Instructor: Robert Zinn  
Email: robert.zinn@yale.edu

Textbook:  
Universe: Stars and Galaxies 5th or 6th Edition  
Roger A. Freedman et al., Publisher: W.H. Freeman  
OR  
Universe 10th or 11th Edition  
Roger A. Freedman et al., Publisher: W.H. Freeman

Outline

Week 1:  
The motions of the planets  
Kepler’s Laws, Newton’s laws and theory of gravitation  
The Nature of Light and Matter  
Optics & Telescopes

Reading: Chapters 1, 4, 5, & 6

Week 2:  
Our Star, the Sun  
The Nature of Stars  
The Birth of Stars  
Stellar Evolution  
The Death of Stars  
Neutron Stars

Reading: Chapters 16, 17, 18, 19, 20, 21

Week 3:  
Black Holes  
Our Galaxy  
Galaxies

Reading: Chapters 22, 23, & 24
Week 4:  Quasars, Blazars, & Active Galaxies
         Cosmology

Reading:  Chapters 25 & 26

Week 5:  Cosmology Continued
         Exploring the Early Universe

Reading:  Chapters 26 & 27

There will be 4 weekly quizzes and a final exam.
Also, approximately 8 homework assignments

Grading:  33% Quizzes
         33% Final
         34% Homework

Homework Policy

1. To receive any credit for a homework problem, you must show how you arrived at your answer (the answers to some problems are given at the back of the textbook).

2. The work you hand in must be your own. (NO copying).

3. Late homework will be marked down 10 points for each class period that it is late. Homework later than two class periods will not be graded, and a zero will be recorded.

4. Homework will not be marked down if you are ill or have an emergency. Please notify me as soon as possible.