



AST 335 Astrophysics

Course Description

Stellar Astrophysics covers the physics of stars and stellar systems. The development is quantitative and requires an understanding of introductory physics and calculus.

Course Prerequisites

- Mechanics and Heat (PHY 131) or Technical Physics I (PHY 241)
- Electricity, Sound, and Light (PHY 132) or Technical Physics II (PHY 242)
- Classical and Modern Astronomy (AST 105)
- Calculus I (MTH 233)

Specific Course Requirements

Textbook Requirements

See current semester textbook list at <http://www.physics.sfasu.edu/docs/books.pdf>

Course Objectives

- Provide students the opportunity to use the physics they have learned in understanding the nature of the universe
- Provide rigorous theory where possible and justifiable approximations when the mathematics becomes graduate level
- Show that the universe is comprehensible and can be understood

Student Learning Outcomes

By the end of the course, a successful student will be able to:

- Analyze the classic two-body problem.
- Describe the fundamental properties of light and stars.
- Describe the principles of atomic structure.
- Discuss the life cycle of stars.
- Examine the equations governing the structure of stars.
- Develop the physics that governs the energy production within stars.
- Discuss solar physics.

Course Content

- The Celestial Sphere
- Celestial Mechanics
- The Continuous Spectrum of Light
- The Interaction of Light and Matter
- Binary Stars and Star Parameters
- The Classification of Stellar Spectra
- Stellar Atmospheres
- The Interiors of Stars
- The Sun
- The Process of Star Formation

Course Assessment

There will be four major exams, each covering a limited amount of lecture and text material. No make-up exams will be given except by EXCUSED absence. Each major exam is graded on a 100-point scale. No grade curving is done on any grade in this course.

Problem assignments are made over material in each of the covered chapters. The problem set average has the same weight as each exam.