

COURSE SYLLABUS
PHY 397 – SECTION 1
ASTRONOMY (ASTROPHYSICS)
3 CREDIT HOURS
SPRING 2008

Location of Class: Room 211, Farrington Bldg.

Class Meeting Times: Tuesday-Thursday, 9:30am – 10:50pm

Instructor: Dr. Brian Oetiker

Rm. 316 Farrington Bldg.

Phone: 294-1600

Email: phy_bgo@shsu.edu

Office Hours: Office hours for this class are scheduled from 2:00pm – 5:00pm, Tuesday & Thursday. I may not be in my office outside scheduled office hours. You make an appointment by phone or by email.

Course Description: Astronomy is a unique science because most of the objects studied by astronomers are too far away for direct experimentation. Therefore, astronomers must be clever in order to gain an understanding of the universe. The most important tool available to astronomers is the science of Physics. Physics is the most fundamental of the sciences. The main emphasis of this class is to relate physics to the science of astronomy. Because astrophysics relies heavily on mathematics, some basic math (mainly algebra, geometry, & trigonometry) will be used throughout this course to further your understanding of important principles.

Course Objectives: The following topics will be covered in this course:

- Overview of mathematics & physics essential to astronomy.
- Optics & telescope design.
- Photoelectric effect & Astronomical detectors.
- Wave motion, light, & the Doppler effect.
- Newton's laws: explaining motion of objects in the universe.
- Circular motion, gravity, planetary motion & binary stars.
- Work, energy, momentum & the formation of the solar system.
- Electricity & magnetism: Another look at light.
- Brightness and magnitude of stars.
- Fission & fusion reactions on Earth and in the Sun.
- Degenerate matter & the evolution of stars.
- The cosmic background radiation.

Required Textbook: "Observational Astronomy" 2nd Edition by Birney, Gonzalez, Oesper. ISBN 0-521-85370-2.

Recommended Textbooks: Any introductory physics book (Griffith or Halliday & Resnick). Any introductory astronomy book (Bennett or Freedman).

Required Supplies: Scientific calculator.

Attendance: Because my lectures do not present this course in the same order as the textbook (or the same material), attendance is vital.

Homework & Quizzes: Each week, homework will be assigned from the textbook. Homework questions will be due at the **BEGINNING OF CLASS EVERY TUESDAY. LATE ASSIGNMENTS WILL NOT BE ACCEPTED.**

Midterm & Final Exams: Astronomy and physics are subjects that are “problem-solving” oriented. Oftentimes, I am more interested in the method you used to solve the problem rather than the final result. Therefore, the exams in this class will not be multiple-choice (you will need to show your work).

Midterm Exam: Thursday, March 6th.

Final Exam: TBA

MAKE-UP EXAMS WILL NOT BE GIVEN WITHOUT A NOTE FROM A PHYSICIAN.

Grading:

Homework: 30%

Midterm: 30%

Final: 40%

Your final grade will be determined based on the following distribution:

A: 90%-100%

B: 80% - 89%

C: 65% - 79%

D: 50% - 64%

F: 0% - 49%

You may find online a more detailed description of the following policies. These guidelines will also provide you with a link to the specific university policy or procedure: <http://www.shsu.edu/syllabus/>

Academic Dishonesty: Students are expected to maintain honesty and integrity in the academic experiences both in and out of the classroom. *See Student Syllabus Guidelines.*

Classroom Rules of Conduct: Students are expected to assist in maintaining a classroom environment that is conducive to learning. Students are to treat faculty and students with respect. *Students are to turn off all cell phones while in the classroom. Under no circumstances are cell phones or any electronic devices to be used or seen during times of examination.* Students may tape record lectures provided they do not disturb other students in the process.

Student Absences on Religious Holy Days: Students are allowed to miss class and other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. Students remain responsible for all work. *See Student Syllabus Guidelines.*

Students with Disabilities Policy: It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. Students with disabilities that might affect their academic performance should visit with the Office of Services for Students with Disabilities located in the Counseling Center. *See Student Syllabus Guidelines.*

Visitors in the Classroom: Only registered students may attend class. Exceptions can be made on a case-by-case basis by the professor. In all cases, visitors must not present a disruption to the class by their attendance. Students wishing to audit a class must apply to do so through the Registrar’s Office.