

ASTRONOMY 2 (Course ID ASTR-2-02)

OVERVIEW OF THE UNIVERSE, WINTER 2007

Class times/room: 2:00 – 3:10 pm, Mon/Wed/Fri; Kresge Classroom 321

Class website: <http://www.ucolick.org/~raja/ay2w.html>

CPS RF response pads (clickers): Each student is **required** to buy a **Classroom Performance System Radio Frequency** (CPS RF) response pad (a.k.a. “clicker”) and to then register it on line at the eInstruction website following the instructions that come with the clicker. This is **VERY IMPORTANT**; you cannot participate in the class or get graded on the in-class pop quizzes if you don’t have a personal registered clicker.

Topics / Schedule: This is a one-quarter introductory course on astronomy and astrophysics. The subject matter includes: origin & evolution of the Universe, and the Big Bang model; galaxies & their constituents, including stars, planets & the interstellar medium; various kinds of normal & active galaxies; formation & evolution of galaxies; life cycle & death of stars, including supernovae, white dwarfs, neutron stars & black holes; nucleosynthesis (origin of the elements); dark matter. Such studies require knowledge of simple mechanics and basic laws of radiation, quantum mechanics, and nuclear & particle physics which we shall develop as we go along. A detailed calendar listing weekly topics, homework deadlines, exam dates, and holidays is on the class website. The actual material covered may be somewhat different from this depending on our rate of progress.

Emphasis / Background: I will emphasize **scientific methods** and the **process of discovery**, not just facts about the Universe, and students are expected to develop a **quantitative grasp of key astrophysical concepts**. The course material is self-contained. No previous college-level math, physics, or astronomy is required. It will be assumed, however, that the student has mastered elementary arithmetic, algebra, and powers, and has some familiarity with scientific concepts and reasoning. A background in math or physics will definitely make the course easier. If you don’t have such a background, however, you may take heart in the fact that some of the best students in the past in Astronomy 2 have been non-science majors who took a strong interest in the course material. It is advisable to purchase a small inexpensive calculator, if you don’t already own one. Be sure to get one that does powers and roots. Questions and classroom discussion are encouraged, both for your benefit and to help me properly pace the course. Please browse astronomy web sites (we’ll provide some links on the class website) and share your findings, comments, questions, etc in class.

Exams / Practice Problem Sets: There will be a **midterm exam** and a **final exam**, both in Kresge Classroom 321 (our usual classroom). The midterm will be on **Mon 02/05** 2:00 – 3:10 pm (usual class slot) and the final on **Tue 03/20** 7:30 – 10:30 pm (*not* during the usual class slot). Both exams will be **open book and open notes** and will consist of short multiple choice and true/false questions and short math problems. Sample problem sets will be provided at the class web site before both exams. Please use these to practice for the exams.

Evaluation: Performance in this course will be judged on the basis of: (i) final exam (45% of overall grade); (ii) midterm exam (35%); and (iii) in-class pop-quizzes (total 20%). Everyone who makes a genuine effort on all aspects of the course stands a good chance of passing.

Texts / Reading: The textbook for this course is:

Pathways to Astronomy (McGraw-Hill, with E-instruction) by Stephen E. Schneider & Thomas T. Arny [ISBN 0073422916]

The book contains only a small fraction of the material that will be covered in class; you may still find it useful to own the book. The class web site will list week-by-week reading chapters from the book. Copies of the book will be on reserve at the Science Library. While you are *not* required to buy the textbook, reading the specified chapters will greatly enhance your ability to follow the lectures.

Notes / Lecture Outline & Illustrations: Since the course material is not contained in any single book or books, PLEASE COME TO CLASS and TAKE GOOD NOTES! These will likely be your most accurate source of information when you're studying for the exams. An electronic copy of the lecture notes (text and illustrations) will be made available at the class web site before each lecture. However, you'll find the notes hard to follow if you don't come to class.

No Field Trip: We will unfortunately **not** be conducting a Lick Observatory field trip this term. The weather statistics on Mount Hamilton is poor during these winter months and it wouldn't make sense to drive all the way there and back (at least 5 hours of driving) and not be able to look at the skies through the telescope. Sorry.