ASTRONOMY 291 – BASIC ASTROPHYSICS AND PLANETARY ASTRONOMY

COURSE INFORMATION
AUTUMN QUARTER 2011

Lecturer: Professor Bradley M. Peterson
Office: 4055B McPherson Laboratory (MP 4055B), 292-2022
Office Hours: Afternoons before exams (except R 3:30-4:30) or by appointment
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Classroom: 1035 McPherson Laboratory (MP 1035)
Class Hours: MTWRF, 12:30 - 1:18 p.m.
Website: http://www.astronomy.ohio-state.edu/~peterson/Ast291/

Textbook:
Required: Foundations of Astrophysics by Barbara Ryden and Bradley M. Peterson (Pearson Addison-Wesley Publishing). This will be the textbook for both Astron 291 and Astron 292.

Course Objectives and Philosophy:
This is the first course in a two-quarter introductory sequence that is intended for sophomore astronomy majors (for whom this is a required course) as well other scientifically literate undergraduates who want to learn basic astronomy from a quantitative (calculus-based) perspective.

The specific major topics to be covered in this course are (a) celestial mechanics and the dynamics of the Solar System, (b) the interaction between radiation and matter, including how radiation is collected and analyzed by astronomers, and (c) the basic astrophysics of the Solar System.

Course Prerequisites:
Unlike the other introductory astronomy courses, this sequence presupposes a working knowledge of calculus (differential and integral, through Math 153) and general calculus-based physics (through Physics 133, which may be taken concurrently with this course).
Astronomy 291 on the World-Wide Web:
The class webpage is at http://www.astronomy.ohio-state.edu/~peterson/Ast291/.
This page will have all current course information, including copies of the syllabus and
course information (the material distributed on the first day of class). Any
announcements made in class will also be posted here. You can also use this to send e-
mail questions to the professor or the T.A.

Problem Sets:
Problems sets will be assigned periodically, and will be due on the dates given on the
syllabus. Since this is a problem-solving course, the problem sets are an integral part of
the course and play an important role in solidifying your understanding of the material.
The problem sets will be graded and will account for 20% of the course grade. Problem
sets will be assigned at least one week before they are due. In general, late work will not
be accepted for credit, except with prior approval of the professor, and late submissions
will be corrected at the T.A.’s leisure. Please staple all the pages of your homework
together.

Recitation Sessions:
Recitation sessions (interactive problem-solving sessions run by one of the T.A.) are
scheduled on days before problem sets are due and on days before examinations. Check
the schedule carefully. Come prepared with questions.

Examinations:
There will be three midterm examinations, tentatively scheduled for (1) Friday, 14
October, (2) Friday, 4 November, and (3) Wednesday, 30 November. Each of the
midterm examinations will account for 20% of the course grade.

A comprehensive final examination will be given at 11:30 a.m. – 1:18 p.m. on Monday, 5
December, in the regular classroom. The final examination will account for the remaining
20% of the course grade. The final examination will be open book; students are allowed
to bring in textbooks and notes for the final examination. No notes or books are allowed
for the midterm exams, however.

Make-up Examinations:
Make-up examinations will be allowed under extraordinary circumstances only (as
determined by the professor), e.g., illness (as verified by a physician), or personal
tragedy. Make-up midterms usually will be one-hour oral examinations.

If an examination conflicts with an approved University function (e.g., if you are a
member of a varsity athletic team or TBDBITL and are required to leave town), you may
take an exam earlier than the scheduled date, provided that you obtain permission from
the professor at least a week in advance.

If you should miss the final examination, your course grade will be recorded as a failure
unless you contact Dr. Peterson (by phone, if necessary) before noon on Wednesday, 7
December and arrange to take the final at the beginning of Winter Quarter – in this case you will receive a grade of incomplete.

**Grades:**
Grades will be determined as described above, with equal weight given to the homework, each of the three midterms, and the final exam. Final letter grades will be available on the registrar’s website at http://www.ureg.ohio-state.edu as soon as they are determined. Absolutely no grades will be given out over the telephone (University policy).

**Course Syllabus:**
A course syllabus will be distributed on the first day of class, and is also available on the class webpage. The syllabus contains all of the important information concerning examination and recitation dates and dates problem sets are due. If you misplace your copy of the course syllabus, get another from the professor or the T.A., or download a copy from the class website.

**Planetarium Demonstration:**
A planetarium demonstration is scheduled during the regular class time on the third day of class, Friday, 23 September. The Planetarium is located in 5033 Smith Laboratory; take the elevator in the northeast corner of Smith Lab to the fifth floor, turn right and you’ll see the Planetarium.

There will be additional optional evening planetarium shows that are geared more toward the students in the 100-level astronomy classes. Astron 291 students are nevertheless welcome to attend. See the schedule through the link on the class website.

**Semester Conversion:**
Beginning Autumn 2012, the University will move to a semester-based calendar. On the semester calendar, Astron 291 will become Astron 2291 and Astron 292 will become Astron 2292. The quarter-based and semester-based versions are identical in content. The name of the undergraduate major will become “Astronomy and Astrophysics”.

**Astronomy 295:**
The Department of Astronomy is now offering a two-quarter one-credit hour seminar that is intended to introduce prospective astronomy majors to the undergraduate astronomy program at Ohio State. There will be introductory lectures on practical aspects of the major program, including course of study, careers in astronomy, observational facilities available to Ohio State faculty and students, the Center for Cosmology and Astro-Particle Physics (CCAPP) connection with the Department of Physics, and opportunities for engagement of undergraduate students (including a discussion of REU opportunities, the OSU Astronomy Summer Undergraduate Research Program, the Ohio State University Astronomical Society, and OSU outreach opportunities). Each of the remaining sessions will feature an Ohio State faculty member, who will describe his or her research program at a level suitable for first-year undergraduates.
Effective Autumn 2009, two quarters of Astronomy 295 is required for Astronomy majors. We strongly recommend that you take this course as early as possible in your program of study.

**Roof Nights:**
Roof Nights constitute what might be called a casual laboratory for the 100-level introductory astronomy courses. Astronomy 291 students are also cordially invited to attend. The telescopes on the roof of Smith Lab will be opened for you to enjoy the splendor of the Universe (or at least the inner Solar System) firsthand at least twice during the quarter. The Roof Night schedule can be found through a link on the class webpage. And, yes, you can bring a friend.

**Academic Misconduct:**
Basically, “academic misconduct” refers to attempts to misrepresent someone else's work as your own (i.e., “cheating”). While we encourage students to work together on their problem sets (since teaching each other and verbally articulating astrophysical arguments are skills we want you to develop), the answers you turn in must be your own work and not simply copied off of another student's work. When you work with other students, you can work out a problem together, but then you should later re-work it independently to make sure you understand it and so that the work you submit is not simply a copy of someone else’s solution. It is perfectly fine to trade insights and explanations, but we will not tolerate "distributed" work (e.g., “you work problems 1 – 5 and I'll do problems 6 – 10”).

There is an instructor’s solution manual published for the textbook: you should not own a copy of this (you can only get it legitimately from the publisher by attesting that you are an instructor and they will check with your institution). You are forbidden to use the instructor’s manual in any way. The professor wrote the manual and will recognize his own solutions (and has). Use of the instructor’s manual solutions will be considered academic misconduct and will be vigorously prosecuted.

Examinations, of course, must be entirely your own work.

**Students with Disabilities:**
Any student who feels that he or she may need an accommodation based on the impact of a disability should contact the course coordinator to discuss specific needs. We will work with the Office for Disability Services (ODS) to verify the need for accommodation and develop appropriate strategies. Students with disabilities who have not previously contacted ODS should do so in advance by visiting the ODS website and requesting an appointment. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; [http://www.ods.ohio-state.edu/](http://www.ods.ohio-state.edu/).

**IMPORTANT:** IT IS THE RESPONSIBILITY OF THE STUDENT TO BE FAMILIAR WITH ALL OF THE INFORMATION CONTAINED HERE. STUDENTS ARE ALSO RESPONSIBLE FOR ANY CORRECTIONS OR ADDENDA ANNOUNCED IN CLASS.