

# ASTR430

The Solar System  
Fall 2005

**Lectures:** Wednesday, Friday 12h30–13h45, CSS 2428

**Homepage:** <http://www.astro.umd.edu/~dcr/Courses/ASTR430/>

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**Office Hours:** Mondays 11h–12h, or by appointment

**Text:** Hartmann, *Moon & Planets* (5th Ed.)

## SYLLABUS

### Course Description

This course is intended to be an overview of the solar system, and planetary science in general, for upper-level science majors. The focus will be on learning concepts, not just facts. There will also be an emphasis on discussion, not just lecturing. Topics will range from celestial mechanics, cosmic collisions, planetary interiors, surfaces, and atmospheres, and even biological processes. Rather than taking the traditional approach of learning about the wonders of each planet in turn, we will concentrate on physical mechanisms that span all scales of the solar system.

You will be expected to participate actively in the class by keeping up with the reading assignments (there will be regular quizzes!) and bringing questions and ideas to each class. There will be a problem solving aspect to this course, so a familiarity with mid-level physics and calculus is essential. Planetary science is a rapidly changing field, with more space missions underway or planned than ever before. As such, an important component of this course will be a term project (with presentations) on one of the hot topics in solar system exploration today.

### Required and Recommended Texts

The required text for this course is *Moon & Planets* (5th Ed.) by Bill Hartmann. This textbook takes the process-driven approach to planetary science that we will be using. There is some suitable mathematical material and problems in the text that we will be augmenting in the lectures and homework. Recommended supplementary texts include *The New Solar*

*System* (4th Ed.) by Beatty *et al.*, a purely narrative approach to the subject (with great pictures!), and *Planetary Sciences* by de Pater and Lissauer, a graduate-level treatment with a strong emphasis on advanced physics and math.

## Website

The course website is

<http://www.astro.umd.edu/~dcr/Courses/ASTR430/>

Copies of the course materials as well as links to other useful information will be posted on this website regularly. In particular, the latest version of the lecture (and quiz!) schedule can be found there.

## Grades, Exams, and Quizzes

Grades will be based on in-class participation, 6 quizzes, 6 homework assignments, a single midterm, the term project, and the final exam, with the following weights:

Participation	5%
Quizzes (6)	15%
Homework (6)	25%
Midterm	15%
Term Project	15%
Final Exam	25%

The midterm exam (tentatively scheduled for Oct 19 in class) will cover Ch. 1–6 of the textbook, plus quizzes 1–3 and homeworks 1–3. The exam will consist of a mix of long-answer and problem-solving questions. The final exam (tentatively scheduled for Fri Dec 16 from 13h30 to 15h30 in the usual classroom) will cover all chapters, quizzes, and homework, with an emphasis on the material not covered by the midterm. The format will be similar to the midterm.

Quizzes will be given at the start of class roughly every other week. The quizzes will last about 15 minutes and are meant to ensure you are keeping up with and understanding the reading. Each quiz will generally cover the previous and *current* chapter in the reading. Usually we will not have addressed the current chapter in class before the quiz, so be sure to read ahead!

The following scale will be used to compute final letter grades:

- A 87.5% and above
- B 75 to below 87.5%
- C 62.5 to below 75%
- D 50 to below 62.5%
- F below 50%

The optional +/- grading scale will *not* be used in this course.

There will be no curve on the final grades. There may need to be some adjustment to scores depending on the class average; however, any adjustment will be only to lower the grading percentages given above, never to raise them.

## **Homework Assignments**

There will be 6 homework assignments. They will be handed out in class and posted on the course website. Most assignments involve problem solving. You may work in groups to discuss solving strategy, but you must submit your own solution to each assignment.

Assignments that are late will automatically incur a 20% penalty unless there are extenuating circumstances. Late assignments must be completed before solutions are posted (typically one week from when the assignment is due) to get any credit.

## **Term Project**

Each student will be required to complete a term project on a current hot topic in planetary science. The project will consist of a paper to hand in plus a presentation before the class. More details will be provided later in the course, but start thinking of possible topics now!

## **Students with Special Needs**

Students with a documented disability who wish to discuss academic accommodations should contact me as soon as possible.