

# HO#1

EE106–GP106/ACF-S

Spring 2008

## PLANETARY EXPLORATION

MWF 2:15 to 3:05 pm Building 200, Rm 030 (Old Quad)

### Instructor

Antony C. Fraser-Smith, Packard 358, (650) 723-3684, acfs@stanford.edu

### Course Description

This class investigates the other worlds of our solar system, particularly as revealed by the various space missions. It compares the properties of the terrestrial and Jovian planets and their moons, including the differences in their interiors, surfaces, atmospheres, and rings (if any). Also considered are planetary and satellite orbits, and spacecraft trajectories, as well as the properties of interplanetary gas and dust, asteroids, comets, and meteorites. We look into what the the planets can tell us about potential terrestrial catastrophies, including, for example, a collision with an asteroid or large comet. We also study the origin and evolution of planetary systems, and the advantages of remote sensing from spacecraft at radio, infrared, light, and ultraviolet wavelengths. The U.S., Russian, European, and Japanese space programs and their comparative engineering and scientific aspects are discussed. Prerequisites: one year of college engineering, mathematics, or physics.

### Textbook

The textbook for the class is *Voyages to the Planets*, 3rd edition, by Andrew Fraknoi, David Morrison, and Sidney Wolff (Brooks/Cole, Thomson Publishing, 2004). A copy of this text will be kept on reserve in the Engineering Library. Use will also be made of handouts to supplement the text.

### Teaching Assistants

Your TA is a graduate student from the STAR Laboratory; her name is Lauren Wye (lcwye@stanford.edu). Lauren's Ph.D. research involves Titan, the largest moon of Saturn. Her office hours will be announced in class.

### Auditors

Make sure you ask your instructor and are accepted as an auditor.

### Homework

Homework will be issued on Fridays and will be due on the following Friday.

### Grading

Your homework grader is Lauren Wye (lcwye@stanford.edu). Your final class grade will depend on your homework as well as on the results of your midterm and final exams. The following allocation will be used in computing the grade: 25% will depend on the midterm, 45% on the final, and 30% on the homework. All exams are open book/open notes.

### Administrative Assistant

To obtain Class Notes (i.e., handouts) that were not picked up at time of issue, you have two options: (1) Electronic copies will be posted on the class web site, and (2) you will find a file cabinet containing paper copies of the handouts in the hallway outside Packard 359. Please enquire directly with my administrative assistant, Bernadette Aguiiao, Packard 359 (Telephone: 723-3687; email: LBAguiiao@stanford.edu) if you have any problems obtaining handouts or with other class matters.

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**CLASS SCHEDULE**

		Homework Sets	
		Issued	Due
April 2	Introduction	.	.
April 4	The Sky/Early Astronomy (Fraknoi, Ch. 1)	HWS 1	.
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April 7	Planetary Motion/Gravitation (Ch. 2)	.	.
April 9	Orbits 1	.	.
April 11	Earth, Moon, Sky (Ch. 3)	HWS 2	HWS 1
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April 14	Radiation and Spectra (Ch. 4)	.	.
April 16	Radiation and Spectra (Ch. 4)	.	.
April 18	Astronomical Instruments/Resolution (Ch. 5)	HWS 3	HWS 2
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April 21	Orbits 2	.	.
April 23	Solar System Overview (Ch. 6)	.	.
April 25	The Sun (Ch. 14)	HWS 4	HWS 3
.	.	.	.
April 28	Earth as a Planet (Ch. 7)	.	.
April 30	Moon and Mercury (Ch. 8)	.	.
May 2	<u>MIDTERM</u>	.	HWS 4
.	.	.	.
May 5	Venus (Ch. 9)	.	.
May 7	Mars (Ch. 9)	.	.
May 9	Orbits 3	HWS 5	.
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May 12	Asteroids (Ch. 12)	.	.
May 14	Jupiter/Jupiter's Moons (Ch. 10, 11)	.	.
May 16	Saturn/Saturn's Moons (Ch. 10, 11)	HWS 6	HWS 5
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May 19	Rings (Ch. 11)	.	.
May 21	Uranus and Neptune and Moons (Ch. 10, 11)	.	.
May 23	Orbits 4	HWS 7	HWS 6
.	.	.	.
May 26	<u>MEMORIAL DAY HOLIDAY</u>	.	.
May 28	Pluto and Charon (Ch. 11)	.	.
May 30	Kuiper Belt Objects, Oort Cloud, Comets (Ch. 12)	.	HWS 7
.	.	.	.
June 2	Meteors, Meteorites (Ch. 13)	.	.
June 4	Review of Course	.	.
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June 10	<u>FINAL, 12:15-3:15 pm</u>	.	.