ESS 9 (2012 Spring): Solar System and Planets

Tuesdays and Thursdays: 12:30pm - 1:45pm in Haines Room 220

Lecturer: David Jewitt jewitt@ucla.edu

Teaching Assistants: Chris Snead stardust2006@ucla.edu
Shanty Naidu spn@ucla.edu

Discussion Sections: Thursdays from 9am - 4:50pm

Discussion Locations: Geology 4653 and 4691

Book: Bennett et al. The Solar System (6th edition), Addison-Wesley

Notes on the Class

The aim of the class is to be broad, informative and fun: you should end up being excited about the solar system and have a decent feeling for what we know, don't know and want to know about it. We will use numbers to describe things but will not rely much on mathematics because this is an introductory class and most of the people who take it do not have mathematical backgrounds.

We will cover the entire solar system in this class, from the rocky planets, to the gas and ice giants, the comets, the asteroids, the satellites and rings, the Centaurs, Kuiper belt objects and Oort cloud, and we will go beyond to consider the planetary systems of other stars and the likelihood and distribution of life.

Book

The Bennett book is there for background. You should read in parallel with the lectures (ideally before the relevant class) and you are encouraged to read ahead as much as you like (in your copious free time). There are many other, similar introductory level books (Chaisson and McMillan Astronomy Today: The Solar System, Freedman et al. Universe: The Solar System). In my mind they're all about the same.

Interactions

You have several opportunities for interaction. First, please ask me questions in the lectures. This is the main way I can tell whether or not I am hitting the right notes: I need your feedback and right there in the lecture is the best place and time to start.

Second, there are “labs” (UCLA-speak for “discussion/interaction sessions”) run by Chris Snead and Shanty Naidu in which you are specifically encouraged to ask lots of questions and interact with them. Third, my office is Geology 3713 and you are welcome to see me at any time to discuss the subjects of this class. Email is another good way to interact with me: phone is not a good way (I rarely answer the phone).

Grades

The various graded aspects of the class are not there to trip you up. They are there to focus your attention on the key points of the class. The final grades will be weighted between homeworks, in-class exams, discussion section quizzes and the final exam as

Homeworks	20% (best 5 of 6)
Discussion section quiz	20% (best 7 of 9)
In-class exams (2)	20% (multiple choice)
Final exam	40% (multiple choice)

The answer to the inevitable question “do you grade on a curve?” is “I think so”. You can assume that if you make a reasonable effort you will get a reasonable response in terms of the grades, and you will know from the homeworks and exams how you are doing as the class progresses, so there should be no surprises. If you want to get an "A" you can by working at it.

Practical Details

PDFs of the lectures will be posted on-line but, since PDFs cannot show movies or animations and have no sound, these may not be an effective substitute for attending the class.

There are no make-up exams and late homeworks will not be graded because these things place a disproportionate burden on the TAs. Instead, you may miss one homework and two discussion section quizzes without penalty.

No electronic devices may be used during the exams.

Date	N	Subject	Chapter	Notes
APRIL				
Tu Apr 3	1	Intro, science, numbers & units	1, 3.4, 3.5	
Th Apr 5	2	Solar system tour	7	
Tu Apr 10	3	Basics of gravity & orbits	4	
Th Apr 12	4	Origin of Solar System I	8	
Tu Apr 17	5	The Good, The Bad & The Ugly	12	Astrobio
Th Apr 19	6	In-Class Quiz		Astrobio
Tu Apr 24	7	Origin of Solar System 2	8	
Th Apr 26	8	Rocky Planets 1: impacts/Moon/ geology	9	
MAY				
Tu May 01	9	Rocky Planets 2: atmospheres	10	
Th May 03	10	Gas Giants 1: nature	11	
Tu May 08	11	Gas Giants 2: formation	11	
Th May 10	12	Ice Worlds 1: tour	11.2	
Tu May 15	13	Ice Worlds 2: formation	11.2	
Th May 17	14	In-class Quiz		ACM
Tu May 22	15	Asteroids & Meteorites	12.1	
Th May 24	16	Comets	12.2, 12.3	
Tu May 29	17	Satellites, regular & irregular	11.2	

Date	N	Subject	Chapter	Notes
JUNE				
Tu Jun 05	18	Life in the Solar System	24	Transit of Venus
Th Jun 07	19	Extrasolar Planets & Life	24	
Tu Jun 10	20	Summary Class		
Jun 14		Final Exam, 8:00am-11am		