

# Astronomy 118

## Physics of Planetary Systems

Professor Jonathan Fortney

Winter Quarter 2012

MWF: 2:00-3:10 p.m., Earth & Marine Sciences B210

This class is designed primarily for physics, astrophysics, and earth & planetary science students in their junior or senior year. Two years of college physics and multivariable calculus are highly recommended as preparation.

The course will take an “astronomical” point of view of the science of planetary systems, with less of a focus on the specifics of our solar system. The course is not really an astrobiology class either, but will focus on planets as astronomical objects. This is an exciting time to study planetary systems, as we are now in the midst of a dramatic transformation in our understanding of how our planetary system fits within the galaxy.

**Main Topics:** Star formation, planet formation, exoplanet detection, statistics of known systems, planetary atmospheres, planetary interiors, and habitability. Mostly we will focus on Chapters 1-4, 6-9 in our textbook (see below), and I will also occasionally give out supplementary material to read. You will also do some writing, based on articles I give you to read.

In addition to the midterm, final, and six homework assignments, a quarter project will be required, which is a 10-page review of a current topic in extrasolar or solar system planets.

**Final Exam:** Friday, March 21, 4:00–7:00 p.m.

**Required Textbook:** Caleb Scharf, *Extrasolar Planets and Astrobiology*, 2008.

### Contact info for Professor Fortney:

Class Web: [www.ucolick.org/~jfortney/118.htm](http://www.ucolick.org/~jfortney/118.htm)

Office hours: Thursdays, 2-3:30 p.m., ISB 275, or by appointment

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### Course Requirements and Grade Fraction:

1 in-class midterm, open notes/book	20%
1 final exam, open notes/book	30%
Quarter project	15%
6 homework sets	35%

### Other Issues:

This class will be graded on a curve, so I cannot estimate what percentage you will need for a given grade. Do your best. I will let you know where you stand as the class progresses.

It is OK to work together on homework problems, but you must write up and turn in your own work.

Please see the “Official University Policy on Academic Integrity for Undergraduate Students” at: [http://undergraduate.ucsc.edu/acd\\_integrity/index.html](http://undergraduate.ucsc.edu/acd_integrity/index.html)

## Schedule of Class

Week	Day			
1	1	M	6-Jan	
	2	W	8-Jan	
	3	F	10-Jan	
2	4	M	13-Jan	
	5	W	15-Jan	HW1
	6	F	17-Jan	
3	Holiday	M	20-Jan	
	7	W	22-Jan	
	8	F	24-Jan	
4	9	M	27-Jan	HW2
	10	W	29-Jan	
	11	F	31-Jan	
5	12	M	3-Feb	
	13	W	5-Feb	HW3
	14	F	7-Feb	
6	15	M	10-Feb	<i>Midterm</i>
	16	W	12-Feb	
	17	F	14-Feb	
7	Holiday	M	17-Feb	
	18	W	19-Feb	
	19	F	21-Feb	HW4
8	20	M	24-Feb	
	21	W	26-Feb	
	22	F	28-Feb	
9	23	M	3-Mar	HW5
	24	W	5-Mar	
	25	F	7-Mar	
10	26	M	10-Mar	
	27	W	12-Mar	
	28	F	14-Mar	HW6
11	29	M	17-Mar	

Final: Friday, March 21, 4:00–7:00 p.m.