

# Course Syllabus: W12 The Planets

## Course Information

### Course Number

Astronomy W12 / Earth and Planetary Science W12

### Course Name

The Planets

### Course Instructor

Prof. Burkhard Militzer

### Graduate Student Instructors (GSI)

TBA

You'll find contact information and details on getting help in the Support page (click on the **Course Information and Support** link on the Modules page).

### Course Schedule

Please click on the **Course Schedule** link under the Modules tab for an overview of due dates and projects. Use the **Calendar**, available from the Calendar tab, to create your own class schedule and manage your coursework and assignments.

### Course Credits

Three (3) Units

### Prerequisites

This course has no prerequisites.

### Course Description

A tour of the mysteries and inner workings of our solar system. What are planets made of? Why do they orbit the sun the way they do? How do planets form, and what are they made of? Why do some bizarre moons have oceans, volcanoes, and ice floes? What makes the Earth hospitable for life? Is the Earth a common type of planet or some cosmic quirk? This course will introduce basic physics, chemistry, and math to understand planets, moons, rings, comets, asteroids, atmospheres, and oceans. Understanding other worlds will help us save our own planet and help us understand our place in the universe.

## Objectives

By successfully completing this course, you will be able to

- Describe the contents of our Solar System, including planets, major moons, asteroids, and comets, and identify their basic interior constitutions
- Explain the reasons for phases of the moon, solar and lunar eclipses, and the origin of the motion of the sun, moon, stars, and planets in the night sky
- Identify the ideas behind basic equations of forces, energy, momentum, and gravity
- Reflect upon the nature of light, wavelengths, frequencies, and how light is generated and absorbed by atoms and molecules
- Explain the structure of Jupiter and Saturn and their rings and moons, especially the four large moons of Jupiter and the largest moon of Saturn
- Compare the four rocky planets and describe their interior structure, plate tectonics, volcanism, and weathering
- Describe the structure of planet atmospheres and explain the greenhouse effect and its relation to global warming
- Explain asteroids, comets, and the reason for Pluto's demotion
- Describe the nature of the Sun, its energy generation, and its magnetic spots
- Recognize the form and detection of planetary systems around other stars
- Define the manner of life on Earth and the possibility of life on other worlds

## Required Textbook and Homework

### Required Text

We will be using the following textbook in combination with an online homework system MasteringAstronomy:

*The Cosmic Perspective: The Solar System* with MasteringAstronomy, 6th edition  
Jeffrey O. Bennett, University of Colorado, Boulder Megan Donahue, Michigan State University Nicholas Schneider, University of Colorado, Boulder Mark Voit, Michigan State University  
ISBN-10: 0321642678  
ISBN-13: 9780321642677  
Publisher: Addison-Wesley  
Copyright: 2010  
Format: Paper Package;  
Published: 12/21/2009

### Required Online Homework

MasteringAstronomy is available at [www.masteringastronomy.com](http://www.masteringastronomy.com).

The majority of the course homework will be completed with MasteringAstronomy. You will need an access code to use MasteringAstronomy. New books come with an access code. If you have a used book, you can purchase access to MasteringAstronomy online. Alternatively, you can purchase an electronic version of the book and access to MasteringAstronomy. Additionally, you will need a course ID. See the course announcements for this classroom's course ID.

## Communication and Support

We want to hear from you if you have any questions or concerns, and we have provided a number of ways to communicate with your instructor/GSIs and fellow students. We encourage you to use the forums for any matters in which other students might also be interested. If the matter is more personal or specific to your situation, visit the Support page for detailed contact information and advise about whom to contact.

## Questions and Answers Forum

Please use this forum to post questions about the course material, assignments, the learning management system or online homework. **The instructor/GSIs will monitor this forum**, but you should also feel free to post answers to help other students. This helps to create a general FAQ so that all students in the course may benefit from the exchange.

## Course Mail

We will send out reminders and other mass mail through Course Mail, so make sure to check your Course Mailbox for messages from the instructor/GSIs. You can access course mail on the course home page, as well as from the Communicate tab.

## Office Hours

The GSIs will offer virtual office hours at set times to communicate in real time via chat with students. These chats are logged, so if you cannot attend the office hours, you can review the conversation later. You can access the chats by clicking on the Communicate tab.

## One-on-One Conferencing

You can also arrange for a one-on-one conference with your Instructor/GSI. These conferences can occur in person, on the phone or over Skype. See the Support page about contact information.

## Assignments

This course is divided into eight *modules* with a series of assignments or learning activities. The schedule of assignments is detailed in the Course Schedule. You will be expected to fully participate in the course including daily reading; watching the multimedia lecture presentations; completing weekly homework assignments on MasteringAstronomy; submitting three additional written homeworks; interacting with your fellow students, graduate student instructors, and professors in the discussion forums; taking an online midterm examination; and completing the final examination.

## Modules

Each module contains a list of Learning Outcomes for the module. Your assignments reflect the learning activities to perform to reach those outcomes. At the beginning of each module, you will also find a short introductory video that explains the themes and topics covered in that week's module.

## Readings

Each module includes specific reading assignments from the textbook.

## Lectures

Recorded lectures support your readings and assignments but also contain additional material that may be included in the exams. Each lecture has been broken into sections. You are expected to take notes while viewing the lectures as you would in a regular classroom. You may also choose to print a handout of the slides that are provided in PDF format. Due to the inclusion of numerous images, videos, and animations, many of the lectures are considerable in file size and may take some time to download. For those of you with limited bandwidth, we strongly encourage you to download the longer lectures before attempting to view them.

In addition to our recorded presentations by Profs. Militzer and Marcy, you will watch three video-recorded guest lectures in Modules 4 and 7. You may be tested on the materials covered in the guest lectures also.

## **Demonstration Videos**

We have made an attempt to illustrate important concepts through demonstrative videos and animations. While most are included directly within the lecture, we have filmed some specific demonstrations that will be watched separately. These will be listed on the lecture pages.

## **Homework Assignments**

In every module you will find assigned homework at MasteringAstronomy. You must login to MasteringAstronomy weekly (at least) to do the homework assignments.

Additionally, there are written assignments due in Modules 2, 5, and 7. Detailed instructions for each of these assignments are included in the module in which they are due. You will submit your written assignments to the appropriate drop box provided at the end of the module. For an at-a-glance view of due dates and requirements, refer to the **Course Schedule** under the Modules tab.

## **Assigned Team Discussions**

On the front page of your online classroom, you should pick a team for assigned discussion. In each module we ask you to write reflectively and critically about a discussion topic. Your posts and responses are considered your class participation, as well as your opportunity for exchanging views and sharing experience with all the other students in the course. While the Discussion Assignments forums are asynchronous (not real time), you will be expected to make an initial posting by end of day Wednesday (PDT) and to respond to at least two or more other students' postings by end of day Sunday. Your discussion contributions will be part of your course grade (see below). Failure to post by the due dates will result in 0 pts for that week's discussion.

## **Midterm Exam**

You will complete a midterm exam in Module 4 within the learning management system. The exam covers the content in Modules 1-4 and contains essay and multiple-choice questions. A sample midterm exam will be provided for you to practice. The exam has a time limit, and you must take it within the prescribed 24-hour window. See the Course Schedule for the date. While the exam is considered an open-book examination, it cannot be taken collaboratively with other students. The learning management system keeps detailed records of logins and submissions. Please review the ethics guideline for online courses provided at the beginning of this class and the UC Berkeley code of conduct.

## **Final Exam**

You will take a two-hour, closed-book final exam on paper. There will be no make-up exam. Students must take the final examination in person or possibly arrange to have the examination proctored if you cannot come to campus. Please contact your Online Learning Support Specialist at [summer\\_online\\_support@berkeley.edu](mailto:summer_online_support@berkeley.edu) to make alternative arrangements. Off-site proctors must be approved prior to July 17, 2015.

The on-campus final examination will be given on **August 12, 2015 6-8pm and location TBA**. *If you miss taking the final or try to take it at in a manner for which you have not received permission, you will fail this class automatically.*

The exam will be a combination of multiple-choice and essay questions covering topics from course readings, homework, and lectures including the guest lectures.

## Grading and Evaluation

Your course grade will be calculated as follows:

|                                       |     |
|---------------------------------------|-----|
| Discussion Assignments                | 15% |
| MasteringAstronomy & Written Homework | 30% |
| Midterm Exam                          | 15% |
| Final Exam                            | 40% |

You must receive a score of at least 50% in each component in order to pass the course. All of your assignments will be graded on a 100-point scale. Discussion postings will be graded on a 10 point scale.

## Grading Rubric

Your discussion assignments will be graded for accuracy and for quality of response. The rubric below gives you an idea of levels of competence.

|                                   | <b>Poor</b>  | <b>Needs Improvement</b>   | <b>Meets Expectations</b>  | <b>Exceptional</b>  |
|-----------------------------------|--|--|--|---|
| <b>Content</b>                    | Poor writing style with little or no specific details, no evidence of having studied the material, and/or off topic. | Adequately written; some points elaborated but with minimal use of concepts from the material. | Well written, most points elaborated with clear and detailed information that supports thoughts and ideas and uses concepts from the material. | Well written, fully elaborates points. Clear and detailed information supports thoughts and ideas and shows full acquisition of concepts from the material. |
| <b>Organization and Mechanics</b> | Little or no structure present. Grammatical errors   | Organization present but awkward. Some   | Good organization with few statements out of   | Clearly organized and remains focused. Few or   |

|                      |  |  |  |   |
|----------------------|--|--|--|---|
|                      | interfere with comprehension.  | grammatical errors present.  | place. Minor grammatical errors.   | no grammatical errors.  |
| <b>Participation</b> | Minimal posts in number or length. Posts show little or no reflection on the topics or previous posts. | Posts address the topic but consist mostly of a rote repetition of the study materials. Little or no reflection on previous posts. | Posts address the topic with reflection. Many responses build on previous posts. | Posts show a genuine interest in contributing to the overall life of the forum. |

Your grades for your written assignments and midterm examinations are recorded in the course gradebook, and you can see them online. Your final grade, however, will not appear online. **Your final letter grade will be mailed to you by the registrar's office.** Final grades are assigned according to the following percentages.

|                     |        |       |       |       |       |       |       |       |       |       |       |      |
|---------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| <b>Letter Grade</b> | A      | A-    | B+    | B     | B-    | C+    | C     | C-    | D+    | D     | D-    | F    |
| <b>Percentage</b>   | 100-94 | 93-90 | 89-86 | 85-83 | 82-80 | 79-76 | 75-73 | 72-70 | 69-66 | 65-63 | 62-60 | < 60 |

## Policies

### Late Work

All assignments are due by their listed due date and time typically at the end of the day (see the **Course Schedule**), except for the last module when some earlier times are indicated. All due dates and times are given in Pacific Daylight Time (PDT). We will subtract 20% for every day that an assignment is late. Any unsubmitted assignments will receive zero points. You will receive zero points for any late posts/responses to the Discussions Forum. You must take the midterm within the allowed 24-hour period or you will receive zero points.

### Students with Disabilities

We have provided text transcripts of all of the recorded lessons at the end of each module. The TXT files are in a zipped folder for download.

Any students requiring course accommodations due to a physical, emotional, or learning disability must contact the Disabled Students' Program (DSP), <http://dsp.berkeley.edu/services.html>, at the beginning of the course with their request. The DSP will review all requests on an individual basis. Please have your Disabled Student Program Specialist send the instructor prior to the course start date.

### Ethics and Academic Integrity

In order to access the content of the course, you must review and agree to the statement on Academic Integrity available at the top of the course.

You are encouraged to discuss the topics covered in this class with your fellow students. However, it is assumed that all work you submit for this class is original and done independently. This includes the MasteringAstronomy and written homework, the midterm, online discussions, as well as the final exam.

*Examples*

OK: Listening to lectures with another student.

Not OK: Working together simultaneously with another student when doing the MasteringAstronomy homework.

OK: Discussing online or offline the discussion question topic.

Not OK: Writing a piece together and submitting the same or slightly paraphrased text.

OK: Studying for the midterm together.

Not OK: Taking the midterm with another student and discussing the answers to the questions.

OK: Researching the web or Googling a topic for a written assignment or discussion question.

Not OK: Copying or paraphrasing text from a website without citing the source.

When in doubt, ask a GSI or the professor. Unethical behavior in this class will result in an F in the course and you will be reported to the Office of Student Conduct.

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