

# The Planets, ASTRON W12

*Three (3) semester credits*

## 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? 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.

## Prerequisites

There are no prior course requirements.

## Course Objectives

After 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

## Instructor Information, Contact, Office Hours, & Communication

### Course Instructor

Prof. Burkhard Militzer

### Graduate Student Instructors (GSIs)

While the instructor will interact with the whole class and will oversee all activities and grading, as well as being available to resolve any issues that may arise, **the GSIs will be your main point of contact.** Your GSIs are responsible for assisting you directly with your questions about assignments and course requirements, as outlined in the Assignments and Calendar. The GSIs will also facilitate ongoing discussion and interaction with you on major topics in each module.

- Elan Lavie
- Austin Mcdowell

### Office Hours

The GSIs will offer virtual office hours at set times to communicate in real time with students. These sessions are logged, so if you cannot attend the office hours, you can review the conversation later. You can access the office hours through the left navigation.

Office hour attendance is optional but students may receive an extra 10 points (50% of one week's discussion grade) for making a meaningful contribution to the conversation in any office hour during weeks 1 through 3. The GSI decides what constitutes a meaningful contribution. During weeks 4-7, students may receive a second set of 10 points for such a contribution.

For an overview of office hours' times, visit the Office Hours link in the left-hand navigation menu.

## Course Mail

Make sure to check the Course Mail for messages from the instructor. You can access course email within the Learning Management System by clicking on the Inbox link on the Corner Help toolbar (see also [Canvas Overview Video](#)) or choose to have your course mail forwarded to your personal email account or your cell phone.

## Question & Answer 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.

## 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, through the online office hours tool or over Skype. See the Support page about contact information.

## Course Materials and Technical Requirements

### Required Materials

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

*The Cosmic Perspective: The Solar System with MasteringAstronomy*, 7th 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: 0321839501  
ISBN-13: 978-0321839503  
Publisher: Addison-Wesley  
Copyright: 2014

Format: Paper Package;  
Published: 1/10/2013

## 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.

**VERY IMPORTANT:** Please read the accompanying PDF about MasteringAstronomy Student Registration before purchasing your textbook for the semester.

You are free to purchase your textbooks from any vendor. Please be sure to thoroughly review the return policies before making a purchasing decision as UC Berkeley does not reimburse students for course materials in the event of a textbook change or an unexpected cancellation or rescheduled course section.

## Technical Requirements

This course is built on a Learning Management system (LMS) called Canvas and you will need to meet these [computer specifications to participate within this online platform](#).

### Optional

Canvas allows you to record audio or video files of yourself and upload them in the course. Although doing so is not required for any of the activities, using these features will enhance your engagement in the course. If you would like to use these features, you will need to have a webcam and a microphone installed on your computer.

### Technical Support

If you are having technical difficulties please alert one of the GSIs immediately. However, understand that neither the GSIs, nor the

professor can assist you with technical problems. You must call or email tech support and make sure you resolve any issues immediately.

*In your course, click on the "Help" button on the bottom left of the global navigation menu. Be sure to document (save emails and transaction numbers) for all interactions with tech support.*

**Extensions and late submissions will not be accepted due to "technical difficulties."**

## Learning Activities

### VERY IMPORTANT

You won't be able to access your course material until you read and make your pledge to Academic Integrity in bCourses.

### Course Activities

You are expected to fully participate in all the course activities described here.

1. Read the assigned textbook pages
2. Watch and listen to the lecture presentations
3. Read web-based announcements and postings assign during the course
4. Compose and post assigned responses to lectures and readings
5. Complete the midterm exam and final exam
6. Complete writing assignments

### Sections

For grading purposes, each of you has been assigned to one of the course GSIs and placed within his/her section. Your particular GSI will grade all of your work, as well as that of your section-mates, and engage with you in the course discussions. You can see whose section you've been placed in by exploring the "Section" column within the "People" page or by examining your discussion group's title, which includes your GSI's name.

### Modules

A module is a grouping of topics related to one area of study, typically with readings, lectures and various kinds of assignments. Each module

contains a list of Learning Outcomes for the module. Your assignments reflect the learning activities to perform to reach those outcomes. For an at-a-glance view of due dates and projects, refer to the course **Calendar**.

## **Reading Assignments**

Each module includes specific reading assignments from the textbook.

## **Multimedia 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 recommend you to download the longer lectures before attempting to view them.

## **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 within each of those modules.

## **Discussion Forums**

## **Weekly Discussion Forums**

Each module contains a group discussion in which we ask you to write reflectively and critically about the discussion topic. Your posts and responses are considered your class participation and represent a unique opportunity for you to exchange views with your group-mates, share experiences and resources, and ensure your understanding of the course material.

Discussion groups have been pre-assigned and include other members of your GSI section. When you navigate to a discussion forum, you will automatically be taken to your group's instance of that discussion and to your group's space within the course. When finished with the discussion, you will need to navigate from your group space back to the main course space in order to continue participating in other aspects of the course.

While the Discussion Forum are asynchronous (no exchange of postings is expected in real time), you will be expected to submit one initial, longer posting by 5:00 pm Wednesday (PDT) and to respond to two or more other students' postings by 5:00 pm Friday. However, a continued participation throughout the remainder of the week is highly encouraged and your overall engagement will matter for your discussion grade. During the last week of the course, these deadlines will be different. See the instructions within each discussion forum for further guidelines.

## **Questions and Answers Forum**

Please use this forum to post questions about the course or topics being studied. The questions will be answered in the forum by the course instructor or GSIs. This way, all students benefit from seeing the answers. This is the preferred place to ask and get answers to questions that are likely to be of general interest.

## **Midterm Exam**

You will complete a midterm exam in Module 4. The exam covers the content in Modules 1-3 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 Calendar 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 either take the final exam in person on campus or arrange to take it with a proctor elsewhere. In the latter case, you need to submit a proctor application prior to July 15th, 2017. Review the Proctor Info on the left navigation menu.

This year's final exam will be held on August 9th from 6-8 p.m. on campus. The location will be announced. *If you miss taking the final or try to take it in a manner for which you have not received permission, you will fail this class.*

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

## Reminder: Your Course End Date

Your course will end on August 11, 2017. As you work through the course, please keep the end date in mind, and if you want to save any commentary or assignments for future reference, please make sure to print or copy/paste those materials before your access ends.

## Grading and Course Policies

**Your final course grade will be calculated as follows:**

Category	Percentage of Grade
Mastering Astronomy and Written Homework	30%
Discussion Assignments	15%
Midterm Exam	15%
Final Exam	40%

### Table 1: Final Grade Percentages

**Note:** You must receive a score of at least 50% in each component in order to pass the course. A passing grade on the final is required to pass the course.

It is important to note that not all components are graded online and included in the online course grade book. Because of this, the online course grade book will not display your overall course grade at any given time or your final grade. It should simply be used to assess your performance on the components that are included within it: the discussions, written assignments and midterm exam. Your final letter grade will be mailed to you by the registrar's office.

## Course Policies

### Promptness

All assignments are due by their listed due date and time (see the **Calendar**), 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. **No late assignments will be accepted during the last week of this course**, and any un-submitted 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.

Further, each online activity must be submitted through the course website by the due date. Fax or mail submission will not be accepted. Students who wait until the final hours prior to a submission deadline risk having problems with their ISP, hardware, software, or various other site access difficulties. Therefore, it is advisable to submit assignments and tests through the course website early. The multiple days allowed for submission are to accommodate the busy schedules of working professionals, not to accommodate procrastination. Students should plan accordingly and get into the habit of checking the course website several times each week, and submitting and posting early.

### Honor Code

The student community at UC Berkeley has adopted the following Honor Code: "As a member of the UC Berkeley community, I act with honesty, integrity, and respect for others." The expectation is that you will adhere to this code.

## **Collaboration and Independence**

Reviewing lecture and reading materials and studying for exams can be enjoyable and enriching things to do with fellow students. This is recommended. However, unless otherwise instructed, homework assignments and the online exam are to be completed independently and materials submitted as homework should be the result of one's own independent work.

## **Cheating**

A good lifetime strategy is always to act in such a way that no one would ever imagine that you would even consider cheating. Anyone caught cheating on a quiz or exam in this course will receive a failing grade in the course and will also be reported to the University Center for Student Conduct. Exams are to be completed without the assistance of other people, and without reference to texts, notes, and other materials. The expectation is that you will be honest in the taking of exams.

## **Plagiarism**

To copy text or ideas from another source without appropriate reference is plagiarism and will result in a failing grade for your assignment and usually further disciplinary action. For additional information on plagiarism and how to avoid it, explore the resources linked below:

[UC Berkeley Library Citation Page, Plagiarism Section](#)

[GSI Guide for Preventing Plagiarism](#)

## **Academic Integrity and Ethics**

Cheating on exams and plagiarism are two common examples of dishonest, unethical behavior. Honesty and integrity are of great importance in all facets of life. They help to build a sense of self-confidence, and are key to building trust within relationships, whether

personal or professional. There is no tolerance for dishonesty in the academic world, for it undermines what we are dedicated to doing - furthering knowledge for the benefit of humanity.

## **Incomplete Course Grade**

Students who have substantially completed the course but for serious extenuating circumstances, are unable to complete the final exam, may request an Incomplete grade. This request must be submitted in writing or by email to the GSI and course instructor. You must provide verifiable documentation for the seriousness of the extenuating circumstances. According to the policy of the college, Incomplete grades must be made up within the first three weeks of the next semester.

## **Students with Disabilities**

Any students requiring course accommodations due to a physical, emotional, or learning disability must contact the [Disabled Students' Program \(DSP\)](#). They will review all requests on an individual basis.

- Request your Disabled Student Program Specialist to send the instructor a formal request before the official course start date by email
- In addition, notify the instructor and your Online Learning Support Specialist, which accommodations you would like to use.
  - Your Online Learning Support Specialist can be reached by emailing [summer\\_online\\_support@berkeley.edu](mailto:summer_online_support@berkeley.edu)

## **End of Course Evaluation**

Before your course end date, please take a few minutes to participate in our Course Evaluation to share your opinions about this course. You will be receiving the Course Evaluation via email. The evaluation does not request any personal information, and your responses will remain strictly confidential. You may only take the evaluation once. It will close August 8th, 2017.

## **Course End Date**

Your access to the online classroom will expire on Friday, August 11<sup>th</sup>, 2017 which is indicated in the initial e-mail you received when you enrolled.