

# ASTRO W12 – The Planets

## Syllabus 2014

### 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.

### Course Credits

Three (3) semester credits.

### 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

## Instructor Information, Contact, Office Hours & Communication

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.

### 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 immediate contact. Your GSIs are responsible for assisting you directly with your questions about assignments and course requirements, as outlined in the calendar. The GSIs will also facilitate ongoing discussion and interaction with you on major topics in each module.

Pauline Arriaga

Dylan Bland

### 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 (equivalent 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.

Office hours are optional; no points are awarded for participation. For an overview of office hours times, visit the Office Hours link in the left-hand navigation menu.

### 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.

### 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.

## Textbook & Textbook Commentary

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). (Links to an external site.)

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 [this document](#)   before purchasing your textbook for the semester.

### Learning Activities

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

This course is designed to provide the student with a survey of planetary and solar system astronomy . A variety of learning activities are designed to accommodate diverse learning styles and build a community of learners. Learning activities for this course include the following:

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

### VERY IMPORTANT

You won't be able to access your course material until you read and make your pledge to Academic Integrity. Click the button below to navigate to and complete the Academic Integrity pledge, found in the Academic Integrity module.

## Academic Integrity Module

### Sections

For grading purposes, each of you has been assigned to one of the two 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.

### Module

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.

### 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.

### Group Discussions

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 preassigned 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 Assignments forums are asynchronous (not real time), you will be expected to make an initial posting by 5:00 pm Wednesday (PDT) and to respond to at least two or more other students' postings by 5:00 pm Friday; continued participation throughout the remainder of the week is highly encouraged. 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 can not 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 can not come to campus. Review the Proctor Info on the left navigation menu. Off-site proctor applications must be submitted prior to July 18<sup>th</sup>, 2014.

This year's final exam will held on August 13 from 6-8pm in **2 LeConte Hall** near the campanile on campus. *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.

## Discussion Participation Criteria

### Initial Post

#### Initial Posts:

- Initial posts are worth up to 20 points.
- Post your initial response to the discussion board by 5 p.m. Wednesday.

- Your initial posts should feature an original, thoughtful response to the discussion prompt, drawing on the concepts and terminology you've learned in this course as well as from outside research and investigations.
- Please begin your post with a short title sentence/paragraph so your classmates can, at a glance, see what you discussed.
- For a top-scored post, suggested length is roughly 350 words, minimum. See the rubric below for more information on discussion score.
- We encourage you to cite outside sources to support your arguments. Please mark such citations clearly and use post field's link function to reference online sources.
- Note that you will be unable to view your group member's posts until you've created an initial post of your own.

### **To post, follow these steps:**

1. In the text field marked "Reply", located beneath the discussion prompt, type your answers/reflections.
2. To include an image *within* your post, use the post field's "Embed Image" feature (tree icon to the left of the pi symbol). You can embed multiple images within a post.
3. To attach a file *to* your post, click the paperclip icon and "Attach" in the post's lower-left corner.
  - You can only attach one file to a post. To get around this and attach multiple files, finalize your initial post as directed below, then create a reply post to that post and attach another file within it. Repeat this process for each additional attached file.
4. Click the "Post Reply" button to finalize and submit your post.

## **Reply Posts**

### **Reply Posts:**

- Your cumulative reply participation is worth up to 15 points.
- Read your fellow group members' posts and respond to at least two by 5 p.m. Friday. Ask your fellow students questions, point out new possibilities and don't hesitate to go beyond the original discussion assignment. Try to initiate engaging conversations as you do in real life.
- Though only two reply posts are formally required, you are highly encouraged to actively contribute to the discussion up until 5 p.m. Sunday.
- Reply posts should feature a thoughtful continuation of the discussion: "I agree" or "good point" are not sufficient responses without further, substantial elaboration.
- For a top-scored reply post, good ideas are most important. As a rough recommendation, a length of 150-250 words would be appreciated.

### **To reply, follow these steps:**

1. Click the Reply link at the bottom of the post you wish to reply to.
2. Type your answers/reflections in the text field.
3. Click the "Post Reply" button to finalize and submit your reply post.

## Response Appreciated

For our interactive discussions, we need a straightforward way to ask for a response when we reply to someone's post. So, your GSIs and professor might conclude a reply post with the capitalized words, "RESPONSE APPRECIATED." You may also use this tool when replying to your fellow classmates' posts.

**Until the Sunday 5 p.m. deadline, please check regularly if someone has replied to you with "RESPONSE APPRECIATED"; if someone has, we expect that you reply within 24-36 hours.**

## Rubric for Evaluating and Grading Discussion Posts

Your discussion assignments will be graded on the satisfaction of a few minimal requirements (see below) as well as on your overall participation within the discussion (i.e. completing the minimal requirements will not ensure full credit). The suggestions below offer advice on how to ensure the highest possible score while the rubric further down gives you an idea of how your participation will be evaluated.

### Formal requirements:

- Initial responses posted by 5 p.m. Wednesday
- A minimum of two peer responses posted by 5 p.m. Friday
- Check until 5 p.m. Sunday for "RESPONSE APPRECIATED" replies to your posts and reply accordingly.

### Requirements for full credit for reply posts:

- Participate early and often.
- Check, and contribute to, the discussion forum on at least three separate occasions throughout the week.
- Engage beyond the minimum of two reply posts requirement.
- Engage beyond the Friday reply post deadline.
- Engage others with the "RESPONSE APPRECIATED" option
- Raise new topics others may find interesting
- Share resources you've found through your own interests, explorations and research (e.g. articles, podcasts, websites, etc.).

	Poor	Needs Improvement	Meets Expectations	Exceptional
Content	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.
Organization and Mechanics	Little or no structure present. Grammatical errors interfere with comprehension.	Organization present but awkward. Some grammatical errors present.	Good organization with few statements out of place. Minor grammatical errors.	Clearly organized and remains focused. Few or no grammatical errors.
Participation	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 or previous posts. Little or no reflection on previous posts.	Posts address the topic with reflection. Many responses build on previous posts and add to overall discussion. Engages others in meaningful conversations.	Posts show a genuine interest in contributing to the overall life of the forum. Contributes beyond minimal post number requirement. Raises new topics that others find worth discussing further.

## Grading

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.

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 nor your final grade and instead, 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. Final grades are assigned according to the following percentages.

## 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.



	Poor	Needs Improvement	Meets Expectations	Exceptional
<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 interfere with comprehension.	Organization present but awkward. Some grammatical errors present.	Good organization with few statements out of place. Minor grammatical errors.	Clearly organized and remains focused. Few or 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.

Again, 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 nor your final grade and instead, 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. Final grades are assigned according to the following percentages.

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
Percentage	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 (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 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.

## Student 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>. The DSP will review all requests on an individual basis. Please have your Disabled Student Program Specialist send the instructor a formal request **before** the course start date by email. In addition, notify your Online Program Coordinator prior to the course start date.

## 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 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.

## End of Course Evaluation

Before your course end date, please take a few minutes to participate in our End of Course Evaluation to share your opinions about this course. The evaluation does not request any personal information, and your responses will remain strictly confidential. To access the evaluation, please select the "Course End Evaluation" link in the left navigation menu. The evaluation will be available starting on June 19th. You may only take the evaluation once.