Syllabus
Astronomy-110
Survey of Astronomy

Instructor Contact Details

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Required Material

*The Essential Cosmic Perspective*, Bennett (comes with bundled material at UH Manoa bookstore)
*MasteringAstronomy.com access kit* (comes bundled with the textbook at the bookstore, or you can sign up on-line with your credit card)

Class Webpage

http://www.ifa.hawaii.edu/users/clhung/Astro110.html

Lecture notes and reading assignments will be posted on the webpage before each lecture. Critical info such as exam dates and other important deadlines are available on the website. Keep it bookmarked!

Overview

Astronomy is an awe-inspiring subject that stretches the imagination to its boundaries. The sheer numbers and distances involved range from the tiny (such as the formation of new atoms and molecules within stars) to the vast edges of the universe. In this course, we will explore the universe from our own earth, sun and solar system to the Big Bang explosion 13,700,000,000
years ago! We will explore the history and the future fate of the Universe. We will learn about exotic and exciting phenomena like supermassive black holes, galaxy collisions, and the prospect of life on other planets.

The aim of this course is to give you an appreciation of the science of astronomy through the eyes of an astronomer. Instead of focusing on learning a long list of facts (that’s what google is good for), this course will focus on developing a deep conceptual understanding of astronomy that will allow you (and hopefully inspire you!) to view the sky and read about new astronomical discoveries with a new depth of understanding, appreciation and insight.

**Active Learning Environment**

This course is taught in an active learning style that is based on short lectures infused with collaborative tutorials, questions and discussions that are carried out within small groups or with the class as a whole. This active learning environment (also known as inquiry-based learning or peer-centered learning) has been proven in numerous studies in both physics and astronomy to lead to a much greater understanding of the concepts than even the most engaging traditional lecture.

For those of you new to the active learning style, the lecture-tutorials and in-class questions may seem strange or uncomfortable at first compared with the passive learning in a traditional lecture. These activities are aimed to actively engage you in the learning process through both thought and communication, and will be very similar to the types of questions that you will find on the exams. You will find that after the first few lectures, you will become more comfortable and familiar with the class style and you may find that you find the classes more satisfying and enjoyable than passive learning. You’re not alone! Students across the country have responded extremely positively to the active learning style in astronomy and physics courses.

If however, you remain uncomfortable with specific aspects of the course, please come and see me. I am more than willing to work with you to ensure that you have a valuable and enjoyable experience in this course.
Tips for doing well in class

• **Attend the lectures.** Lectures have many in-class questions, collaborative discussions and tutorials. Answers are not necessarily given in the lecture notes. Exams and homeworks are based on the lecture material. Your success in this class depends on and is enhanced by your active participation in class.

• **Come prepared.** Read the text materials and lecture notes before class. The lectures provide highlights of the text material but lectures do not replace reading the textbook, and vice versa. The lecture notes include some of the questions to be asked in class. Think about these questions. However, do not complete lecture tutorials before class because they will be completed collaboratively within allocated time periods during the class.

• **Get help early.** If you are confused by aspects of the coursework or you feel that you are are falling behind, come and see us immediately! No matter what is causing the difficulty, we are willing to work with you to help you succeed

• **Don’t procrastinate.** Start the homework assignments early. If you leave them to the last minute, you won’t be able to get help, should you need it. To avoid losing points, turn in work when it is due.

Worried about Math?

This class does not require a mathematical background. The aim of this course is to help you gain a conceptual understanding of the universe with as little math as possible. You will not be required to derive complex formulas or solve detailed equations. I use the occasional mathematical equation to illustrate an idea because mathematics gives a deeper understanding of science. You can approach mathematics as a language used to communicate ideas. To understand the vast scales of the universe, you will learn about the powers of 10, and you will encounter the occasional equation to illustrate important concepts in astronomy. You are not required to memorize these equations but you are encouraged to spend the time to understand them and why they are used.
Grading

Class Participation/Lecture Tutorials – 20%
Homework – 20%
Midterm – 30%
Final – 30%

Your letter grades will not be graded on a curve. Your classmates and you are encouraged to communicate and collaborate with them (except on exams). Like in most workplaces, collaboration and teamwork are essential for the achievement of the class as a whole.

Class Participation/Lecture Tutorials: The Active Learning environment requires class participation in group or pair discussions and tutorials. During some classes we will complete lecture tutorials. We will collect your lecture tutorial books near the end of the summer session, and these will count toward your participation grade, regardless of the correctness of answers.

Homework: Weekly homework assignments will be completed using the Mastering Astronomy website. Assignments will be available through Mastering Astronomy each Tuesday, and due by 5pm on the following Tuesday. You will have received the Mastering Astronomy access kit with your textbook package. You will need to go to the Mastering Astronomy website and sign up on the website so that you can access the homework assignments (see the Mastering Astronomy access handout attached or the class website). To receive full marks in participation, you must attempt all of your homework assignments.

Exams: There will be two exams given during the summer. The midterm will be on Friday, July 20, 2012 and will be worth 30% of your grade. The final will be on the last day of class, Friday August 10, and will only cover the material given after the midterm. Exam questions will be predominantly based on what we do in class or on the homework assignments. No late or make-up exams will be given without a doctor certificate.

Late Policy

All assignments lose 10% per day for lateness.
Expectations

- **Academic Honesty**: Your homework, exams, and in-class write-ups must be written in your own words. Don't cut and paste text from websites or from books. U. Hawaii has very strict plagiarism rules and I am required to check all assessment items for plagiarism. Plagiarism can result in you being removed from this course, suspension or expulsion from UH Manoa. In addition, putting ideas or descriptions in your own words helps you to know which areas you don't understand and helps you learn how to communicate astronomy with your peers.

- **Common courtesy guidelines**: These guidelines are self-explanatory and are for the benefit of the entire class:
  - Be on time.
  - Turn off ALL cell phones, laptops, ipods
  - Laptops are detrimental to active learning and are not allowed in this active learning class. Anyone using laptops for any reason will be asked to leave. You may take notes in class in notebooks or on printouts of the class slides. The best method of learning in this class is to listen, answer the class action questions, and review the class slides after class.
  - Be kind and respectful of your classmates and instructors.

- **Class pair and group activity guidelines**: During pair-based or group activities in class, you are expected to follow six guidelines. These guidelines are similar to expectations of behavior in meetings and team projects in the workplace.
  - **Read**: Come to class prepared to discuss the reading and homework material
  - **Risk**: Be open with your opinions and your questions. Listen to and encourage everyone’s ideas so that they can take risks too.
  - **Relax**: Don’t take criticism of your own ideas personally. Change your mind when evidence shows that you should.
  - **Respect**: Act toward your peers as you would have them act towards you. Be civil, be charitable.
  - **Reason**: Play the skeptic, but be critical of reasoning, ideas, and data, not of people. Consider the extreme cases to try to understand the principles.
Restate: Try to paraphrase another’s explanation if it is unclear to you. Try to put them together in a way that makes sense. Focus on coming to the best possible answer as a group.