

Astronomy 10

Summer 2010

Instructor

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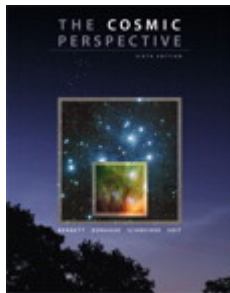
Class Times

Lecture: Mon, Tue, Wed, Thu 10-12 (150 GSPP)
Discussion Sections: Mon, Tue 2-3 (264 Evans)

Office Hours

by appointment - do not hesitate to e-mail me!

Textbook



The Cosmic Perspective 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: 0321620909

ISBN-13: 9780321620903

Publisher: Addison-Wesley

Copyright: 2010

Format: Paper Package; 832 pp

The book should be available at the university bookstore

[Buy from myPearsonStore](#) (\$138.80)

[Buy from amazon.com](#)

The [5th edition of the book](#) is also OK

The book is also on course reserves in the Physics-Astronomy Library.

Go to <http://oskicat.berkeley.edu/search/r> and enter either
Instructor "Timokhin" or Course Number "Astronomy 10"

Important: the homework will be done online with [MasteringAstronomy](#).

You will need access to this webpage to pass this class. Here are three ways:

- 1) If you purchase a book *NEW*, you will receive an access code for MasteringAstronomy packaged with the book.
- 2) If you purchase a used book (the 5th edition is ok too) without access code (whether it be online, from a friend, or from the bookstore) and need access to Mastering separately, you can do so at www.masteringastronomy.com for \$35. You will need Course ID and a valid credit card.
- 3) If you wish to purchase an eBook with your Mastering access you can also do so at www.masteringastronomy.com for \$82. Again, you will need Course ID and a valid credit card.

Course ID: MATIMOKHIN24300

Web site

http://astro.berkeley.edu/~atim/teaching/astro10_2010/index.html

Background

Astronomy 10 has no prior course requirements. It is designed with the expectation that you have had high school algebra and an understanding of basic science.

Course Description and goals

Astronomy 10 is a basic introduction to the field of astronomy. It is designed for both non-science and science majors to gain an appreciation for the wondrous and amazing Universe in which we live. The scope will be rather broad, touching on a number of subjects in physics, ancient and modern astronomy, and even recent discoveries. We will discuss everything from the workings of our local solar system to the size, age, and shape of the Universe as a whole.

The focus of the lectures will be on understanding *how* things work and the relationship between different aspects of the Universe. I will not be asking you to memorize a bunch of facts. Instead, you will be expected to learn general principles, like how larger stars are hotter, burn their fuel faster, and in fact live a shorter amount of time in comparison to smaller stars. This will give you a better appreciation of how things work, and hopefully, further develop your curiosity to understand the world around you.

The main goals of this course are that you will be able to (1) understand the scientific process and how it is used in astronomy, (2) gain an understanding of the big ideas in astronomy at a level that will allow you to read popular articles and appreciate new discoveries, (3) gain an appreciation of the scale of the Universe and your own place within it, and (4) be familiar with the star maps and planetarium software on the level of an amateur astronomer

Star Parties

I will conduct observing sessions throughout the class using a telescope here on the UC campus. Everyone is encouraged to participate in these. I will try to schedule at least two star parties over the 6 week class period. Dates will depend on weather, etc.

Course Requirements and Grading

Your final grade will be based on the following work:

- **Five homework assignments:** There will be one homework set assigned each week, assigned on Wednesday and due the following week. Late homework will be accepted only if you have made *prior arrangements* and there is a very good reason for the lateness.
- **Mini “research” paper:** This is a short course; to allow you to dig a little deeper into topics of astronomy that we may not cover, or cover only briefly, you will be asked to complete one small research paper. This will require you to form an informed opinion about a question relevant to astronomy today, and should take several hours of online or library research, reading popular astronomy or news articles. I will hand out a list of possible topics at least 2 weeks before the paper is due.
- **Exams:** We will have one in-class midterms and one final exam. The final exam will be weighted more toward the second half of the class, but there will be elements from the entire course.

Additionally, for those of you who feel that your final grade from the above described work might be less than you deserve, I will offer a possibility to pass an *optional* oral exam. During that exam I can ask you questions regarding any subject in the course; the number of questions and grading of your answers will be at my discretion. The final grade you get from the above described activities (homework, research paper, written exams) will *not be decreased*, but I can increase it basing on your activity and/or results of the optional oral exam.

Grading:

Homework	30%
Mini research paper	15%
Midterm	25%
Final	30%

Grades will be based on a percentage system according to the table below, *not* graded on a curve. You are not competing with your fellow classmates and are encouraged to collaborate with them (except on exams of course).

97% - 100 %	A+
90% - 96%	A
85% - 89%	A-
82% - 84%	B+
75% - 81%	B
70% - 74%	B-
67% - 69%	C+
60% - 66%	C
55% - 59%	C-
52% - 54%	D+
45% - 52%	D
40% - 44%	D-

If you have questions about your grade, please email me.

Collaboration: Science often requires us to work together. In doing homework and writing up mini research paper it is okay that your work together. Copying, however, will not be awarded any credit. Collaboration is of course not allowed on exams. If you have any questions about the fine line between collaborating and cheating, please come and see me.

Course Outline

This is a tentative schedule. Stay tuned for announcements in class about any changes.

1	Tue	Jul 6	Mathematical notations. Our place in the Universe	Ch. 1.1-1.2, Appendix C	
	Wed	Jul 7	Constellations, star maps, apparent motion of the sky	Ch.2.1, S1.2, from Ch.15: “The magnitude System”	
	Thu	Jul 8	Seasons, phases of the Moon, eclipses, apparent motion of planets	Ch. 2.2-2.4	
2	Mon	Jul 12	Astronomy as science	Ch. 3	
	Tue	Jul 13	Motion, energy, gravity	Ch. 4	
	Wed	Jul 14	Light and matter	Ch. 5	HW 1 due Sun Jul 18 th
	Thu	Jul 15	Telescopes	Ch. 6	
3	Mon	Jul 19	Solar System I	Ch. 7	
	Tue	Jul 20	Solar System II	Ch. 8; 10.1; 10.6; 11.1	
	Wed	Jul 21	Solar System III. Other planetary systems	Ch. 12; 13	HW 2 due Sun, Jul 25 th
	Thu	Jul 22	Midterm Exam		
4	Mon	Jul 26	Our star the Sun	Ch. 14	
	Tue	Jul 27	Star Zoo	Ch. 15	
	Wed	Jul 28	Life and death of stars I	Ch. 16-17	
	Thu	Jul 29	Life and death of stars II	Ch. 16-17	HW 3 due
5	Mon	Aug 2	Stellar graveyard: white dwarf, neutron stars, black holes	Ch. 18	
	Tue	Aug 3	Our Galaxy	Ch.19	
	Wed	Aug 4	Galaxies and expansion of the Universe	Ch. 20	HW 4 due
	Thu	Aug 5	Galaxy evolution. Quasars & Co.	Ch. 21	Paper due
6	Mon	Aug 9	Dark side of the Universe	Ch. 22	
	Tue	Aug 10	The beginning of time	Ch. 23	
	Wed	Aug 11	Review		HW 5 due
	Thu	Aug 12	Final Exam		