CHAMINADE UNIVERSITY
PHY-140: INTRODUCTION TO ASTRONOMY
COURSE SYLLABUS – FALL 2011

Instructor: Matthew Cochran
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Office: Henry Hall 7
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Course Time: Monday, Wednesday, and Friday from 11:30 to 12:20
Course Room: Ching Hall 250
Prerequisites: Concurrent enrollment in PHY-140L is assumed.
Required Text: Bennett, Donahue, Schneider, and Voit, *The Essential Cosmic Perspective,* 5th ed., Pearson, New York, 2009.
Other Materials: Calculator

COURSE DESCRIPTION:
This survey of general astronomy course is intended for students with no previous background in astronomy. The course will emphasize the tools and methods of astronomy, the solar system, the stars, and the structure of the galaxy and the universe. Emphasis is placed on conceptual, as contrasted with mathematical, comprehension.

EVALUATIONS AND GRADING SCALE:

Exam 1	15%
Exam 2	15%
Exam 3	15%
Exam 4	15%
Final	15%
Homework	15%
Presentation	10%

90%	–	100%	A
80%	–	90%	B
70%	–	80%	C
60%	–	70%	D
0%	–	60%	F

Incomplete grades (I) will be given in accordance with college regulations as outlined in the college catalog. Withdrawals (W) from the class are the responsibility of the student and deadlines are set by the college.

EXAMS:
There will be four examinations and a final as part of the requirements for the course. Tests include a combination of short answer, multiple choice, figure identification, and short essay formats. Exam questions may be drawn from readings in the textbook, lecture materials (including handouts or other supplements), homework assignments, slides, and in-class activities. Makeup exams will only be given under extenuating circumstances beyond the student's control.

HOMEWORK:
To be successful in this course, it is essential that you complete all homework assignments. Be prepared to spend three hours or more on homework every week. If you are having trouble, get help from the instructor or your classmates. Do not fall behind. Homework is due at the beginning of class. Late homework is not accepted.

PRESENTATION (more information coming later):
As a part of this course, you are required to give a presentation. You can either give it by yourself or with one other person.

Presentations from individuals should last between five and eight minutes. Presentations from groups of two should last between eight and twelve minutes. Time will be allowed for questions. You can use Power Point, the white board, or just talk. If you require other materials, let the instructor know in advance.

You can speak on anything related to astronomy that you think the class will find interesting. The only constraint is that the topic must be approved by the instructor. Here are some ideas.

Chapters 16 to 18 During the semester, we will only have time to cover the first fourteen chapters in your text. Still, the later chapters answer very interesting questions such as what is dark matter and what is the evidence for dark matter in galaxies? What are the necessities of life? Could there be life on Mars? Europa or other jovian moons? Do massive black holes really exist?

Current Research New discoveries in astronomy are made on a daily basis. Check the magazine *Astronom*y in the library or http://www.physorg.com/ for instance. There are many other sources.

Popular Culture UFOs, crop circles, and similar topics are frequently reported in the popular news. A discussion of these topics could be interesting. Do not, however, stray too far from science. The information that you present must be backed by evidence and you must describe this evidence in your talk.

History People have observed the Sun, Moon, and stars since the beginning of time. Their understand of what they observed took the form of stories and legends. You might, for example, discuss part of the history of Hawaiian, Greek, Chinese, or Native American astronomy.

ATTENDENCE:
Regular attendance is expected of all students. Read material prior to lecture. If a topic is still not clear after it has been discussed in class, ask questions. Time will be spent working through homework problems and reviewing for exams in addition to lecturing. You will work with partners in class. It is important that partners engage in discussion of their work and avoid working as isolated individuals.

COURSE OBJECTIVES:
Upon successful completion of the course, the student will be able to:

- Identify and describe all the members of our solar system.
- Identify major stars and constellations.
- Classify stars according to brightness, size, color, and distance.
- Describe the evolution of different kinds of stars.
- State characteristics of various deep sky objects.
- Construct a hierarchy of objects in the observable universe, according to size and distance.

TENTATIVE WEEKLY SCHEDULE:

Week	Date	L#	Topic	Reading	Due	Monday Lab
1	Aug 22	1	Intro;Our Place in the Universe			Lab 1: Position
	Aug 24	2	Scale of the Universe	1.1 to 1.3		
	Aug 26		**Fall Spiritual – No Class**			
2	Aug 29	3	Patterns in the Sky	2.1	**HW1**	Lab 2: Motion
	Aug 31	4	The Seasons	2.2		
	Sep 02	5	The Moon	2.3		
3	Sep 05	**H1**	**Labor Day – No Class**			**Labor Day – No Lab**
	Sep 07	6	The Planets	2.4	**HW2**	
	Sep 09	7	Review			
4	Sep 12	**E1**	**Exam 1 – Chapters 1 & 2**			Lab 3: Seasonal Stars
	Sep 14	8	Ancient Science	3.1 & 3.2		
	Sep 16	9	Copernicus; Nature of Science	3.3 & 3.4		
5	Sep 19	10	Describing Motion	4.1 & 4.2	**HW3**	Lab 4: Acceleration of Gravity
	Sep 21	11	Conservation Laws; Gravity	4.3 & 4.4		
	Sep 23	12	Light	5.1		
6	Sep 26	13	Spectra	5.2		Lab 5: Focal Length
	Sep 28	14	Telescopes	5.3	**HW4**	
	Sep 30	15	Review			
7	Oct 03	**E2**	**Exam 2 – Chapters 3 to 5**			Lab 6: Apparent and Absolute Magnitudes of Stars
	Oct 05	16	Our Solar System	6.1 to 6.3		
	Oct 07	17	Formation of Planets	6.4 & 6.5		
8	Oct 10	**H2**	**Discoverer's Day – No Class**			**Discoverer's Day – No Lab**
	Oct 12	18	Terrestrial Worlds	7.1 & 7.2	**HW5**	
	Oct 14	19	Terrestrial Worlds	7.3 to 7.5		
9	Oct 17	20	Jovian	8.1 to 8.3		Lab 7: Earth's Changing Surface
	Oct 19	21	Jovian; Asteroids	9.1 & 9.2	**HW6**	
	Oct 21	22	Comets	9.3 & 9.4		
10	Oct 24	**E3**	**Exam 3 – Chapters 6 to 9**			Lab 8: The Parsec
	Oct 26	23	Sun; Fusion in the Sun	10.1 & 10.2		
	Oct 28	24	The Sun-Earth Connection	10.3		
11	Oct 31	25	Luminosities	11.1	**HW7**	Lab 9: Parallax and Distance
	Nov 02	26	Patterns Among Stars	11.2		
	Nov 04	27	Star Clusters	11.3		
12	Nov 07	28	Star Birth; Low-Mass Stars	12.1 & 12.2	**HW8**	Lab 10: HR Diagrams
	Nov 09	29	High-Mass Stars	12.3		
	Nov 11	**H3**	**Veterans' Day – No Class**			
13	Nov 14	**E4**	**Exam 4 – Chapters 10 to 12**			Lab 11: Milky Way Scales
	Nov 16	30	Milky Way	14.1 & 14.2		
	Nov 18	31	History of the Milky Way	14.3 & 14.4		
14	Nov 21	32	Galaxies	15.1 & 15.2		Lab 12: Galaxy Classification
	Nov 23	33	Galaxy Evolution	15.3 & 15.4	**HW9**	
	Nov 25	**H4**	**Thanksgiving – No Class**			
15	Nov 28	34	Presentations			Presentations
	Nov 30	35	Presentations			
	Dec 02	36	Review			
Finals	Dec 07	**FE**	**FINAL EXAM – 11:00 to 1:00 – Cumulative**			