CHAMINADE UNIVERSITY
PHY-140: INTRODUCTION TO ASTRONOMY
COURSE SYLLABUS – SPRING 2012

Instructor: Matthew Cochran
Email Address: matthew.cochran@chaminade.edu
Office: Henry Hall 7
Office Phone: 739-8361
Course Time: Monday, Wednesday, and Friday from 1:30 to 2:20
Course Room: Henry Hall 105
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. Make-up 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.

MUSIC DEVICES AND CELLPHONES:
Unless specifically permitted by your instructor, use of music devices and cell phones is prohibited during all Natural Science and Mathematics classes at Chaminade, as it is discourteous and may lead to suspicion of academic misconduct. Students unable to comply will be asked to leave class.

ADA ACCOMODATIONS:
Students with special needs who meet criteria for the Americans with Disabilities Act (ADA) provisions must provide written documentation of the need for accommodations from CUH Counseling Center (Dr. June Yasuhara, 735-4845) by the end of the third week of classes. Failure to provide written documentation will prevent your instructor from making necessary accommodations. Please refer any questions to the Dean of Students and review procedures at:

www.chaminade.edu/student_life/sss/counseling_services.php

TENTATIVE WEEKLY SCHEDULE:

Week	Date	L#	Topic	Reading	Due	Monday Lab
1	Jan 16	**H1**	**Martin Luther King Day**			**Martin Luther King Day – No Lab**
	Jan 18	1	Intro;Our Place in the Universe			
	Jan 20	2	Scale of the Universe	1.1 to 1.3		
2	Jan 23	3	Patterns in the Sky	2.1	**HW1**	Lab 1: Position
	Jan 25	4	The Seasons	2.2		
	Jan 27	5	The Moon	2.3		
3	Jan 30	6	The Planets		**HW2**	Lab 2: Motion
	Feb 01	7	Review			
	Feb 03	**E1**	**Exam 1 – Chapters 1 & 2**			
4	Feb 06	8	Ancient Science	3.1 & 3.2		Lab 3: Seasonal Stars
	Feb 08	9	Copernicus; Nature of Science	3.3 & 3.4		
	Feb 10	10	Describing Motion	4.1 & 4.2	**HW3**	
5	Feb 13	11	Conservation Laws; Gravity	4.3 & 4.4		Lab 4: Acceleration of Gravity
	Feb 15	12	Light	5.1		
	Feb 17	13	Spectra	5.2		
6	Feb 20	**H2**	**Presidents' Day**			**Presidents' Day – No Lab**
	Feb 22	14	Telescopes	5.3	**HW4**	
	Feb 24	15	Review			
7	Feb 27	**E2**	**Exam 2 – Chapters 3 to 5**			Lab 5: Focal Length
	Feb 29	16	Our Solar System	6.1 to 6.3		
	Mar 02	17	Formation of Planets	6.4 & 6.5		
8	Mar 05	18	Terrestrial Worlds	7.1 & 7.2	**HW5**	Lab 6: Apparent and Absolute Magnitudes of Stars
	Mar 07	19	Terrestrial Worlds	7.3 to 7.5		
	Mar 09	20	Jovian	8.1 to 8.3		
9	Mar 12	21	Jovian; Asteroids	9.1 & 9.2	**HW6**	Lab 7: Earth's Changing Surface
	Mar 14	22	Comets	9.3 & 9.4		
	Mar 16	23	Review			
10	Mar 19	**E3**	**Exam 3 – Chapters 6 to 9**			Lab 8: The Parsec
	Mar 21	24	Sun; Fusion in the Sun	10.1 & 10.2		
	Mar 23	25	The Sun-Earth Connection	10.3		
–			Spring Break			
11	Apr 02	26	Luminosities	11.1	**HW7**	Lab 9: Parallax and Distance
	Apr 04	27	Patterns Among Stars	11.2		
	Apr 06	**H3**	**Good Friday**			
12	Apr 09	28	Star Clusters		**HW8**	Lab 10: HR Diagrams
	Apr 11	29	Star Birth; Low-Mass Stars	12.1 & 12.2		
	Apr 13	30	High-Mass Stars			
13	Apr 16	31	The Stellar Graveyard	13.1 & 13.2		Lab 11: Milky Way Scales
	Apr 18	32	The Stellar Graveyard	13.3 & 13.4	**HW9**	
	Apr 20	33	Review			
14	Apr 23	**E4**	**Exam 4 – Chapters 10 to 13**			Lab 12: Galaxy Classification
	Apr 25	34	Milky Way	14.1 & 14.2		
	Apr 27	35	History of the Milky Way	14.3 & 14.4		
15	Apr 30	36	Presentations			Presentations
	May 02	37	Presentations			
	May 04	38	Review			
Finals	May 08	**FE**	**FINAL EXAM – 11:00 to 1:00 – Cumulative**			