University of California, Merced
THE COSMOS
Physics 6 – Spring 2011

SYLLABUS

Lecture: Tue & Thu 12:00-01:15 pm, COB 116
Discussion: Tue 06:00-06:50 pm (02D) & 07:00-07:50 pm (03D), COB 127
Thu 06:00-06:50 pm (04D), COB 127
4 units (3 hours of lecture and 1 hour discussion)

Instructor: Prof. Wil van Breugel
Office - COB 226, wvanbreugel@ucmerced.edu, ph. 209-228-4686
Office hours: after lectures, by appointment (Tue or Thu)
Teaching Assistant: Yaquob (Jacob) Tokhi
Office – TBD, email – yafghan@ucmerced.edu
Office hours: TBD

Course Description:
This course is an introduction to astronomy and astrophysics for non- science or engineering majors. Topics include: Scientific method as illustrated by astronomical discoveries about the Cosmos; and the concepts of matter and energy; and the formation of the Universe, galaxies, stars and the Solar System. Throughout the course our connection to the Cosmos will be illustrated using new discoveries in astrophysics, astrochemistry and astrobiology.

Textbook:
THE COSMOS: ASTRONOMY IN THE NEW MILLENNIUM
Jay M. Pasachoff & Alex Filippenko
Third Edition - ISBN 0-495-01303-X
The lectures will be updated with new information that has become available since the latest, Third Edition of the textbook was published (in 2004).

Learning Objectives (instructor will):
- Introduce students to astronomy and astrophysics
- Show how the scientific method can be used to learn about things that are far away and which can only be studied through the use of instruments
- Cultivate intellectual curiosity about the origin and evolution of planets, stars, galaxies and the cosmos
- Demonstrate our close connections to the universe: we are stardust, living on a special, habitable planet, in a Solar System that we are exploring with advanced spacecraft and telescopes

Learning Outcomes (students will be able to):
- Understand the value of science in discovering our place in the cosmos
- Appreciate that, in order to advance our knowledge about the cosmos, we must employ an interdisciplinary scientific approach, using physics, chemistry and biology
- Organize and assess information from new astronomy discoveries and Solar System explorations as they become available

Procedures and Guidelines:

Lectures:
This course is straightforward but fast-paced, with nearly every lecture devoted to another chapter of the textbook and to new ideas. ***It is imperative that students come to class and read the appropriate chapters of the textbook.*** Not keeping up will put you hopelessly behind and may result in low grades. I may check whether students have read their reading assignments using brief quizzes at the beginning of each class.

Questions:
During the lecture students are expected to take notes and are asked to *write down and email me questions on topics that are unclear (**wvanbreugel@ucmerced.edu**), or use index cards that can be picked up at the beginning of class and dropped off at the end of class*. The TA or myself will address these questions, in the next discussion sections and lecture. The below 5 questions can serve as a general guide:
Reflection on learning

1. Which concepts presented in class are difficult for you?
2. What was the key concept today?
3. What else would you like to know about the topic?

Critical thinking

4. Describe a connection between today's lecture and recent news issues (science, technology, politics, economic, etc.)
5. Describe how your own personal background and thinking (cultural, ethnic, education, religion, experience, gender) may affect your interpretation of the material presented today

Lecture Schedule:
See separate document

Homework: Homework will be assigned at the end of each lecture (2x per week), to be turned in at the beginning of Tuesday class one week later (1x per week).

Discussion Sections: To be determined together with TA.

Course Requirements:

- Class participation and attendance: Will be evaluated using quizzes (lectures) and sign in sheets (sections)
- Required readings: Chapters of the text book covered in the lectures + lecture slides
- Course assignments and projects (homework): To be determined

Midterms: You will be given three midterms. The midterms will be in-class exams. No make-up exams will be given unless there are exceptional circumstances justified by the appropriate documentation. Students who have a documented reason (such as a religious observance or scheduling conflict with another exam) may request to take the midterm exam *at a different time* then the scheduled exam time.

Grading: Your learning will be assessed as follows:

15%	midterm 1
15%	midterm 2
15%	midterm 3
15%	final exam
20%	discussion section (attendance taken)
20%	homework

Exam re-grading: Midterm exams may be submitted for re-grading if the student believes that errors were made in the grading. Requests for re-grading must be made within a week of the exam being returned. Exams submitted for re-grading will be completely re-graded, so that the resulting grade may be higher or lower than the original grade.

Academic integrity: Academic honesty is a core value of the University of California and the central rule of academic honesty is that you must do your own work. While it is acceptable to work in groups to study, it is completely unacceptable to receive assistance of any kind on exams and homework. Existing policies forbid cheating on examinations, plagiarism and other forms of academic dishonesty. The current policies for UC Merced are described in the *Academic Honesty Policy* section *The Student Handbook*, which is available via the UCMCROPS site http://studentlife.ucmerced.edu/what-we-do/student-judicial-affairs

Examples of academic dishonesty include:

- receiving or providing unauthorized assistance on examinations
- using unauthorized materials during an examination
- plagiarism - using materials from sources without citations
- altering an exam and submitting it for re-grading
- fabricating data or references
- using false excuses to obtain extensions of time or to skip coursework

The ultimate success of a code of academic conduct depends largely on the degree to which the students fulfill their responsibilities towards academic integrity. These responsibilities include:

- Be honest at all times.
- Act fairly toward others. For example, do not disrupt or seek an unfair advantage over others by cheating, or by talking or allowing eyes to wander during exams.
- Take group as well as individual responsibility for honorable behavior. Collectively, as well as individually, make every effort to prevent and avoid academic misconduct, and report acts of misconduct that you witness.
- Know the rules -- ignorance is no defense. Those who violate campus rules regarding academic misconduct are subject to disciplinary sanctions, including suspension and dismissal.

General Astronomy Websites:
http://antwrp.gsfc.nasa.gov/apod/archivepix.html (Astr. Picture of the Day)
http://imagine.gsfc.nasa.gov/index.html (NASA)
http://www.space.com/ (Space Exploration)
The Astronomy Café (Ask an Astronomer)
http://www.astrosociety.org/education/astro/project_astro.html (Project Astro)
http://www.stsci.edu/astroweb/astronomy.html (Astroweb)
Astronomy & Geophysics Home Page (http://www.blackwellpublishing.com/journal.asp?ref=1366-8781&site=1)

Major Astronomical Observatory Websites:
http://chandra.harvard.edu/edu/ (Chandra X-Ray Observatory – X-ray)
http://oposite.stsci.edu/ (Hubble Space Telescope - Optical)
http://sirtf.caltech.edu/EPO/ (Spitzer Space Telescope - Infrared)
http://www.nrao.edu/level2-genpub.shtml (Very Large Array - Radio)
http://www2.keck.hawaii.edu/news/news.html (Keck Observatory - Optical)
http://www.noao.edu/education/noaoeo.html (Natl. Opt. Astr. Obs. - Optical)