PHYSICS 416: Cosmology
SPRING 2017 Syllabus

Note: the course will focus on cosmology, with the discussion of extragalactic astronomy limited to matters that directly relate to cosmology.

COURSE OVERVIEW

Cosmology, the study of the Universe, its birth and evolution, is currently experiencing a tremendous renaissance, mostly due to a plethora of new observations such as those of the Cosmic Microwave Background (CMB) by recent missions such as WMAP (NASA) and *Planck* (a joint NASA and ESA mission). This introduction to modern cosmology discusses the Big Bang, the expanding Universe and the basic cosmological parameters describing it, the dynamics of our Universe, dominated by some unspecified dark matter and dark energy, arguments for an early inflationary period, the formation of light elements in the early universe, and the wealth of information we extract from measurements of the CMB.

By the time the semester is over, you will have an up-to-date knowledge of the evolving state of affairs in cosmology, of the things we are pretty sure we understand, as well as of the open issues that arguably make cosmology the most exiting area of physics and astronomy. We will focus our efforts on understanding the concepts of cosmology, their observational foundation, their range of applicability and their limitations. Beyond the required textbook (see below), we will make use of articles from journals such as "Scientific American", and "Science", and specialized astrophysics journals, as well as of web pages from various institutes and universities. The goal of the semester will be to cover the entire Ryden textbook, in addition to any outside material.

Instructor: Dr. Eileen Meyer, E-mail: meyer@umbc.edu tel: 1-410-455-2534 office: 312

Lectures, time and place (*note different room on Fridays*):
Mondays and Wednesdays, 1:00-1:50 in Math & Psychology 010
Fridays 1:00-1:50 in Math & Psychology 012

Office Hours: Mondays and Fridays from 9:00-10:30 in my office, PHYS 312, or by appointment
Class web page: We will use Blackboard
Prerequisite: Physics 324 or Instructor Permission
Required Text: "Introduction to Cosmology" by Barbara Ryden. Cambridge University Press; 2nd edition (November 24, 2016) ISBN: 1107154839 ***(Note: Second Edition is required! Cosmology has changed a lot in 10 years)***

Academic Integrity: By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student Handbook, the Faculty Handbook, or the UMBC Policies section of the UMBC Directory.

Grading:

Final Exam (25%): An exam at the end of the course on all the course material.

Mid Term (25%): There will be only one mid-term for the course, on the Friday before Spring Break (March 17). (The final exam will put more weight on the second-half material.)

Homework (50%): A homework will be (usually) assigned weekly on Fridays, to be due the following Friday at the beginning of class (a total of approximately 11 homeworks). Solutions will not be posted until all homeworks have been turned in. See late poicy below.

<u>NOTE:</u> Clear handwriting, proper English grammar and syntax, as well as logical flow of your arguments and no missing steps are required in all exams and homeworks. *If you cannot write neatly and legibly, you will be asked to type your homeworks.*

Late Homework Policy/Missed exam policy:
10% penalty per calendar day, up to five days, after which the grade will be zero. Homework will be marked late starting at 1:05 pm on class days. Exception to this rule: NO LATE HOMEWORK will be accepted for the last homework due before the midterm or final. This is to ensure adequate time to grade the homework and return it before the test.

Except in exceptional circumstances, a missed exam will result in a failing grade.

Grading Scale:
A standard grading scale (with no curve) will be used. Thus 89.5-100 is an A, 79.5-89.4 is a B, etc.

Important dates:

Jan 30	First lecture
February 10	Last day to drop a class without a "W" grade
March 17	Mid-term Exam
March 20-24	Spring Break
May 15	Last lecture (review)
Friday, May 19	Final Exam (Math & Psychology 012 , 08:00am-10:00am)**

**Final Exam Date to be confirmed once registrar releases official Spring 2017 schedule