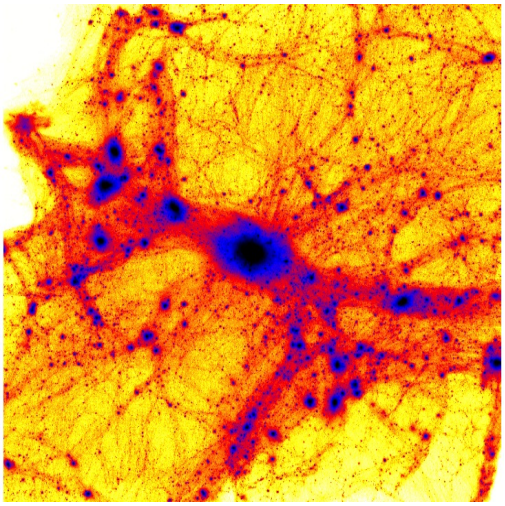
ASTR480: High Energy Astrophysics
(Spring 2016; Mushotzky)



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Office hours: Tuesday and Thursday 10-11am , or by appointment
Room: CSS 2416
Textbook: High Energy Astrophysics M. Longair
Secondary books: High Energy Astrophysics (2nd edition) by Fulvio Melia,
Introduction to High Energy Astrophysics by S. Rosswog and M. Bruggen
Course description

Astronomy 480 is an introduction to high energy astrophysics. The structure, formation, and astrophysics of compact objects, such as neutron stars, and black holes, are examined. Phenomena such as supernovae , cosmic-rays and clusters of galaxies are also covered.. We start by briefly looking at the history of the field. We then discuss the physical processes producing high energy photons and the means by which these photons are detected. We then proceed to study in more detail neutron stars, black holes, clusters of galaxies and supernova remnants.

http://www.astro.umd.edu/~richard/ASTR480/astro480_index.html

It will contain links to course information, homework , additional interesting information and links and lecture notes.

•Course Pre-requisites

It is assumed that you have some knowledge of astronomy at the ASTR320 level. In addition, some mathematics (high-school level algebra, trigometry and geometry and some calculus) will be required for the classes, homeworks and examinations..

•Course expectations

Attendance: In order to successfully complete this course, I expect you to attend class 2 times a week. If you have to miss a lecture, please be sure to obtain a copy of the notes (either from another student, the web-site, or from me) and make sure that you understand what you missed. There will also be times when I will ask for class participation.

Preparation: I expect you to be prepared to work. We will be covering some fascinating *but* very challenging concepts - you will understand this material much more easily if you preview the recommended chapter of the course book ahead of time, as well as giving it a more careful read after the lecture. You also should review your class notes sometime before the next lecture to make sure everything is clear. I encourage you to ask questions in the lectures or during my office hours.

Study Habits: It is better to keep up with the material on a daily basis than cram the night before the exam. I encourage you to chat about problems with your friends and classmates – you will learn a huge amount from trying to explain confusing issues to each other Please ask for help if you need it.. ***However, all graded materials, including class-assignments and home-works, must be your own thoughts in your own words.***

•Grading

Grades are based on a point scale with different assignments weighted as shown below.

Assignments:

Homework:	25%
Midterm :	25%
Class project	20%
Final :	30%
TOTAL :	100%

Class participation is encouraged but not graded

Letter grades will be assigned based upon your cumulative score. The exam grades will be renormalized.

•Midterm exam

There will be one in-class examination on the 10th March 2016. This exam will be closed book and will consist of a section of short answer questions, with essay and problem solving questions. University regulations will apply regarding academic honesty and excused absences. Please see the Schedule of Classes for these policies. If you are not able to take an exam due to illness or other legitimate reasons, you must contact me on or before the day of the exam either by email or voice mail. In addition, you must document the reason for your absence. A make up exam must be taken promptly.

If, for whatever reason, the University is officially closed on the day of the exam, the exam will be re-scheduled for the next lecture date.

•Final exam

The University examination schedule has the final exam for this course on Weds 18th May 2016, 10.30am-12.30pm, in room CSS2416. The final exam is cumulative in the sense that it will cover all material discussed in this course, but stress the second half. The format of the final exam will be the same as the midterm exam, with a section of short answer questions and a section of longer essay or problem solving questions.

•Homeworks

I will aim for a total of 5-6 homeworks in this course. On the due date, homeworks should be handed in at the front of the class. Homeworks will be considered late by the end of class. If you cannot make it to class, you should either ask a friend/classmate to hand it in for you, or make sure that it gets to me (room PSC1111) before the time that it is due. If you have a valid emergency, you should send me an email or voice mail message before the due date telling me the nature of the emergency. Please document all such emergencies.
If, for whatever reason, the University is officially closed on the day of the due date, the due date will be moved to the next lecture.

Academic Integrity

The University's policies and rules on academic integrity are laid out in the Schedule of Classes. You must never engage in acts of academic dishonesty at any time. Acts of academic dishonest include cheating, fabrication, plagiarism, or helping any other person to do these things. These rules apply to homeworks and quizzes as well as exams. As a part of these rules, you must give credit to any book (including the course textbook!), published article or web-page that you have used to help you with a particular assignment. The University and I take these issues extremely seriously.
To underscore the need for academic integrity, the University asks you to write the following pledge on any assignment or exam:
"*I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination*."

Preliminary Course Outline

Introductory Lectures – what is High Energy Astrophysics 2 lectures
Physical Processes 2 Lectures
X-ray Detectors +Telescopes 2 Lectures
Cluster Lectures (4)
NS Lectures (4)
Black Hole Lectures (4)
SuperNova and SNR lectures (2)
Gamma-ray bursts (1-2)
Summary
Other topics?? - what do you want??