

Astronomy 3113 : Galaxies and Cosmology

Instructor: Eddie Baron
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Office Hours: MW 1:00-2:00 and by appointment
Class Time: MWF: 10:30-11:20
Class Room: NH 302
Final Exam: Friday, May 15, 8:00-10:00

Text:

An Introduction to Modern Astrophysics, B. Carroll and D. Ostlie (Reading, MA: Addison-Wesley) 2007.

Supplementary Texts:

Astronomy: A Physical Perspective, Marc L. Kutner (Cambridge: Cambridge Univ. Press) 2003.

The Physical Universe: An Introduction to Astronomy, F. Shu (Mill Valley, CA: University Science Books) 1982.

Cosmology: The Science of the Universe 2nd Edition, E. Harrison (New York: Cambridge Univ. Press) 2000.

This course will be taught somewhat experimentally. My goal is to try to teach a self-contained course on cosmology. We will spend the first part of the course understanding the Friedmann-Robertson-Walker Universe and what it means, including topics such as baryogenesis and big bang nucleosynthesis. The second part of the course will discuss the modern era of “precision cosmology” from the measurement of the Hubble Constant to the discovery of the dark energy and plans to determine its nature.

Most homeworks and some readings will be taken from the required text, I will also supplement the readings with handouts.

The course requirements will include homework, one midterm, and a final

project. The final project will consist of both a presentation to the class and a paper. The final paper will be shared with the rest of the class.

Topic	Chapter
Relativity	C&O: 4
General Relativity	C&O: 17
The Redshift Distance and Velocity Laws	Handout
Cosmology	C&O: 29
Expansion	Harrison: 10
Redshifts	Harrison: 11
Darkness at Night	Harrison: 12
The Universe in a Nutshell	Harrison: 13
Newtonian Cosmology	Harrison: 14
The Early Universe	Harrison: 18
The Big Bang	C&O: 30
The New Cosmology	Handout
Discovery of Dark Energy	Handout
Current Efforts to Probe the Dark Energy	Handout
Planned Efforts to Probe the Dark Energy	Handout (and presentations)

Final Exam: Friday May 15, 8:00AM

Course Grade Distribution:	30%	Midterm
	35%	Final Project
	35%	Homework

Homework will be assigned weekly and is due one week later (in class or in my box by 5pm). Homework turned in late will be have the grade reduced by 10%/day late (holidays and weekends included). The lowest homework grade will be dropped. You are encouraged to work together on homeworks, but in the end you should work through and write up the problems on your own. If you turn in identical (or nearly so) papers I will simply divide the points by N.

Note:

Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.