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CRN# 36788
 Section: 501
 Day, Time, Location: Thursday 6 – 10 PM Science 113
 Office Hour: Thursday 5 – 6 PM
 Midterm Exam March 4 (Distribution)
 March 18 Deadline)
 Final Exam May 27 6 – 9 PM

Course Tutors: Jacqueline Goldstein
 Jacquelyn Parsons

Course Description:

L/C 4
 Prereq. ASTR 1, 14, or 16

Intended for students who desire an astronomy course more advanced than the general survey course. Emphasis on current state of theoretical astrophysics and research astronomy. An opportunity for students to pursue independent research projects or to develop teaching aids for astronomy. The College planetarium and observatory, including the 14-inch Schmidt-Cassegrain telescope, a CCD camera, and fiber-optic spectrograph are available for such projects. UC

This is an introductory astrophysics course that emphasizes the application of basic physical laws to understanding physical conditions in various astronomical phenomena. Basic physical laws will be introduced in a self-contained manner throughout the semester. The instructional methodology in this class is to emphasize a problem-solving approach to astrophysics. The presentation will consist of lectures, problem-solving conferences, and *seminars*. (Optional field trips will be offered from time to time.)

A Problem Set and regular homework assignments will be available through the **course website**. The problems are more-or-less *standard problems* relevant to astrophysics which we may assign some of them as homework assignments. You are encouraged to work with your classmates, but you must turn in your own write-ups.

In addition to the Problem Set and homework assignments, you may require to collaborate with your classmates to do project(s) and present the results at midterm and/or at the end of the semester. You may consider these projects as an in-depth study of a particular astronomical phenomenon -- details will be announced later.

The exams are entirely based on the Problem Set and homework assignments. All exams are open-book.

Course Details:

The course is structured into five interrelated segments:

1. **Reviews and Methods** – Basic astronomical and physical concepts will be reviewed during the first two weeks of the course, and the concept of modeling will be introduced.
2. **Extragalactic Astronomy and Cosmology** – February and March, we will be devoted to the properties of galaxies and the interplay between observational data of extragalactic astronomy and cosmology.

3. **All About the Stars** – In mid-April, the course will focus on the details of stellar evolution and basic application of the theory of relativity to astrophysics.
4. **The Sun and Astrophysical Fluids** – In May, the Standard Model of the Sun will be covered, and the topic of astrophysical fluid dynamics will be introduced.
5. **Other Topics** – We may have guest speaker(s) during the semester

Tentative Lecture Schedule:

DATE	LECTURE	READING
1/21	Astronomical Concepts, etc.	
1/28	The Milky Way I	Chapter 1: 1.1, 1.2, 1.3, & 1.4
2/04	The Milky Way II I	Chapter 1: 1.5 & 1.6 Chapter 2: 2.1 & 2.2
2/11	Observed Properties of Galaxies II	Chapter 2: 2.3 & 2.4
2/18	Evolution of Galaxies, etc	Chapter 2: 2.5 & 2.6
2/25	Observed Properties of Active Galaxies	Chapter 3: 3.1, 3.2, & 3.3
3/04	First Glimpse of Relativity	Chapter 3: 3.4 Supplement
3/11	Basic AGN models	Chapter 3: 3.5, 3.6, & 3.7
3/18	Observed Properties of the Universe I	Chapter 4: 4.1, 4.2, 4.3, & 4.4
3/25	Observed Properties of the Universe II	Chapter 4: 4.5 & 4.6 Chapter 5: 5.1, 5.2, & 5.3
4/01	SPRING BREAK	SPRING BREAK
4/08	Cosmological Parameters	Chapter 5: 5.3, 5.4, & 5.5
4/15	The Big Bang Cosmology	Chapter 6 & Chapter 7*
4/22	Energy Sources of Stars	Supplement
4/29	Evolution of Stars.	Supplement
5/06	Standard Solar Model I	Supplement
5/13	Standard Solar Model II	Supplement
5/20	Astrophysical Fluids	Supplement
5/27	Final Exam	Project Presentation

Required Textbook:

Jones. & Lamboune An Introduction to Galaxies & Cosmology
Cambridge university Press ISDN 0-521-54623-0

Recommended Reference Books:

Shu, Frank H. The Physical Universe: An Introduction to Astronomy,
University Science Books ISDN 0-935702-05-9

Zeilik & Gregory Introductory Astronomy & Astrophysics, 4th Edition
Saunders College Publishing ISDN 0-03-006228-4

Resources for the Course

There are a few good magazines that you can get from the newsstands, bookstores, and libraries that will be good supplemental readings for this course. They are as follow: *Astronomy*, *Sky and Telescope*, *Discover*, *Science News*, *Scientific American*, and others.

You can also find a wealth of information about astronomy on the Internet -- the World Wide Web. If you have never surfed the web before, it is time to learn to use this wonderful resource. For starters, try the following websites:

<http://www.ccsf.edu/astro/>

Astronomy Department

<http://www.stsci.edu/>

Space Telescope Science Institute

<http://www.sdss.org/>

SDSS Homepage

<http://www.universetoday.com/>

Universe Today News

Attendance:

Attendance in class is very **important**, because the course consists of more than the material covered in the text. The text is a useful resource and reference to ideas, concepts, and terms that are presented and discussed in class.

You are allowed two absences during the semester. If you miss more than **six** lecture-hours **and** you do not inform us, we may elect to **withdraw** your enrollment, if the absences occur before midterm exam; afterwards, this will result in a grade adjustment. The attendance policy will start in the 3rd week of instruction (**February 4, 2010** onwards).

Evaluation:

The course grade will be based on homework assignments, projects, take-home midterm exam, and a final exam. The grade will be weighted as the following:

Assignments	30%	300 points
Project(s)	30%	300 points
Midterm exam	15%	150 points
Final exam	25%	250 points

The assignment of grade is as follow:

A	90% and higher
B	75 - 89%
C	60 - 74%
D	45 - 59%
F	below 45%

If you have any further questions and concerns, please feel free to contact us.