Astronomy 7B

Introduction to Astrophysics (II)

Spring 2015

Instructor: Eugene Chiang
Office: New Campbell Hall (NCH) 605C
Phone: 701-5996 (email is preferable)
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Class Time and Place: Tue/Thur 11:00-12:30 in 103 Moffitt

Graduate Student Instructors:

Tom Zick (tzick{at}berkeley.edu) in New Campbell Hall 302C
Dominic Ryan (dryan{at}astro.berkeley.edu) in New Campbell Hall 302E

Discussion Sections:

Mondays 12-1 pm: Tom Zick (131B NCH, Section 101)
Fridays 10-11 am: Dominic Ryan (121 NCH, Section 102)

Office Hours:

Eugene Chiang: TALC (see below) + Wed 2:00-3:00 pm in NCH 131B + by appt.
Tom Zick: TALC (see below) + Wed 12:00-1:00 pm in NCH
131B + by appt.
Dominic Ryan: TALC (see below) + Tuesday 12:30-1:30 in NCH 131B + by appt.

**TALC = The Astronomy Learning Center**: This is a large, collaborative "office hour" where students work on their homework assignments in an informal, group setting. TALC is staffed by GSIs who serve as guides, rather than tutors, in helping students with their homework problems. In addition to supervised group work, students may discuss difficulties in their conceptual understanding of lecture and reading topics with their peers and the GSIs.

TALC is held Wed 4:30-6:30 PM in NCH 121.

Historically, students who attend TALC regularly do better in the course. However, it is crucial that you actively participate in TALC, and not just copy or passively absorb the answers to HW questions from others. **Towards this end, you must start the HW problems BEFORE you come to TALC.**

Class Home Page:
http://astro.berkeley.edu/~echiang/Astro7B/7B.html

Homeworks, solutions and other course material will be posted on the website regularly.

**Text**: Choose one (or both) of the following:

**FOUNDATIONS OF ASTROPHYSICS by Ryden and Peterson (RP)**. Winner of the inaugural Chambliss Award for Astronomical Writing of the American Astronomical Society. Readable, compact, but covers less material than Carroll & Ostlie (CO). On sale at campus bookstore and Ned's. Also on reserve at Physics...
library (1 day loan).

Readings from Ryden and Peterson (RP) are scheduled for every lecture day. Please keep up.

MODERN ASTROPHYSICS by Carroll & Ostlie (CO, 2nd edition). Covers a lot more material than RP, can be more technical, and contains more current information. On sale at campus bookstore and Ned's. Also on reserve at Physics library (1 day loan).

Readings from Carroll and Ostlie (CO) are scheduled for every lecture day. Please keep up.

Optional Text:

THE PHYSICAL UNIVERSE by Shu: Less mathematical than CO, though often conceptually more difficult. Portions are elegantly written. Also on reserve at Physics Library (1 day loan).

Class Overview:  This course continues the survey of introductory astrophysics begun in Astro 7A, emphasizing the application of basic physics to the understanding of astronomical objects. We treat interacting binaries; tides; accretion disks; black holes; gravitational lensing; and galaxies. We conclude with cosmology: the content and evolution of the universe at large.

Lecture topics (see below) will follow some of the text by RP and CO,
but will sometimes diverge. The presentation will differ from the textbook.

Prerequisites: Physics 7A & 7B (7B may be taken concurrently). This course uses calculus, vectors, and scientific notation \(10^n \times 10^m = 10^{m+n}\). If you think you would prefer a less mathematical introduction to astronomy, consider taking Astro 10.

FIELD TRIP (optional): Toward the end of the course, we may tour Aaron Parson's experimental cosmology lab.

Grading:

- Homework: 40%
- 2 Midterms: 15% each
- Final: 30%

The Astronomy Department's Policy on Academic Misconduct is here. 

**Homework** is due at 11:30 am Thursday starting Jan 29. It should be placed in the special boxes inside New Campbell Hall, in the 5th floor front office. The boxes will be marked Astro 7B with the appropriate sections. Do not place your homework in any of the other boxes which are for Astro 10. The homework will be picked up by the grader soon after 11:30 am Thursday. Late homework will not be accepted.

Write your name and section (and date & time) on each homework and please staple your sheets together.

Please start the homework questions yourself, independently of other
students.
If, after serious effort, you remain unsure of how to proceed, you are welcome to discuss the homework with classmates or instructors. **Under all circumstances, the answers must be written up individually.**

If you miss an exam you will receive zero credit for that portion of the course grade. No make-up exams will be given. If you miss the final exam for a good and well-documented reason, your grade will be an Incomplete.

**Exam Dates (midterms are held in class unless otherwise noted):**

- Midterm #1: Thursday Feb 26
- Midterm #2: Thursday Apr 9
- Final: TBA

You will be given a "cheat sheet" containing equations and physical constants for the exams.

Please let one of the instructors know immediately if you cannot attend one of the exams.

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