Syllabus: Astronomy 82
Astrophysics II: Stellar Evolution, Galaxies, and Cosmology


We will also include a segment on planets and exoplanets.

Requisites. from the catalog: Mathematics 31A, 31B, and Physics 1A or 1AH. Recommended: course 81, Physics 1B and 1C (or 1BH and 1CH). Open to qualified sophomore and upper-division students. In practice, Significant amounts of mathematics, including calculus, are required both in the lectures, and in your assignments and tests. It also assumes that you are familiar with the material covered in Astronomy 81.

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Teaching Assistant: Kevin Hayakawa
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Class Time and Location: Lecture: 8:30 – 9:45 AM in PAB 2-434
Discussion: 10 – 10:50 AM in PAB 2-434

Textbook (required): Fundamental Astronomy, 6th edition, 2017, edited by H. Karttunen, P. Kröger, H. Oja, M. Pouttanen and K.J. Donner, publisher: Springer (this is the same text that was used for Astronomy 81 in Winter 2019)

Course Website: https://ccle.ucla.edu/course/view/19S-ASTR82-1
Assignments, solutions, lecture notes, etc. will be posted here. Please make use of the discussion board to get your questions answered, both structural questions about the course and scientific questions about course material.

Grading: Homework ................................................................. 20%
Participation in discussion section ......................... 5%
Midterm exam #1 (Tuesday, April 23) ...................... 19%
Midterm exam #2 (Thursday, May 16) ...................... 19%
Final exam (Monday, June 10, 6:30 – 9:30 PM) ........ 37%

The homework problem sets are not tests; if you try them and get stuck, you are welcome to discuss them with the instructor, the TA, or with anyone else, in order to get yourself on the
right track. In the same spirit, students are welcome to work and study together for this course, but all are encouraged to seek their own understanding of the course material, and everyone must submit independent (not copied!) work. The grader is instructed to give zero credit for all instances of work that is clearly copied.

**Late homework:** grades reduced by 25% prior to the time the homework is discussed in class or prior to the time the answer sheet is distributed, whichever comes first, and reduced 50% thereafter. No exceptions… if you have a conflict with the due date, submit the homework in advance.

**Reading assignments** will be posted weekly. It is highly recommended to read as much as possible before the week’s lectures.

**Note on exams:** No makeup midterms: In extreme situations such as a written medical excuse, the average of the other exams will be used for the missing midterm grade. The final exam MUST be taken for a passing grade.

**Comment on plagiarism and cheating:** we have a zero-tolerance policy on cheating during exams. Cheating is defined as copying from another student’s exam, inappropriate communications with other students, or using notes or any other visual or audio resource during the closed-book exams. This includes smartphones and laptops. Students found to be violating this policy will be referred immediately to the Dean of Students, and will receive no credit for the exam.

**Disabilities:** if you wish to request an accommodation due to a suspected or documented disability, please inform the instructor and contact the UCLA Center for Accessible Education as soon as possible at A242 Murphy Hall, [Website: www.cae.ucla.edu](http://www.cae.ucla.edu) (310) 825-1501, (310) 206-6083 (telephone device for the deaf).

**Please be aware:** Title IX prohibits gender discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking. Students who have experienced sexual harassment or sexual violence can receive confidential support and advocacy at the CARE Advocacy Office for Sexual and Gender-Based Violence, [advocate@careprogram.ucla.edu](mailto:advocate@careprogram.ucla.edu), (310) 206-2465. You can also report sexual violence or sexual harassment directly to the University’s Title IX Director, Mohammed Cato, 2255 Murphy Hall, [mcato@equity.ucla.edu](mailto:mcato@equity.ucla.edu) (310) 206-3417
Topics to be Covered (in order of presentation):

The Interstellar Medium    chapter 16
Formation of Stars and Planets   end of chapter 7, ch 16
The Sun                        chapter 13
Planets and Exoplanets         chapters 7, 8, 22
Stellar Structure & Evolution, Nucleosynthesis – review    chapters 11, 12
End States of Stellar Evolution chapters 12, 14
Stellar Remnants               chapter 15
Clusters and Associations      chapter 17
The Milky Way Galaxy           chapter 18
Structure and Evolution of Galaxies chapter 19
Active Galaxies and Quasars    chapter 19
Large-Scale structure of the Universe: Galaxy Clusters, Voids, Cosmic Web chapters 19, 20
Cosmology: Origin and Evolution of the Universe    chapter 20
Astrobiology                   chapter 21