

AST 731, Fall 2010

Stellar Interiors

Professor: Daniel Proga, Department of Physics and Astronomy, UNLV
 Tel: 895-3507, Email: dproga@physics.unlv.edu
 Class time: Monday/Wednesday 11:30-12:45 am, BPB 248
 Reference Book: *Stellar Interiors* by C.J. Hansen, S.D. Kawaler and V. Trimble
 Website: <http://www.physics.unlv.edu/~dproga/AST731F10.html>
 Office hours: Formally the office hours are on Tuesday from 10:00 am to 11:00 am in my office (BPB Rm. 240). However, feel free to stop anytime with questions/problems/suggestions.

Week	Date	Subject	Reading
1	Aug. 23	Overview	Ch. 1
	Aug. 25	Preliminaries	Ch. 1
2	Aug. 30	An Overview of Stellar Evolution I	Ch. 2
	Sept. 1	An Overview of Stellar Evolution II	Ch. 2
3	Sept. 6	Labor Day Recess	
	Sept. 8	An Overview of Stellar Evolution III	Ch. 2
4	Sept. 13	An Overview of Stellar Evolution IV	Ch. 2
	Sept. 15	Equation of State I	Ch. 3
5	Sept. 20	Equation of State II	Ch. 3
	Sept. 22	Equation of State III	Ch. 3
6	Sept. 27	Radiative and Conductive Heat Transfer I	Ch. 4
	Sept. 29	Radiative and Conductive Heat Transfer II	Ch. 4
7	Oct. 4	Heat Transfer by Convection I	Ch. 5
	Oct. 6	Heat Transfer by Convection II	Ch. 5
8	Oct. 11	REVIEW	
	Oct. 13	Mid-term exam	
	Oct. 18	Stellar Energy Sources I	Ch. 6
	Oct. 20	Stellar Energy Sources II	Ch. 6
10	Oct. 25	Stellar Energy Sources III	Ch. 6
	Oct. 27	Stellar Modeling I	Ch. 7
11	Nov. 1	Stellar Modeling II	Ch. 7
	Nov. 3	Stellar Modeling III	Ch. 7
12	Nov. 8	Astroseismology I	Ch. 8
	Nov. 10	Astroseismology II	Ch. 8
13	Nov. 15	Astroseismology III	Ch. 8
	Nov. 17	Structure and Evolution of the Sun	Ch. 9
14	Nov. 22	Structure and Evolution of White Dwarfs	Ch. 10
	Nov. 24	Review and Discussion	
15	Nov. 29	Review and Discussion	
	Dec. 1	Summary	
116	Dec. 6	Student Presentation	
	Dec. 8	Student Presentation	

Course description:

This is an astrophysics course for astronomy major graduate students. It is a survey course designed to introduce the students to the basic concepts and principles of stellar structure and the microphysics of the equation of state, opacity, and nuclear reactions. Stellar evolution will be examined using semi-quantitative approaches. This course is worth 3 credits.

Grading:

The course grade will be based on homeworks, a numerical problem assignment, a mid-term exam, and a presentation.

- There will be five homeworks during the semester. Each homework will be worth 5 pts. (the total of 25 pts can be earned from homeworks). You may use any available materials to solve the problems. You are also encouraged to discuss the problems with each other, while you are trying to solve homework problems, with the provision that after the discussions you must write up your solutions yourself, independently from anyone else. This rule will be taken very seriously under the UNLV honor system. In particular, it should be stated in the submitted solutions who you have discussed the problems with (as a form of acknowledgements).
- Each student will be given a problem to be solved using numerical methods. It is to master a concept/idea and use a computer to generate a numerical solution of a specific problem. There will 20 pts. to be earned from this.
- Each student will be assigned to read one or more research papers related to this course. Some additional thinking and possible ideas of research projects are encouraged. Each student will give an hour presentation at the end of the semester. 30 pts will be assigned for reading / presentation.
- The mid-term exam is on October 13. There will be 5 problems each worth 5 pts. (i.e., the total of 25 pts can be earned). No printed materials are allowed during the exam.
- Final Letter grades will be assigned according to the numerical scores (100 total).

A (≥ 85), A- (80-84),

B+ (77-79), B (73-76), B- (70-72)

C+ (67-69), C (63-66), C- (60-62)

D (50-59)

F (< 50)

Other information:

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Academic Misconduct – “Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV’s function as an educational institution.”

An example of academic misconduct is plagiarism: “Using the words or ideas of

another, from the Internet or any source, without proper citation of the sources.” See the “Student Academic Misconduct Policy” (approved December 9, 2005) located at: <http://studentlife.unlv.edu/judicial/misconductPolicy.html>.

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Disability Resource Center (DRC) - The Disability Resource Center (DRC) coordinates all academic accommodations for students with documented disabilities. The DRC is the official office to review and house disability documentation for students, and to provide them with an official Academic Accommodation Plan to present to the faculty if an accommodation is warranted. Faculty should not provide students accommodations without being in receipt of this plan.

UNLV complies with the provisions set forth in Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, offering reasonable accommodations to qualified students with documented disabilities. If you have a documented disability that may require accommodations, you will need to contact the DRC for the coordination of services. The DRC is located in the Student Services Complex (SSC), Room 137, and the contact numbers are: Voice (702) 895-0866, TDD (702) 895-0652, fax (702) 895-0651. For additional information, please visit: <http://drc.unlv.edu/>.

Religious Holidays Policy -- Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor no later than the last day at late registration of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. This policy shall not apply in the event that administering the test or examination at an alternate time would impose an undue hardship on the instructor or the university which could not be avoided.
<http://catalog.unlv.acalog.com/content.php?catoid=1&navoid=44&bc=1>

Tutoring -- The Academic Success Center (ASC) provides tutoring and academic assistance for all UNLV students taking UNLV courses. Students are encouraged to stop by the ASC to learn more about subjects offered, tutoring times and other academic resources. The ASC is located across from the Student Services Complex, #22 on the current UNLV map. Students may learn more about tutoring services by calling (702) 895-3177 or visiting the tutoring web site at: <http://academicsuccess.unlv.edu/tutoring/>

UNLV Writing Center – One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 895-3908. The student's Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>