

ASTR 404: Stellar Astrophysics

Spring 2011

Instructor: Professor Edward Schmidt
Office: Jorgensen 310K (Mail box in Jorgensen 208)
Phone: 472-2788
email: eschmidt1@unl.edu
Required Text: *Modern Astrophysics, 2nd Edition* by Carroll & Oestlie
(Note that this text is also used in AST 403)
Class: Tuesday/Thursday, 14:00-15:15 in Jorgensen 211
Office Hours: MWF, 14:30-15:15 and T/Th, 13:00-13:45, Jorgensen 310K
Other times by appointment or just drop by or call.
Prerequisites: ASTR 204, PHYS 213 or permission
Attendance policy: Students are expected to attend and participate in all classes.
No make-up exams will be allowed except in extraordinary circumstances.

COURSE DESCRIPTION: Stellar atmospheres, interiors and evolution. Theoretical and observational aspects of stellar astronomy.

GRADING AND EXAMS: The grades in this course will be determined by a midterm exam, a final exam, homework assignments, quizzes and participation in journal discussions as follows:

Midterm exam: The midterm will be worth 25% of the grade.

Final exam: The final will be comprehensive and is required. It is worth 25% of the grade.

Homework assignments, quizzes and in-class discussions: There will be regular homework assignments and in-class discussions of journal articles. In-class quizzes will be every Thursday (except the week before and the week of and the week after

the exam and the 1st and 15th weeks). Each assignment, journal discussion and quiz will count equally and together they will count for 50% of the grade.

SCHEDULE AND READING ASSIGNMENTS: It will be assumed that students will read the assigned material before coming to class. **The class is not a substitute for reading the book. Nor is the book a substitute for the class.** Rather, they supplement each other; some things from the book will not be covered in class and conversely some things will be discussed in class that are not in the book. The exams will cover material from both the class and the reading. The schedule of topics on the next page indicates the chapters from the book you should read. However, as we go along, the instructor will direct you to pages or sections of special importance and you should pay particular attention to those sections. Journal articles will be distributed at least a week before we discuss them in class. You should read them thoroughly and come to class ready to discuss them. In particular, prepare at least one question that we can discuss together.

Tentative Schedule of Topics and Reading

Class Dates	Topic	Reading
Jan 10--14	Introduction. Review of relevant topics	Chapter 3
Jan 19--24	Review of atomic spectra and stellar spectra	Chapter (5.1, 5.2), 5.3, 8
Jan 26—31	Start stellar Atmospheres: Radiative transfer	Chapter 9
Feb 2--9	Physical processes relevant to stellar atmospheres	
Feb 11-16	Model atmospheres	
Feb 18	Line Spectra	
Feb 21	Exam	
Feb 23-28	Modelling of stellar interiors	Chapter 10
Mar 2--7	Early stellar evolution	Chapter 12
Mar 9—16	Main-Sequence and beyond	Chapter 13
Mar 18—30	End points of Stellar Evolution	Chapter 15,16
TBA	Binary Stars	Chapter 7 & 18
TBA	The sun and stellar activity	Chapter 11
TBA	Stellar Pulsation	Chapter 14
May 4	Final Exam	1:00—3:00 p.m.

Note that this is a tentative schedule. The last three topics will only be included to the extent that there is time at the end of the semester. Which of those three topics is included if there is not time for all three will be based on student interest.