Astr 545: Astrophysics of Stars and Accretion

Fall 2015

Tuesday – Thursday 2:00 - 4:00, SO 204

http://u.arizona.edu/~dpsaltis/Astr545/

http://tinyurl.com/Astr545

- **Course Description**

In this class, we will start by reviewing the basic equations and physical processes related to hydrodynamics, radiative transfer, and nuclear astrophysics. We will then apply this knowledge to the study of the structure and evolution of stars and of accretion flows.

We will be exploring a very large range of physical theories and processes. However, we will concentrate on the physical ideas and their applications, without sacrificing rigor and detail. The prerequisite for this class is a good understanding of classical mechanics and of electrodynamics.

- **Textbooks**

There is no recommended textbook for this class. We will be using different chapters from various books (all of which are on reserve in the library) as well as recent review articles.

- **Assignments**

There will be **two** different types of assignments in this class, each of which will help you improve different types of skills that you will need in your careers.

(i) Homework: this will require solving detailed, quantitative problems that will involve analytic calculations, simple numerical calculations, statistical inferences, etc. We will assign 6 sets of homeworks, about once every two weeks. The due dates for the homework will be on Tuesdays, at the beginning of class.

A team of students will write the solutions and grade each homework. Each student participate in one team, to be chosen at the beginning of the semester. For each homework, the team of graders will meet with the instructor who assigned that particular set during office hours on the day (Wednesday) after the one that the homework set is due. The graders and the instructor will review the solutions and agree on the grading scheme. The graders will then have to return the graded homework within one week, typically by the next Tuesday's class.

For each student, we will drop the set with the lowest grade, and the 4 best sets graded by other students will count for 10% of the grade each, for a total of 40%. The set that each student helps to write solutions to and grade will count for another 20% of the course grade.

Students are encouraged to work together on homework problems. However, the submitted solutions should be written up independently, not directly copied. Anyone who provides significant help should be acknowledged, similar to a scientific journal. Students may lose credit for failing to acknowledge assistance.

(ii) Project: the final assignment will help you develop strategies in literature searching and in distilling the important information from the large amount of published papers available. It will be a term project on a subject related to the material in the class. Your goal will be to review a topic, write a 10-15 page review paper on it, and present your findings in a 15 min talk in front of the class. This will count for 40% of the grade.

There will be no midterm or final exams. There will be no credit for late assignments.

A total score of 90% will guarantee an A, 80% will guarantee a B, and 70% will guarantee a C grade for the class. The final distribution of scores will determine the exact grade breakdown.

- **Contact**

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- **Policies**

Students will not be graded on class attendance, with the following caveats. (1) Students must give final presentations and attend the office hours where their team's homework solutions are discussed. (2) Students are responsible for any announcements made in class, which may or may not appear on the web page. (3) If and when you do come to class, please give your full attention and participate in the discussion (without hogging it). Useful questions and discussion participation may (or may not) lead to extra credit.

There will be no late credit for assignments.

There will be make up assignments only with a well documented, serious, and valid excuse, such as a serious sickness, death in the family, or a university function.

Cheating or any other form of unethical or threatening behavior will not be tolerated. You can find more information on these issues in the following two web sites of the university:
`http://dos.web.arizona.edu/uapolicies`
`http://policy.web.arizona.edu/~policy/threatening.pdf`

Students with disabilities who require reasonable accommodations to fully participate in course activities or meet course requirements are encouraged to register with the Disability Resource Center and contact me to discuss access issues.

Incompletes will only be given if a student has satisfactorily completed the majority of the work in the class and has a valid reason, such as medical, for not completing the remainder of the course. Students must make arrangements with the instructor in order to receive an incomplete.

Other than grade and absence policies, the information contained in this syllabus may be subject to change with reasonable advance notice.