

Astronomy 596b: Computational Astrophysics

Fall 2016

Mondays, Wednesdays, & Fridays, 14:00
Steward Observatory, Room 202

Course Instructor: Prof. Philip A. Pinto
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Office Hours: After class, any time I am in my office, and by appointment.

Description: This is an elective course in computational astrophysics. We will spend the first several weeks discussing some general topics from statistical mechanics and astrophysics. In the following weeks we will then cover a variety of numerical approaches appropriate to problems of interest to students taking the class, potentially covering topics in N-body problems, hydrodynamics, and radiation transport.

Prerequisites: While there are no formal prerequisites for this course, students should have a solid background in classical mechanics, thermodynamics, and statistical physics, as well as some knowledge of general astrophysics and of course the mathematics appropriate to the previous topics. If we cover certain topics in radiation transport, a knowledge of atomic physics will also be useful. Students must be fairly proficient in at least one programming language; sample codes and the class computational project will be in C++.

Text: There are no formal texts for this course.

Assignments:

Informal assignments and sample codes will be given throughout the course.

Students will undertake an extended project in the second half of the semester which will culminate in an in-class presentation and a written report. Students are encouraged to work in small groups for this exercise.

Exams:

There will be no exams in this course.

Grading:

Your final grade for this course will be based upon your performance on the in-class project and, to a lesser extent, on your level of participation in class discussion.

Attendance:

Graduate students, especially in astronomy, must often be away conducting experiments or observations or attending conferences. I will make as much accommodation as possible for such activities, and will, to the extent possible, provide copies of my lecture notes and otherwise help such students keep up to date when I am apprised of such absences in advance.

All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion.

Office Hours: I am in my office much of the day and very often until late at night. Please do not hesitate to call or to stop by for help. If the door is closed, do not hesitate to knock! If I am not in my office, keep trying; I am probably in a meeting. I will try to keep the class abreast of my travel schedule, which will unfortunately be rather full in September. We will attempt to schedule make-up classes as appropriate. Finally, I cannot guarantee that I will promptly read your email. If you need to see me, come find me, or call to see if I will be in.

Incompletes: A grade of “Incomplete” will only be given in this course if a student has satisfactorily completed the majority of the work in the class and has a valid reason (for example a medical problem) for not completing the remainder of the course. Students must make advance arrangements with me in order to receive an incomplete.

Students are expected to maintain a high level of decorum in the classroom. In particular, the use of cell phones and/or computers to communicate during class is bad manners and should be eschewed.

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See: <http://deanofstudents.arizona.edu/codeofacademicintegrity>.

Students who need special accommodation or services should contact the Disability Resources Center, 1224 East Lowell Street, Tucson, AZ 85721, (520) 621-3268, FAX (520) 621-9423, email: uadrc@email.arizona.edu, <http://drc.arizona.edu>. You must register and request that the Center or DRC send me official notification of your accommodations needs as soon as possible. Please plan to meet with me by appointment or during office hours to discuss accommodations and how my course requirements and activities may impact your ability to fully participate. The need for accommodations must be documented by the appropriate office.

Information contained in this course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor. NB: notice of such changes will only be given in class.