

You will be introduced to a lot of interesting phenomena and objects this semester as we study the interstellar medium together. You'll find a pleasing synthesis of many physics and astrophysics concepts you've been learning and thinking about the last few years. And you'll also be introduced to open research problems and read research and review papers. You'll be asked to think of questions (even from the textbook) as answerable but often open-ended. Your problem solving skills will be tested, and you'll be expected to provide qualitative (and sometimes quantitative) interpretation of the solutions you come up with, both in writing and verbally, in seminar.

My goal for each of you is to help you increase both your knowledge and your reasoning and communication abilities and strategies. And to help you work collaboratively with your classmates to gain – and help them gain – this understanding. A secondary goal is to improve your presentation skills.

To these ends, you will each be relying on each other to present and explain the material we read about each week. You will have to have the desire and discipline to read carefully the material I assign and to think about it – always testing your own knowledge and incomplete understanding. I will be counting on you to ask good and productive questions about the material we read each week. And that will require giving yourself enough time to read, think, re-read, and answer questions. To maximize your happiness and learning, you absolutely must start working on the week's assignment more than 48 hours ahead of time. And you must read the material more than once, after thinking about the questions I ask in the week's assignment.

You should access other (including of course, on-line) resources to look things up. Wikipedia is not always bad when it comes to astro, physics, and math. You should talk to each other and work together on the assignments (but always doing your own final writing, math, and coding). And you should ask me anything – after you've tried a few things yourself.

The weekly assignments will consist of some reading that will form the basis of our in-class work/discussion. I will assign problems for you to solve (write up, and hand in – some on the Monday before seminar and some at the beginning of seminar). You should hand in the Monday problems on paper, in the box outside my office door (sometimes I'll ask you to email me things – like code – too or instead, but the default hand-in mode should be paper). I will look them over and make comments and hand them back to you on Tuesday. I expect you then to read over my comments and do whatever additional thinking (and possibly note-making) is required in order to have adequate understanding for the discussion that will happen in seminar (i.e. we may go over some of those Monday problems in seminar on Wednesday, and you'd be expected to be able to present a good solution at the board even if your handed-in solution was not so good).

Other problems I'll expect you to hand in when you arrive in seminar on Wednesday at 1:15. We'll go over them, too, in seminar. You should xerox a copy of these problems to give me so that you also have a copy to mark up in seminar. If you arrive a few minutes early, you can use the department xerox machine.

Beyond the problems in each assignment for which you have to write up solutions, the assignment will have commentary – points to think about as you're reading specific sections of the text, questions to answer (but not hand in solutions to), images to find, graphs to sketch. You should really address all the commentary – make sketches, jot down a few notes, find and share images. Expect to have a discussion in class about the reading, based on this commentary. It is your responsibility to be prepared for it. Addressing my commentary is a way for you to make sure you really have deep understanding of the material you're reading.

Sometimes, I will supplement the formal problems with presentations, as I am doing on the first week, where the presentation topics are review of Astro 16 material. More commonly presentations will be about that week's reading. That is especially true when we read research articles and review articles, which we will do increasingly as the semester progresses. Sometimes a problem I assign will involve some coding. Even there,

I will expect you to be able to talk about the relevance of what you've done – its astrophysical interpretation.

I will grade the problems you hand in in seminar – sometimes giving you the opportunity to redo or improve your solutions by the day after seminar meets, based on our in-class discussion. And I will grade on a check, check-plus, check-minus basis the problems you hand in on Mondays. That will be based on effort and thoroughness. We will have a midterm and a final exam. The grade breakdown will be roughly 50% weekly seminar work, 20% midterm, and 30% final.