

# ASTR 480, 680: The Interstellar Medium

## Classes

Place: Planetary Hall, room 220

Time: MW 3:00–4:15

Web site: [www.physics.gmu.edu/~joe/ASTR480.html](http://www.physics.gmu.edu/~joe/ASTR480.html)

## Instructor

Joe Weingartner

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Office hours: TW 1:30–2:30, or by appointment

## Course Objectives

1. Develop the skills and knowledge needed to participate in research projects in astronomy
2. Reinforce basic physics concepts and skills in a novel setting

## Evaluation

### Problems, to be worked both in class and at home (100%)

1. You are encouraged to discuss the problems with one another, but the detailed solutions that you submit must be your own, independent work.
2. Do not hesitate to seek help from me, in person, over the phone, or by email.
3. The point value of each problem is indicated in brackets. The total number of points for ASTR 480 is 1306 and for ASTR 680 is 1576.
4. See the course web site for due dates. Problem sets are due at the start of class. Late work will not be accepted. If you don't finish the problem set, turn in what you have. If you can't make it to class on time, submit the problems earlier.
5. The clarity of your solutions will factor significantly into your grade. It is not sufficient to write a few equations. You must define your variables, draw well labeled figures where appropriate, and explain what you're doing. Use the distributed solutions as a guide for the level of detail required. Also, you must write legibly. I will not struggle to decipher handwriting; instead, I will simply assign zero points.
6. Each week, I will choose a fraction (possibly 100%) of the submitted problems to grade. Of course, I will not reveal in advance which problems will be graded. Your total earned points for each submission will be  $AB/C$ , where  $C$  is the total number of points in the graded problems,  $A$  is the number of points you earned on those problems, and  $B$  is the total number of points in the problems on which you made a serious effort.
7. Unless explicitly stated, you may not use computer programs like Mathematica.
8. When a problem asks you to “show” something, this should be interpreted as “derive” rather than “verify”.
9. Assignments for ASTR 680 are longer than those for ASTR 480. The additional problems are more mathematically challenging and probe the physics to greater depth.

Letter grades for the course will be determined from total numerical grades as follows:

A range: 90-100%

B range: 80-90%

C range: 70-80%

D: 60-70%

F: < 60%

## **Course Outline**

1. Background Physics
2. Introduction to the ISM
3. Atomic Structure and Radiation
4. HI Regions
5. Dust
6. HII Regions
7. Molecular Clouds
8. Structure and Dynamics of the ISM