

Syllabus

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0.1 Classroom expectations

0.1.1 What you can expect from Casey and Manbir

- We will stay home if we are feeling sick and make arrangements to deliver the course material
- We will work with you to arrange accommodations when you need them
- We will respect your time by starting and ending class on time
- We will answer your questions thoughtfully, and if we don't know the answer, we will follow up in a timely manner
- We will model respect, openness, and engagement, and foster a supportive and inclusive environment

- We will be honest when we make mistakes, because failure is part of growing

0.1.2 What Casey and Manbir expect from you

- That you will stay home if you are sick and contact us via email to arrange accommodations
- That you genuinely attempt to engage with the course
- That you ask questions if you are confused (you may do this privately – there is no obligation to ask during class hours)
- That you communicate with us when you have problems that interfere with your ability to engage with the coursework
- That you treat your peers with respect and openness, and that you participate in creating an inclusive, supportive, and engaged classroom

0.2 Assignments and Grading

Assignments fall into “bundles,” which make up a percent of the grade. Each assignment within a bundle is equally weighted, and individual assignments will all be graded with a rubric that includes the learning objectives, so that you can see very clearly what you missed.

0.2.1 Letter grade table

Grades will be determined from percentages using the following table:

Table 1: Letter grades

Letter grade	Percent range
A	92.5 ≤ x < 100
A-	90 ≤ x < 92.5
B+	87.5 ≤ x < 90
B	82.5 ≤ x < 87.5
B-	80 ≤ x < 82.5
C+	77.5 ≤ x < 80
C	72.5 ≤ x < 77.5
C-	70 ≤ x < 72.5
D+	67.5 ≤ x < 70
D	62.5 ≤ x < 67.5
D-	60 ≤ x < 62.5
F	0 ≤ x < 60

0.3 Grading bundles

1 Growth Mindset (10%)

An important element of being a scientist is seeing opportunities to improve from mistakes and failures. This is emphasized in this class in multiple ways, through homework and test re-dos as well as through the goal-setting assignment, which spans the entire semester. Please note that some of the deadlines are more rigid in this bundle in order to make it a useful activity.

- Course pre-test (1 hr, graded on completion, not content)
- Course post-test (1 hr, graded on completion, not content)
- Math Assessment (with two chances to re-take)
- Growth Mindset Reflection
- SMART goal setting
- SMART goal mid-semester check-in
- SMART goal final reflection

Given the purpose of these activities, we will not offer extensions beyond one week on the deadlines for the Growth Mindset bundle, except in case of a major medical or family emergency.

2 Practice (30%)

Good note-taking and regular problem-solving are very important to developing confidence and skill in this content, so every week you will have to turn in your Cornell Notes for the class and a short weekly problem set. More details below:

- Weekly Cornell Notes
 - This will include one initial assignment to demonstrate how to do Cornell Notes
 - To learn more about Cornell Notes, there is a detailed walkthrough in the [FAQ](#)
 - You can drop 2 Cornell Notes assignments with no penalty
- Weekly Problem Sets
 - The first question on the weekly problem set is a reflection on the previous problem set
 - You can drop 2 Weekly Problem Set assignments with no penalty

3 Labs and Lab Reports (25%)

Lab activities will be integrated into many classes, and completing the labs is an important part of your learning in the course, so you may not use another student's data for your homework problem or lab report. If you are unable to attend a class you may contact the instructor (in advance if possible) about finding a time to make up the lab work.

There will be three labs you can write a report on during the semester, **but you only need to do two of them**. These reports are more than just a short write-up of what you did. These are an exercise in synthesizing the concepts you learned in class with the activities you did in the laboratory.

The lab reports must include:

- a short introductory paragraph putting into context the activity
- a clear statement of the question you were trying to answer with the activity
- an explanation of the methods you used (what did you measure, how did you do it, how did you account for error, etc)
- a visualization of your results (using plots and figures)
- a discussion of what your results mean.

Note: We don't ever expect you to have perfect data, so use the discussion as an opportunity to explain the problems that arose and what you might have done differently if you'd had more time.

You may revise and resubmit each lab report one time.

4 Jigsaw Solve/Teach Activities (25%)

There will be two jigsaw activities during the semester. In these activities, you will be given a challenging problem to solve in small groups. Together your group must write up a "lesson plan" that demonstrates how to approach and solve that problem. In the next class period, you will be split into different groups in which each member of the group solved a different problem, and you will have to teach your problem to that group.

To get credit for these jigsaws, you must:

- participate in both days of activity
- submit your "lesson plan" write-up for the question you were assigned
- submit a second write-up for **one** of the problems you learned on the second day

You may revise and resubmit each jigsaw write-up one time.

5 The Problem Project (10%)

The student becomes the teacher... your final project for this class is to write a physics problem similar to the jigsaw problems. You must:

- select at least one key idea from three of the five different [groups](#)
- write a physics problem that tests understanding those three key ideas
- write up a detailed solution to that problem using the [four-step problem solving method](#)
- explain how your problem tests understanding for the three key ideas you selected

** Because this is due during finals week, there will not be an opportunity to revise and resubmit this **

5.1 Deadlines and Extensions