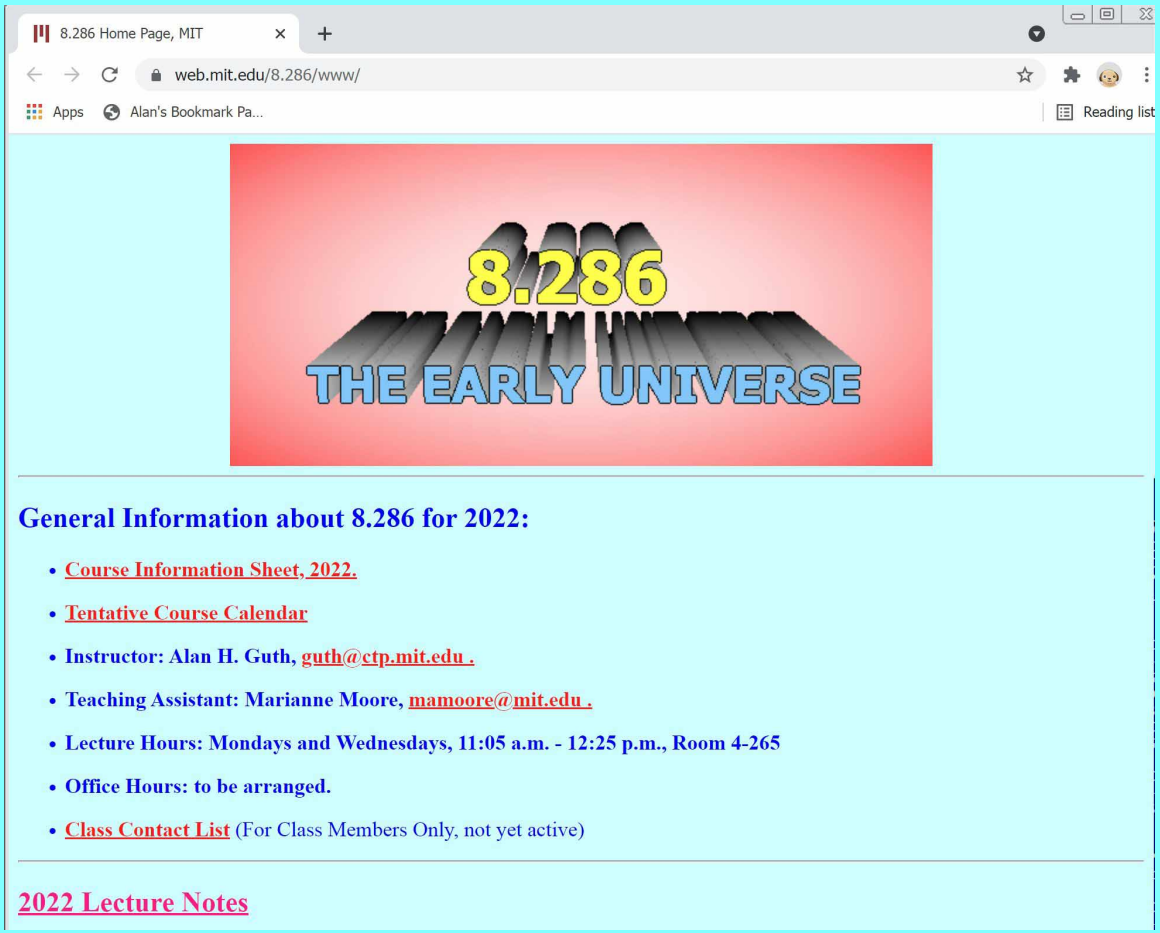
8.286 Lecture 1
September 7, 2022

WELCOME TO 8.286!

OVERVIEW:
INFLATIONARY COSMOLOGY — IS OUR UNIVERSE PART OF A MULTIVERSE?

Course Website

https://web.mit.edu/8.286/www



Canvas

We will use Canvas for homework submission, and for showing your grades.

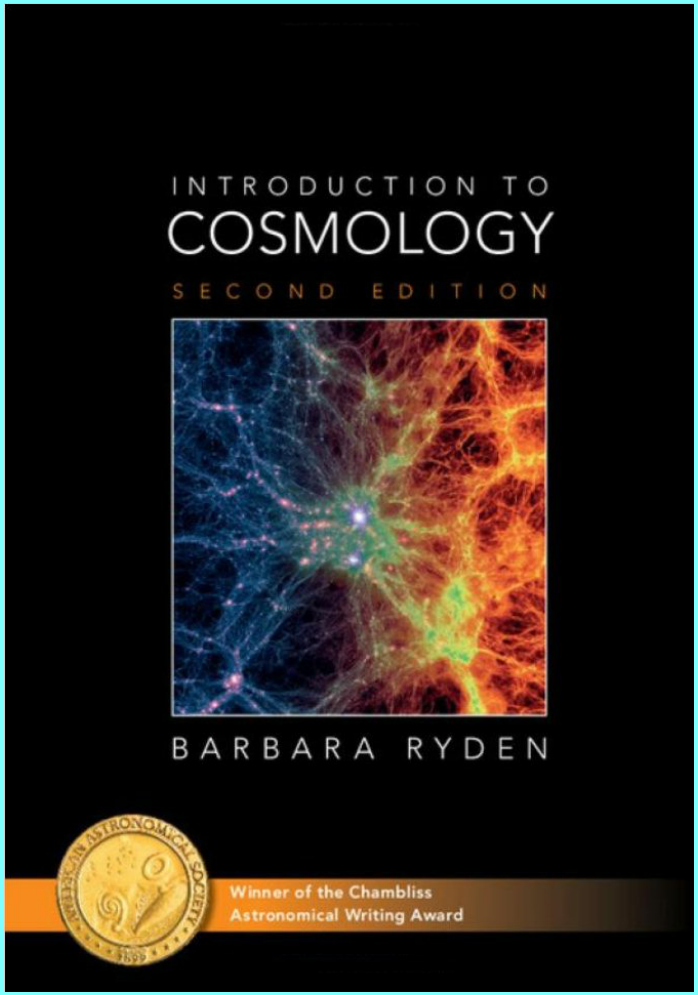
Course Staff

Lecturer: Me (Alan Guth), guth@ctp.mit.edu.

Teaching Assistant: Marianne Moore, mamoore@mit.edu.

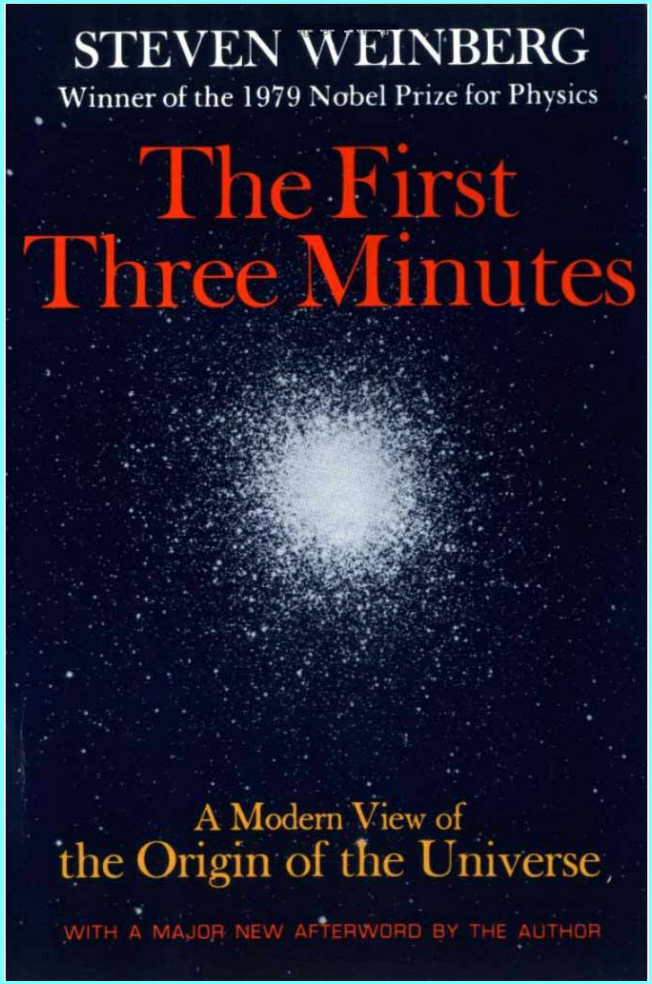
Required Textbook #1

Introduction to Cosmology, Second Edition (Cambridge University Press, 2016), by Barbara Ryden.



Required Textbook #2

The First Three Minutes, Second paperback edition, (Basic Books, 1993), by Steven Weinberg.



8.286 Lecture Notes

- Most of the course will be based on the 8.286 lecture notes, which will be posted as we go along. The first set is posted.
- All of the lecture notes from 2020 (and earlier years) are available on the website.
- Each quiz will have one question based on the reading in Ryden, Weinberg, and perhaps other brief sources near the end of the course. All of the readings from Weinberg will be fair game for such questions. You should think of Ryden's book as a supplement to the topics discussed in class, giving you a chance to see an alternative perspective. I will indicate some sections of Ryden's book that you are expected to read, and which will be fair game for the reading questions on quizzes.

Grading

Three "In-Class" Quizzes: 75%

The quizzes will tentatively be on the following dates:

Wednesday, October 5, 2022
Wednesday, November 9, 2022
Wednesday, December 7, 2022

If you have a problem of any kind with any of these dates, you should email me (Alan Guth) as soon as possible.

Problem Sets: 25%

No final exam.

Problem Sets

About 1 problem set per week, ten altogether, mostly due on Fridays at 5:00 pm Boston time.

There is a course calendar posted on the web page which shows the expected due dates for all the problem sets.

The first problem set is posted, and is due Friday, September 16.

The problem sets will not all be worth the same number of points. Your grade will be the total number of points you earn, compared to the maximum possible. That is, problem sets with more points will count a little more than the others.

All Problem Sets Will Count

Reason: Psets will be an integral part of the course, so you will miss something significant if you blow one of them off.

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However: I understand that you all have very overfilled lives. That's what MIT students are like! So, to make up for the fact that no problem set grades are being dropped, I will be VERY generous with extensions. If you are having an unusually busy week (or if you are sick, have a family crisis, or have a fight with your younger brother), just send me an email briefly describing the situation, and ask me for an extension.

If the solutions are posted before you turn in your problem set, you are on your honor not to look at the solutions, or discuss the problems with anyone who has (other than me or the other course staff), until you have turned it in.

Extra Credit

Some of the problem sets will offer additional problems for extra credit. We will keep track of the extra credit grades separately.

At the end of the course I will consult with Marianne Moore to set grade cuts based solely on the regular coursework. We will try to make sure that the grade cuts are fair with respect to this data set.

Then the extra credit grades will be added, allowing the grades to change upwards accordingly.

Finally, we will look at each student's grades individually, and we might decide to give a higher grade to some students who are slightly below a borderline. Students whose grades have improved significantly during the term, and students whose average has been pushed down by single low grade, and students who have been affected by adverse personal or medical problems will be the ones most likely to be boosted.

Homework Policy

I regard the problem sets primarily as an educational experience, rather than a mechanism of evaluation.

Your are encouraged — even strongly encouraged — to work on the homework in groups. I will be setting up a Class Contact webpage to help you find each other. But, you are each expected to **write up** your own solutions, even if you found those solutions as a group project.

We will ask you to indicate at the start of your homework the names of students whom you worked with, and students from outside the class whom you may have received help from. In that way the grader will know when to expect similarities in student's solutions.

8.286 Problem Solutions from previous years are strictly off limits, but other sources — textbooks, webpages — are okay, as long as you rewrite the solution in your own words.

A homework problem that appears to be copied from another student, from a previous year's solution, or copied from some other source without rewording might be given zero credit. Except in blatant cases, the first time you will be given a chance to redo it.

Remember that this homework policy does not necessarily apply to other classes.

Expect Two Emails

1) **Office Hours:** Marianne and I will each have one office hour a week, and the email questionnaire will be aimed at finding out what times work for you. I am using email because it allows more information transfer than Doodle or WhenToMeet. You will be able to tell us what hours do not work, what hours can work but are undesirable, and also what hours work best. If possible, we will arrange the pair of office hours so that all of you who respond will be able to attend at least one. There will also be a Piazza page where you can ask questions.

2) **Class Contact List:** This page, visible to all class members but no one else, is intended to help you find each other to discuss the course and to set up homework groups. It is Opt-In: if you don't want to be listed, you need not respond. The page will include photos (with your permission), contact information, and an optional comment describing what kind of interaction you are hoping to find.

☆ I will send these questionnaires to all registered students and listeners, and will post them on the website.