

Astro 210  
Lecture 1  
Jan 17, 2018

Announcements:

- Welcome!
- take a, seat and a syllabus
- fire up your iClicker

Today's Agenda

1. Introductions
2. Overview and Appetizer:  
Preview! No need to take notes today!
3. Course Mechanics

# Introductions

## Getting to know us

*Instructor:* **Brian Fields**, Prof. of Astronomy & of Physics

*Teaching Assistant:* **Jesse Miller**, Graduate Student  
office hours, grading, observing

*Teaching Assistant:* **Yinghe Celeste Lü**, Graduate Student  
grading, observing

## 2 Getting to know you

## Getting to Know You: iClicker Poll

Aug 21 2017 was epic: *Did you see the total solar eclipse?*

- (a) Yes! I was in totality! and it was awesome!
  - (b) Yes. I saw the partial eclipse. It was nice.
  - (c) Yes. I saw the partial eclipse. Meh.
  - (d) There was an eclipse?
- 

ω All answers receive credit: everyone's a winner!

We'll soon see what all the fuss is about...

# Welcome!

This course sweeping in scale  
science applied to the biggest picture  
→ the most sweeping course you can take  
this side of Green street.

Note: you are (at great expense)  
attending the **University** of Illinois  
you have been promised the Universe...  
→ it's right there in the name!

In this course, **we deliver!**

## Expanding Universe, Expanding Mind

Huge range of scales in space and time

in space:

subatomic  $10^{-33}$  cm, to the solar system  $10^{10}$  km across  
to Milky Way 100,000 light-years across,  
to edge of observable universe 10's of billions of light years,  
to unobservable universe beyond

also sweeping in time:

$10^{-43}$  sec after big bang  
to billions of years in future of cosmos

# Taking Astr 210 Here and Now: A Wise Choice

Great **time** to take the course:

Golden Age in study of the cosmos

new results flooding in—some during this semester

We are very lucky to live in an age in which we are still making discoveries. It is like the discovery of America—you only discover it once.

– Richard Feynman, *The Character of Physical Law*

Also great **place** to take this course:

Illinois national and world player in astronomy and astrophysics

◦ both theoretical and observational

⇒ getting it from the horse's mouth—so to speak

# Appetizer: Course Goals

## The Big Picture

My goal in this course:

get a familiarity with the big picture

- partly phenomenology—*what* we know: “just the facts”
- but also: *how* and *why* things are as we see them

Will apply physical principles: “get under the hood”

Will *work hard* and *have fun*

- will use real data from latest discoveries
- science culture! poetry slam, song, mnemonic contest

✓ Today: A brief, whirlwind tour  
preview of coming attractions  
→ don't need to take notes...

## iClicker Poll: Black Holes

From a safe distance, you drop an object (nuclear waste? Voldemort?) on an isolated black hole.

Will you see it fall in?

- (a) yes, no matter your distance from the hole
- (b) maybe, depends on how far you are from the hole
- (c) no, because it never actually falls in
- $\infty$   
(d) no, although it does actually fall in



# Business: Highlights

**Read the Syllabus carefully!**

## Course Websites

- Moodle page <http://learn.illinois.edu>  
course information, notes, assignments, grades
- public course page <http://go.illinois.edu/astr210>  
lecture webpages and notes

## Prerequisites:

Credit in Phys 211—i.e., mechanics

Credit in Calculus

Physics 212 very helpful, especially for physics of light & waves

- not required **if** you are willing to pick these up on your own from my class notes, textbook, etc.

## Optional Textbook

Pankaj Jain, *An Introduction to Astronomy and Astrophysics*

- a useful alternative to lecture notes
- I **do not** follow the textbook
- Bookstore listing is incorrect  $\Rightarrow$  **book is optional**
- EBook version available

## Course Behavior Standards

- your responsibility: show respect and courtesy towards other students and instructor
- your right: to be shown respect and courtesy from other students and others
- come to class on time; do not leave early
- be attentive, **ask questions!**