Before we start...

• Get comfortable... we will be using the full lecture time today

• Studies show that the students who sit up front get the best grades
  - Studies also explain WHY
    - http://people.physics.tamu.edu/toback/TeachingArticle/PerkinsWieman_PT.pdf

• As the semester moves on we will stop allowing people to sit in the back rows

• We will not be allowing laptops and cell phones without permission
Overview

1. What this course is really about and why I’m teaching it

2. How the course is organized

3. Stuff you’ll need for the course and the next lecture
Big Picture

This course is really designed to teach the wonder and excitement of the universe around us

- I want it to be understandable
- By the end of the course, I want you to be able to COMMUNICATE the understanding, the excitement and the evidence to others
The Story

• I think in terms of crime stories and the evidence for them

The Scientific Case of How the Universe Came to be the Way is Now

• We have a good degree of confidence in this story
Some of the Questions

- How did the Universe come to exist?
- A Big Bang occurred... then what?
- How did we get from a Big Bang ~14 billion years ago to the Universe we have today?
- What are black holes REALLY?
- What are dark matter and dark energy?
- Is the Universe REALLY expanding? Will it contract again and we'll all die?
- Should I be worried?
Questions and Evidence

• These are important questions for all for humankind

• Everyone should know about (some of) these questions and (some of) what we know about the answers

• You should also know something about the evidence
Communicating the Excitement

• A great deal of the understanding can be had WITHOUT the math
  – You can enjoy music without being a musician or a composer

• As future leaders I want you to be able to go out into the world and effectively teach your senators, friends, co-workers, etc. why this stuff is exciting and important
This course is designed to teach you about the Big Bang, Black Holes, Dark Matter, Dark Energy, and other stuff, and to do it without the Math.

Next talk about HOW we’ll do it...
Being a Detective

• Want you to use evidence to make decisions like a detective (Sherlock, Elementary, Criminal Minds, CSI, NCIS, Bones, Law & Order, others like Scooby-Doo…). For example:
  
  - Don’t need you know HOW to do DNA tests
  - Do need you to understand that DNA tests (using blood from the scene of the crime) can tell us whose blood it is and provides evidence they were there

• Can we put together evidence that would convince a jury to convict?
What's the Evidence?

• What is the evidence that the Big Bang actually occurred?
• What is the evidence that supports our understanding of the “history” of the Universe from the beginning until today?
• What is the evidence for little things we can’t see directly with our own eyes?
  • Atoms, protons and electrons
  • Dark Matter
  • Black Holes
Course Content

These are REALLY big questions

• We want to know what we observe in the universe
  - Big and Small

• To do this we need to understand some of the most important ideas in science
  - Quantum Mechanics
  - General Relativity
  - Others
Don’t worry

• Don’t worry... we aren’t going to do ALL of physics in a semester

• We aren’t going to ask you to calculate anything

• What we want is for you to understand, and re-tell, the story and explain some of the evidence
Ok... worry a little

• This course will make you question what you know about nature and history. If you are uncomfortable with that, you may not like this course.

• This course is harder than it looks. If you are looking for an “Easy A”, you should drop before it counts against you.

• If you are looking for a course where you will can get an A if you put in the work, then this could be a good fit.
How the course is organized

Next few slides are on course organization, grades etc...


(page 2-35) And


- Overview: Grades, Course website, FAQ
- Other Stuff
- eCampus Quizzes
- PLRQ Reading
- Warmups
Intro Lecture Notes
(for before Unit 1)
Overview
First describe how everything fits together, then describe the assignments in detail

This document can be found at
Class Time

• We meet Monday, Wednesday and Friday from 9:10AM to 10:00AM

• Will use the full time period

• I expect you to be on time, and prepared for class by being caught up with all the assignments
Course Home Page/Web Page
http://people.physics.tamu.edu/toback/109
Most things can be found there
Need help? email at
109QuizHelp@physics.tamu.edu and
109GeneralHelp@physics.tamu.edu

Syllabus on Howdy and eCampus

Don’t need to write this all down!
Copy of all the lecture notes at
http://people.physics.tamu.edu/toback/109/Lectures/
Regular and Honors Sections

• Regular sections
  - ASTR 109, Section 501
  - PHYS 109, Section 501

• Honors sections
  - ASTR 109, Section 201
  - PHYS 109, Section 201

There is no difference between the Physics and Astronomy sections (All meet together)

This course counts as 3 credit hours for your “Life and Physical Sciences Core Courses” requirement
Honors vs. Regular Sections

- There is no difference between the Physics and Astronomy Honors sections lectures - All meet together
  - You should have gotten an email from me
- Assignments are the same, except students in the Honors section have an extra paper on a topic we agree upon - See Course Webpage
- Want to be in the honors section but couldn't get in? In the honors section but want to get out? Let me know and we'll fix it
Coming to Class

• Need you to be proactive DURING class!! Get into it and have fun

• If you need sugar or caffeine go for it... just do it quietly
  - Candy/Soda machines nearby

• Laptops/cellphones are NOT allowed during class except for iClicker quizzes since they are too distracting.
  - Will allow them for notes in the first 5 rows with explicit permission
Grades

The course grade will be:

1. Papers in Peerceptiv: 90%
2. Pre-Lecture Reading Questions (PLRQ) Assignments and In-Class Quizzes: 5%
3. End-Of-Chapter (EOC) quizzes in eCampus: 5%

No in-class exams or final

The lab (ASTR/PHYS 119) is a separate course, not required, and NOT being run this semester
Grades

- I like for my students to do well and I like giving lots of good grades
- While I do give lots of A's, this is not an “Easy A” class despite what you may have heard
- Do all the work and I’ll make it worth your while, both in terms of fun and your grade
  - If you blow off the easy stuff or don’t ask for help when you need it, then I’m unlikely to have much sympathy when you ask for a grade change at the end of the semester
  - I’ve given lots of F's
- It will be a lot of work, so if you don’t want to keep up with the class every day, work hard and stretch your mind, you should drop now
- I’ll expect you to keep at it until you get it right
Typical Order of Things

(Things will be a little different for the first week)

Read Chapters for the whole Unit

Go to Lecture, take in-class Clicker quizzes and actively participate

Take PLRQ quiz in eCampus before next lecture

After we finish a chapter in Lecture, do the End-of-Chapter Quiz in eCampus

Start Paper if we have finished Chapter 6, 8, 12 or 17
Tentative Schedule for 2020A

This document can be found at
Frequently Asked Questions Page

- There is an FAQ page for the course
- In general, you should check there if you have a question about the course or assignments before emailing
eCampus
Where you will find all the online assignments

Login instructions at
http://people.physics.tamu.edu/toback/109/ECampus_Quiz_Instructions_and_Help.pdf
Use eCampus for many things

- Papers: (Part of your grade)
  - Peerceptiv
  - TurnItIn
- Warmup Quizzes: (Not part of your grade, but required)
  - 4 Separate sets of quizzes
  - All are Pass/Revise and require 100% except Astronomy Misconception Survey (AMS) which is just one attempt (do the best you can do)
- Pre-Lecture Readin Questions (PLRQ): (Part of your grade)
  - Quizzes
    - Unit 1 is Pass/Revise, the others are not
  - TurnItIn (Submit your own questions for Unit 2 only as Pass/Revise)
- End-of-Chapter (EOC) quizzes: (Part of your grade)
  - All the quizzes are Pass/Revise, but only an 70% is required to pass
- Other:
  - Announcements
  - Grades
Required Textbook

• *Big Bang, Black Holes, No Math* (Toback)
  • Extra credit for students who email me corrections which make it better (list of previous corrections online)
  • eBook or paper is fine
  • Can order at bigbang.physics.tamu.edu
  • First 4 chapters online if your book is late
  • Copy on Reserve at Evans if needed
Next Time...

• Start with an in-class written quiz and in-class iClicker quiz
• Talk more about
  - End-of-Chapter Quizzes in eCampus
  - Grades
• Lecture is on Chapter 2
• The Very Big
Prep for Lecture 2 Pop Quiz

The in-class quiz at the beginning of the next class on will contain at least two of the following questions:

- Why are you taking this class?
- What do you most want to learn about?

- Be prepared to answer these two honestly (there are no right answers, and don't tell me what you think I want to hear)
Prep for Next Time - L1

- All this is posted in the lecture notes!!
- Reading:
  - Required: BBBHNM: Chapter 1-4
  - Recommended Reading:
    - BHOT: Chap. 1-3
    - SHU: Chap. 1-2
    - TOE: Chap. 1
- eCampus Stuff
  - Read eCampus Instructions on the main course page
  - Complete both the Warm-up Quizzes which are in Part 1 (will assign Part 2 next time)
    - Extensions granted if needed. Email me
  - If you need additional attempts, follow the instructions or fill out the worksheet
    - How to get to your old submission information
      - http://people.physics.tamu.edu/toback/109/ECampus_Quiz_Instructions_and_Help.pdf#page=3
- Pre-Lecture Reading Questions:
  - Read Instructions on what kinds of questions we are looking for at
  - Unit 1 quiz (will open after you finish Warmups 1) assigned next time
- Honors Section:
  - If you are in the Honors Section you need to reply to the email I sent you. If you didn’t get it email me
- Other Prep
  - Make sure you are receiving email using the Official A&M email, will use it for class announcements
  - Bring lined paper and your iClicker to the next class
Useful Links

- Course Website
  http://people.physics.tamu.edu/toback/109
- Course Organization
- Class Schedule
- eCampus Instructions
  http://people.physics.tamu.edu/toback/109/ECampus_Quiz_Instructions_and_Help.pdf
- PLRQ Instructions
- Lecture Notes
  http://people.physics.tamu.edu/toback/109/Lectures/
- Papers and Peerceptiv
  http://people.physics.tamu.edu/toback/109/WritingAssignments/Papers_and_Peerceptiv.pdf
- FAQ Page
Full Set of Readings So Far

- **Required:** BBBHNM: Chap 1-4
- **Recommended:**
  - BHOT: Chap. 1-3
  - SHU: Chap. 1-2
  - TOE: Chap. 1