Cosmic Catastrophes

The Lives and Deaths of Stars

AST 309N

- Handouts
- Webpage:
- http://www.as.utexas.edu/astronomy/education/spring06/wheeler/309n.html
- Star Parties
- Book: Cosmic Catastrophes (second edition in the works)
- Syllabus
- Review Sessions
- Grading (90-100 A, 80-89 B, 70-79 C, etc (do not drop lowest exam -- but extra credit!)
- Schedule - brief background then start with Chapter 5
- Leave room for Chapter 12 and extra stuff

Reading: Chapters 1 thru 4 for background plus Chapter 5 - White Dwarfs

Chapters 1 & 2 - AST 301

- Particles, forces, neutrinos
- Charge repulsion
- Pressure -
  - Thermal
  - Quantum
- Nuclear Reactions

Chapters 3 & 4

- Binary Star Evolution
- Accretion Disks

Will refer to as needed

Extra Credit

On exams:

Astronomy in the News,

NASA's Astronomy picture of the day
http://antwrp.gsfc.nasa.gov/apod/astropix.html

Log of observations: up to 5 points on term average (equivalent to 25 points on a single exam!).

Keep an eye on Betelgeuse in Orion, also locate Sirius A, the Crab Nebula, Cassiopeiae A, Cygnus X-1, Sagittarius A, others. Record enough information so that I can tell you actually went out at night and tried to see something. Give a brief summary of why they are important. Some of these can be seen with the naked eye, some not. Some can be seen now, some later in the term. **Star Party**.

One minute exams

Peer interaction

Scientific Research: Exploring the Unknown

Known

Summary of what we have learned of the natural world by rigorous study of nature: observation, experiment, guided by peer review, reproducibility, mathematical consistency.

Unknown

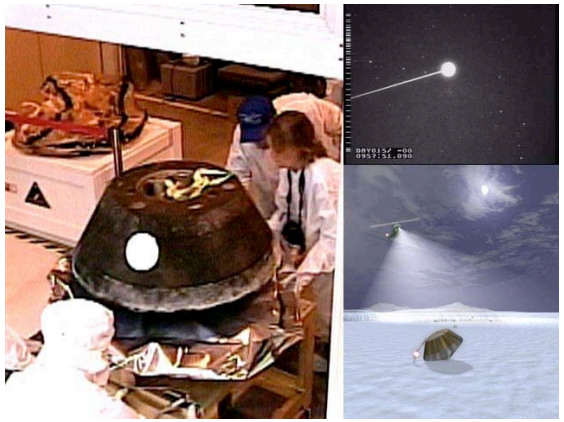
Where the fun is! This class will explore some of those boundaries.

Not yet known

Need more scientific research, understanding.

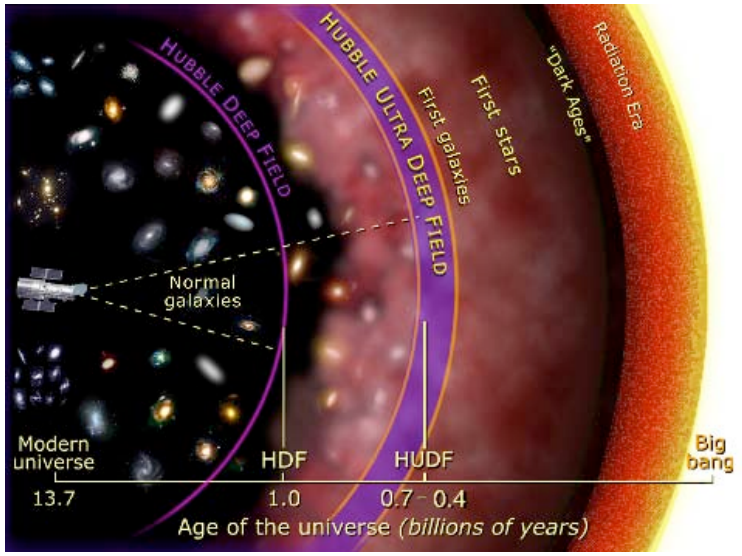
Unknowable

Science assumes no aspect of the natural world is fundamentally unknowable.



Stardust mission return with sample of dust from comet

The Past is All Around Us



The Universe is a strange place!

It began in a Big Bang, the creation of space and time as we know them,

It has been expanding for 14 billion years,

It is full of dark matter, unlike protons, neutrons, electrons, our stuff, that nevertheless gravitates.

It currently seems to be accelerating in the grip of some anti-gravitating “dark energy.”

On the microscopic scale, nature follows the laws of quantum theory, probability not certainty, quantum jumps, wave-like properties of particles.

Study the stars - see where that leads…