

AST 100 - Astronomy Today

Fall 2006

Essential Information:

Prerequisites: None. Students who have taken *any* college-level astronomy courses are discouraged from taking AST 100.

Credits and Meeting: 1 credit, Monday, 6:50-8:00 PM, ESS 222

Text: None.

Instructor: Prof. James Lattimer, 2-8227, lattimer@astro.sunysb.edu

Office Hours: ESS 455, Tu 2:30 – 3:30, Th 2:30 – 3:30

Grading: A letter grade will be determined by

1. 30% on own presentation,
2. 50% on summaries of other students' presentations,
3. 20% participation in discussion (including attendance).

Course Description:

Consider some of the discoveries of just the past *decade*. Spacecraft have visited the asteroids and are exploring Mars. The new large ground-based telescopes have revealed the Kuiper Belt objects, a new domain in the Solar System, leading to a new understanding of an enigmatic member, Pluto. Discoveries of planets around nearby stars prove that the Solar System is not unique and demonstrate the unexpected variety of planetary systems. Farther afield, astronomers can now measure the mass of the black hole at the center of our galaxy, the Milky Way, and have shown that our galaxy is experiencing a collision with a smaller companion. New generations of UV and X-ray satellites allow us to examine neutron stars and other objects in unprecedented ways. At much greater distances, and longer look-back times, the Hubble Space Telescope has provided us with a glimpse of the Universe at the largest scales yet imaged. New understanding of gamma-ray bursters has emerged with a possible classification into two groups associated with supernovae and merging compact binaries, respectively. Study of certain supernovae have shown them to be “standard candles” that indicate that the Universe, previously believed to be decelerating, has recently entered an epoch of accelerating expansion. Supernovae and measurements of the cosmic background radiation have revealed that over 95% of the universe is made up of either dark matter or dark energy, perhaps the greatest mystery of all at present.

The goal of AST 100 is to introduce the beginning student to these recent discoveries and to assess them critically. AST 100 is a one-credit seminar course, with an emphasis on presentations by students and discussion. Later in the term the skies will be dark during class and one or more excursions to the roof of ESS for astronomical viewing will be possible.

Presentations

Each student will prepare one **20 minute** presentation based on articles in the *New York Times*, *Newsday*, science magazines, and various web sites (see sources below). Student presentation dates will be assigned by the instructor during the first class meeting (11 September). Students will present titles for their presentations at least two weeks before their presentation via email to the instructor, who will post the titles to ensure that topics are not duplicated (first come, first served). Enrollment is limited to 25 students, and typically there will be two student presentations per class period, followed by discussions. Student presentations may be prepared using PowerPoint, html web pages, postscript/pdf files, a chalk board, or transparencies. Each student will prepare a one-page summary and critique of *every* presentation apart from their own, due the week following each presentation. Thus it is essential that students keep notes during the presentations and discussions. Students should be aware of what constitutes plagiarism and avoid it, for both their presentations and their critiques. Sources for information should be identified in presentations. Critiques of other students' presentations should not be copied in whole or in part from other students.

Sources for Presentations:

This list only suggests places to start. It is not complete.

- The *New York Times*, especially *Science Times* on Tuesdays
- *Newsday*
- *Sky and Telescope*, *Astronomy*, *Astronomy Now* monthly magazines
- *Scientific American*, *Science News* publications
- www.stsci.edu results from Hubble
- www.noao.edu the National Optical Astronomical Observatory
- www.nrao.edu the National Radio Astronomical Observatory
- www.jpl.nasa.edu spacecraft exploration of the Solar System
- www.nasa.gov spacecraft exploration and NASA-supported research
- www.nsf.gov NSF-supported research

Do not use www.space.com.

Special Needs:

If you have a physical, psychological, medical or other disability that may affect your ability to carry out assigned course work, you are urged to contact Disability Support Services (ECC Bldg., 2-6748). DSS will determine what accommodations are necessary and appropriate. All information and documentation of disability are confidential.