

ASTR 123 : ASTRONOMY: GALAXIES AND COSMOLOGY

Transcript title

Astronomy: Galaxies

Credits

4

Grading mode

Standard letter grades

Total contact hours

60

Lecture hours

30

Lab hours

30

Recommended preparation

MTH 60 or MTH 98 or placement into Math level 10.

Course Description

Introduces fundamental concepts of the universe for a non-science major audience. Explores modern cosmological concepts of the Big Bang, dark matter, curved space, black holes, and galaxy formation. Unpacks the scientific development of these concepts and explains the basic physics underlying them. ASTR 100, ASTR 121, ASTR 122, and ASTR 123 can be taken in any order.

Course learning outcomes

1. Compare and contrast our galaxy to others in terms of type, contents, age, luminosity, motion, and size.
2. Analyze the size, age, structure, and motion of the universe overall use cosmological models.
3. Access space science research from a variety of sources, evaluate the quality of the information, and compare it to current models of astronomical processes.
4. Use scientific reasoning to interpret field-based observations and measurements of astronomical phenomena and compare the results with current astronomical models.
5. Assess the contributions of astronomy to our evolving understanding of global change and sustainability while placing the development of astronomy in its historical and cultural context.

Content outline

1. History of astronomy.
2. Telescopes of various types and designs.
3. Open and globular clusters of stars and main-sequence fitting.
4. The contents of our galaxy and the local group of galaxies.
5. The dark matter issue and possible solutions and implications.
6. Clusters of galaxies and large scale structure of the universe, and active galaxies (AGN's).

7. Cosmological models, the universal expansion, and parameters including distances and ages.

8. Elementary particle physics and relativity.

Required materials

May require a textbook.

General education/Related instruction lists

- Science Lab