

COURSE DESCRIPTION

Dept., Number	Astr 103	Course Title	Astronomy I
Semester hours	3	Course Coordinator	Tibor Torma, Director of Kennon Observatory, Research Assistant Professor

Current Catalog Description

Lectures, demonstrations in astronomy, laboratory experiences in celestial mechanics and light, and observations through an optical telescope in an integrated lecture laboratory sequence.

Textbook

J. Bennett et al: *The Cosmic Perspective*, 4th edition, Addison-Wesley, 2005.

References

Voyager SkyGazer Planetarium software associated with the textbook.

Course Outcomes

Upon successful completion this course, the students:

1. gain a general understanding of astronomy,
2. understand what can be observed in the sky,
3. acquire knowledge of what we know about the Solar System.

Relationship between Course Outcomes and Program Outcomes

The ABET/CAC criteria for computer science require 30 credit hours of science and mathematics appropriate for the discipline. The BSCS program meets this criterion by requiring 14 hours of natural science courses intended for majors in those fields, including a two-course sequence with associated laboratories in one field, and 18 hours of mathematics beyond the pre-calculus level. This course is one option for satisfying part of the science requirement. The course outcomes are related to the expectations for the role of natural science in the BSCS curriculum.

Prerequisites by Topic

No prerequisites

Major Topics Covered in the Course

This is an introductory course to astronomy, with more emphasis on active thinking than memorizing facts. The laboratory is a mandatory part of Astronomy 103, and it is to provide practical experience with astronomical observations, measurements in general, and with the underlying scientific concepts. Major topics of the course include:

1. The Celestial sphere and apparent motions.
2. Motion of the Earth and timekeeping.
3. Motion of the Moon, phases, and eclipses.
4. Ancient astronomy; geocentric models.
5. Renaissance astronomy; Kepler's laws; Newton's laws and gravity.
6. Matter and energy.
7. Light and the electromagnetic spectrum.
8. Optical telescopes.
9. New technologies and other kinds of telescopes.
10. Sun and Solar System.
11. The inner planets; Mercury, Venus, Earth, and Mars.
12. Asteroids and meteoroids.
13. Jupiter and Saturn.
14. Uranus, Neptune, and Pluto.
15. Kuiper Belt object, comets, and Solar System formation.

Assessment Plan for the Course

The instructor assesses the student performance related to the course outcomes using examinations, quizzes, and laboratory exercises.

How Data in the Course are Used to Assess Program Outcomes (unless adequately covered already in the assessment discussion under Criterion 4)

The conduct of this course is not governed by the ABET program faculty. No data are collected that are used to assess program outcomes directly.

Estimate Curriculum Category Content (Semester hours)

Science 3 hours