

**College of San Mateo
Official Course Outline**

1. COURSE ID: ASTR 100 **TITLE:** Introduction to Astronomy

Units: 3.0 units **Hours/Semester:** 48.0-54.0 Lecture hours

Method of Grading: Letter Grade Only

Recommended Preparation:

Eligibility for ENGL 838 or ENGL 848

or appropriate skill levels as indicated by English placement tests and MATH 110

2. COURSE DESIGNATION:

Degree Credit

Transfer credit: CSU; UC

AA/AS Degree Requirements:

CSM - GENERAL EDUCATION REQUIREMENTS: E5a. Natural Science

CSU GE:

CSU GE Area B: SCIENTIFIC INQUIRY AND QUANTITATIVE REASONING: B1 - Physical Science

IGETC:

IGETC Area 5: PHYSICAL AND BIOLOGICAL SCIENCES: A: Physical Science

3. COURSE DESCRIPTIONS:

Catalog Description:

General survey course in astronomy, in which students will study the sun, planets, their moons, and other minor bodies of the solar system. Students will also study extrasolar planets, stars, black holes, dark matter/dark energy and cosmology. Emphasis is on conceptual understanding of the universe.

4. STUDENT LEARNING OUTCOME(S) (SLO'S):

Upon successful completion of this course, a student will meet the following outcomes:

1. Explain the reason for the Earth's seasons.
2. State and explain the importance of Newton's Law of gravity.
3. State and explain the importance of Kepler's Laws.
4. Describe the basic properties of black holes.
5. Assess the role of dark energy in determining the eventual fate of the universe.

5. SPECIFIC INSTRUCTIONAL OBJECTIVES:

Upon successful completion of this course, a student will be able to:

1. Explain the reason for the Earth's seasons.
2. State and explain the importance of Newton's Law of gravity.
3. State and explain the importance of Kepler's Laws.
4. Describe the basic properties of black holes.
5. Assess the role of dark energy in determining the eventual fate of the universe.

6. COURSE CONTENT:

Lecture Content:

- Earth's Seasons
- Constellations of the Season
- The Moon: Our Ancient Neighbor
- Eclipses of the Moon and Sun
- Kepler's Laws of Planetary Motion
- Newton's Laws of Gravity and Motion
- Light and the Electromagnetic Spectrum
- Jupiter and Saturn: The Biggest Giants
- Origin of the Comets: Kuiper Belt and Oort Cloud
- The proton-proton chain as the source of the sun's energy production
- Surveying the stars
- Characteristics of Black Holes
- Mystery of gamma ray bursts
- Our galaxy
- Dark matter, dark energy and the fate of the universe

7. REPRESENTATIVE METHODS OF INSTRUCTION:

Typical methods of instruction may include:

- A. Other (Specify): Lectures in the Planetarium- The informational content of Astronomy I 00 is conveyed by lecture in the planetarium. These lectures are in Powerpoint format and uploaded to the instructor's website, for easy access by the student. CSM 's GOTO HYBRID star projector is used extensively and enables students to see the effects of precession, diurnal motion, lunar phases and the effect of one's change in latitude as one travels northward or southward from San Mateo. The various types of star clusters and galaxies and the different types of nebulae are easily displayed. Required Homework Assignments- There are weekly homework assignments that enable the student to further hone their skills in understanding the course material. These assignments are designed to enable the student to think critically in arriving at the answers. After Class Excursions -On the first Friday of the month, the San Mateo County Astronomical Society (SMCAS), meets. An astronomer from NASA or any of the local universities gives a talk about the latest research in his/her field.

8. REPRESENTATIVE ASSIGNMENTS

Representative assignments in this course may include, but are not limited to the following:

Writing Assignments:

There are weekly homework assignments that enable the student to further hone their skills in understanding the course material. These assignments are designed to enable the student to think critically in arriving at the answers.

9. REPRESENTATIVE METHODS OF EVALUATION

Representative methods of evaluation may include:

- A. Exams/Tests
- B. Homework
- C. Exams- including midterm and final exams. Homework Assignments- Weekly homework assignments from the Mastering Astronomy website or other sources.

10. REPRESENTATIVE TEXT(S):

Possible textbooks include:

- A. Bennett, Donohue, Schneider. *Cosmic Perspective*, 6th ed. Voit- Pearson, 2010

Origination Date: August 2010

Curriculum Committee Approval Date: October 2010

Effective Term: Spring 2016

Course Originator: Darryl Stanford