

College of San Mateo
Official Course Outline

1. **COURSE ID:** ASTR 115 **TITLE:** The Solar System
Units: 3.0 units **Hours/Semester:** 48.0-54.0 Lecture hours; and 96.0-108.0 Homework hours
Method of Grading: Letter Grade Only
Recommended Preparation:
 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:
 Study of the sun, planets, their moons, asteroids, and comets, as well as the age and formation of the solar system. Also covers the history of astronomy and the contributions of various cultures to astronomy. Emphasizes the connection between Newton's Laws and the conservation of energy to Kepler's laws of planetary motion. Discusses the results of interplanetary space probes and the discovery of extrasolar planets. Focuses on conceptual understanding of the solar system.

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**
 Upon successful completion of this course, a student will meet the following outcomes:
 1. Explain the reasons for the seasons.
 2. Analyze the role of tectonics in shaping the surfaces of terrestrial planets.
 3. Discuss the similarities and differences of the atmospheres of the jovian planets.
 4. Discuss the similarities and differences of the major solar system moons.
 5. Demonstrate an understanding of the latest categories of solar system objects.

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**
 Upon successful completion of this course, a student will be able to:
 1. Explain the reasons for the seasons.
 2. Analyze the role of tectonics in shaping the surfaces of terrestrial planets.
 3. Discuss the similarities and differences of the atmospheres of the jovian planets.
 4. Discuss the similarities and differences of the major solar system moons.
 5. Demonstrate an understanding of the latest categories of solar system objects.

6. **COURSE CONTENT:**
Lecture Content:
 1. Earth's Seasons
 2. Kepler's Laws of Planetary Motion
 3. Newton's Laws of Motion
 4. Light and the Electromagnetic Spectrum
 5. Jovian Planet Atmospheres
 6. Exotic Moons of Jupiter and Saturn
 7. Topography of the Terrestrial Planets
 8. Origin of the Comets: Kuiper Belt and Oort Cloud
 9. Eclipses of the Moon and Sun
 10. The Moon: Our Ancient Neighbor
 11. The Tides
 12. Planetary Classification

7. **REPRESENTATIVE METHODS OF INSTRUCTION:**

Typical methods of instruction may include:

- A. Lecture
- B. Other (Specify): Lectures in the Planetarium -The informational content of Astronomy 115 is conveyed by lecture in the planetarium. These lectures are in Powerpoint format and uploaded to WebAccess, 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.

8. REPRESENTATIVE ASSIGNMENTS

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

Writing Assignments:

Written problem solving using various worksheets. These are performed weekly.

Reading Assignments:

Students are required to keep up with the weekly reading of the astronomy text.

9. REPRESENTATIVE METHODS OF EVALUATION

Representative methods of evaluation may include:

- A. Class Participation
- B. Exams/Tests
- C. Homework
- D. Exams - There are three midterm exams and a non-comprehensive final exam. Homework Assignments - There will be weekly assignments from Pearson's Mastering Astronomy website. Class Participation - Class participation is engendered by student usage of iClickers. This instructional tool enables the student to gauge their comprehension of the study material.

10. REPRESENTATIVE TEXT(S):

Possible textbooks include:

- A. Bennett, Donohue, Schneider, Voit. *Solar System*, 7th ed. Pearson, 2014

Origination Date: September 2020

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Effective Term: Fall 2021

Course Originator: Darryl Stanford