

Course discipline/number/title: ESCI 1124: Solar System Astronomy

A. CATALOG DESCRIPTION

1. **Credits:** 4
2. **Hours/Week:** 3 Lecture, 2 lab
3. **Prerequisites (Course discipline/number):** None
4. **Other requirements:** None
5. **MnTC Goals (if any):** Goal 3/Natural Sciences

B. COURSE DESCRIPTION: This course is a survey of the solar system. It includes study of the Earth and Moon, the planets and their satellites as well as asteroids, meteors and comets. Study includes the history of astronomy from ancient times leading up to our modern view of the sun and planets. Topics include light and telescopes, planetary surfaces and atmospheres and the origin of planetary systems. Students will also be introduced to striking beauty of our solar system as revealed through images and direct experience through the telescope. Lab work is supplemented by astronomical observations.

C. DATE LAST REVISED (Month, year): December, 2024

D. OUTLINE OF MAJOR CONTENT AREAS:

1. History of Astronomy
2. Orbits and Gravity
3. Radiation and spectra
4. Relationships of Earth, Moon, Sun and Stars
5. Telescopes
6. The Planets of the Solar System
7. The satellites of the planets
8. Minor solar system objects
9. Origin of the Solar System

E. LEARNING OUTCOMES (GENERAL): The student will be able to:

1. Describe the characteristics of objects in the solar system.
2. Explain astronomical influences on the Earth such as seasons and tides.
3. Explain the phases of the moon.
4. Apply the physical laws that govern the bodies in our solar system.
5. Refute incorrect interpretations of solar system phenomena
6. Defend the Nebular Theory for the formation of the Solar System using scientific evidence.
7. Perform laboratory experiments in astronomy including analysis of data and sources of error and uncertainty.

F. LEARNING OUTCOMES (MNTC):

Goal 3/Natural Sciences: The student will be able to:

1. Demonstrate understanding of scientific theories.
2. Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.
3. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.

G. METHODS FOR EVALUATION OF STUDENT LEARNING: Methods may include but are not limited to:

1. Exams
2. Essays
3. Writing assignments
4. Homework
5. Quizzes
6. Lab exercises

- H. **RCTC CORE OUTCOME(S).** This course contributes to meeting the following RCTC Core Outcomes(s):
Critical Thinking. Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.
- I. **SPECIAL INFORMATION (if any):**
Included in the initial lab session is a discussion on general safety hazards and safety equipment. During the pre-lab instruction of labs involving hazardous materials or equipment, students are given information pertaining to the use, safety precautions, and disposal of these materials or equipment. The instructor directs all students to wear the necessary protective equipment while working with any hazardous chemicals. Safety Data Sheets for chemicals used are available online.