ASTR 115H: PLANETARY ASTRONOMY - HONORS

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Spring 2022
Credits:	3
Total Contact Hours:	108
Lecture Hours :	54
Lab Hours:	0
Hours Arranged:	0
Outside of Class Hours:	54
Prerequisite:	ENGL 101 or ENGL 101E or ENGL 101H or eligible for ENGL 101 without support; student must be eligible for the Citrus College Honors Program or obtain a recommendation from an Honors instructor.
Strongly Recommended:	Elementary algebra or higher or direct placement based on multiple measures.
District General Education:	B2. Natural Sciences - Physical Sciences
Transferable to CSU:	Yes
Transferable to UC:	Yes - Approved
Grading Method:	Standard Letter

Catalog Course Description

The astronomy of the solar system including the history of astronomy, the physics of motion, energy, and light, and the processes that determine the formation and evolution of planets, moons, and other bodies in our solar system and others. Students are expected to work and participate at an honors level which includes strong critical thinking skills, thorough analysis of astronomical readings, presentation and leadership skills demonstrated through class participation/presentation. 54 lecture hours.

Course Objectives

- have a perspective of the size and scale of the solar system and its relationship to the larger universe.
- identify, describe, and understand the processes that shape the solar system and various bodies such as planets, satellites, comets, and asteroids
- understand methods and tools of science, especially astronomy
- explain astronomical phenomena in simple terms
- connect the observed motions of objects in the sky to the actual movement of the Earth, Moon, and planets.
- make predictions on the behavior of simply physical systems based on the physics of forces, energy, and light.
- connect solar system formation to physical processes such energy transfer and conservation. relate physical parameters such as mass, composition, and rotation to the processes that shape planetary surfaces.
- predict effects of physical processes such as greenhouse warming, Coriolis effect, and thermal escape on a planet's atmospheric structure and long-term evolution.

Major Course Content

1. The Size and Scale of the Universe
2. The Motions of the Earth and Sky
3. The Development of Modern Science
4. The Physics of Astronomy:
5. Energy, Force, and Matter
6. Light
7. The Solar System
8. General Properties of the Solar System
9. Origin of the Solar System
10. The Evolution of Planets and Moons
11. Geology of Terrestrial Planets
12. Atmospheres of Terrestrial Planets
13. Jovian Planets and their Moons
14. Other Relevant Topics
15. Small bodies in the solar system
16. Extrasolar planetary systems
17. The Sun and its affects on the planets
18. Life in the Solar System
19. Exploring the Solar System
20. Spacecraft and Remote Sensing
21. Robotic and Human Exploration

Suggested Reading Other Than Required Textbook

Popular astronomy internet web sites produced by NASA, USGS, and major observatories.

Examples of Required Writing Assignments

Write an proposal for a series of instruments to be used aboard a spacecraft exploring another planet or moon. This proposal should discuss how each of these instruments will help answer specific scientific questions about the surface of this world.
Exam question. Describe in a paragraph the steps in the formation of the solar system.
Imagine your are standing on the surface of the Moon facing the Earth. Explain whether or not the Sun rises and sets and how you can tell. Explain whether or not the Earth rises and sets and how you can tell.

Examples of Outside Assignments

Given information about a planet's mass and radius, calculate the escape velocity from the surface.
Given information about mass, radius, and distance from its star, describe the likely geologic processes acting on the surface of a planet.

Instruction Type(s)

Lecture, Online Education Lecture

IGETC Area 5: Physical and Biological Sciences

5A. Physical Science