ASTR C100L: ASTRONOMY LABORATORY

Item	Value
Top Code	191100 - Astronomy
Units	1 Total Units
Hours	54 Total Hours (Lab Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)
Local General Education (GE)	• Area 5A Physical Sciences (CB1)
California General Education Transfer Curriculum (Cal-GETC)	• Cal-GETC 5C Laboratory Activity (5C)
Intersegmental General Education Transfer Curriculum (IGETC)	• IGETC 5C Laboratory Activity (5C)
California State University General Education Breadth (CSU GE-Breadth)	• CSU B3 Laboratory Activity (B3)

Course Description

A beginning astronomy laboratory course for non-science majors. The course will include sky observations with real or virtual telescopes as well as indoor experiments that utilize astronomy-based simulations. PREREQUISITE: ASTR C100 or concurrent enrollment. ADVISORY: Understanding of Beginning (Elementary) Algebra. Transfer Credit: CSU; UC: Credit Limitation: No credit for ASTR C100L unless ASTR C100 is taken previously or concurrently.

Course Level Student Learning Outcome(s)

1. Explain the basic principles of astronomical observations and data reduction and analysis.
2. Apply proper strategies to derive various astronomical quantities.
3. Interpret various astronomical data.

Course Objectives

- 1. Describe the main components of a telescope and their functions.
- 2. Collect and analyze data acquired through actual or simulated telescope observations.
- 3. Identify and explain the phases of the moon and the changing location of sunrise or sunset over the course of a semester.

Lecture Content

See Lab Content.

Lab Content

Tracking and Observing the Sun and Moon Planisphere Telescope I: Basics Telescope II: Alignment and Operation Telescope III: Observing the Moon. Telescope IV: Observing Planets, Stars, and Nebulae. Photometry of the Pleiades. Spectral Classification of the Stellar Spectra Hertzsprung-Russell Diagram of Star Clusters The Hubble Red Shift

Method(s) of Instruction

- Lab (04)
- DE Online Lab (04X)

Instructional Techniques

A variety of instructional techniques will be employed to encompass different student learning styles. Instruction will be supplemented, where appropriate, by PowerPoint presentations, videos, simulations, and other electronic resources and technologies.

Reading Assignments

Students will complete reading assignments from the lab manual. This is a lab-only course.

Writing Assignments

Lab Reports and Discussions will require the students to demonstrate and communicate a qualitative understanding of scientific concepts. This is a lab-only course.

Out-of-class Assignments

This is a lab-only course.

Demonstration of Critical Thinking

Students will demonstrate critical thinking through written work such as lab reports as well as active participation in class discussions.

Required Writing, Problem Solving, Skills Demonstration

Problem-Solving will be emphasized in the class through quiz and test questions, and testing predictions based on simulations and hands-on experiments. Writing skills will be demonstrated by lab reports.

Eligible Disciplines

Astronomy: See physics/astronomy Master's degree required.

Textbooks Resources

1. Required Reynolds, M.D. Backich, M.E. A Laboratory Guide for Astronomy, 1st ed. Morton, 2015 Rationale: - Legacy Textbook Transfer Data: Legacy text

Other Resources

1. Coastline Library 2. Project CLEA - CONTEMPORARY LABORATORY EXPERIENCES IN ASTRONOMY developed laboratory exercises that illustrate modern astronomical techniques using digital data and color images. All manuals, questionnaire forms and VIREO (The Virtual Educational Observatory) lab software are available free of charge through the Project CLEA site. Sponsored by Gettysburg College and the National Science Foundation.