GROSSMONT COLLEGE

COURSE OUTLINE OF RECORD

Curriculum Committee Approval: 03/22/2022

 GCCCD Governing Board Approval: 04/19/2022

ASTRONOMY 112- GENERAL ASTRONOMY LABORATORY

 1. Course Number Course Title Semester Units

 ASTR 112 General Astronomy Laboratory 1

 Semester Hours

 3 hours laboratory: 48-54 hours 48-54 total hours

 2. Course Prerequisites

 A “C” grade or higher or “Pass” or concurrent enrollment in Astronomy 110 or equivalent.

 Corequisite

 None

 Recommended Preparation

 None

 3. Catalog Description

 Designed to accompany and augment Astronomy 110. Topics can include constellations and astronomical coordinates, astronomical instruments, the solar system, stars and stellar systems, and the Universe. These will be addressed using naked eye and telescope observations, laboratory experiments, computer simulations and calculations.

 4. Course Objectives

 The student will:

 Identify various stars, constellations and the visible planets.

 Examine the movements and relationships of Earth to other members of the solar system and stars.

 c. Apply and understand astronomical coordinate and measurement systems.

 d. Apply and understand simple astronomical telescopes and binoculars.

 e. Employ basic instruments and techniques of the astronomers in the process of obtaining professional observations.

 f. Set up apparatus to experiment with optics, spectroscopy and materials. Use real or simulated data to examine stellar and galactic colors, magnitude, distance and how physical laws affect the motion of astronomical objects.

 g. Evaluate numeral results of experiments for constancy with expected results and prior knowledge. Examine how measurement errors are reflected in experimental results.

 5. Instructional Facilities

 a. Refracting and reflecting telescopes including the 8" and larger reflectors

 b. Audiovisual equipment.

 c. Computers for simulated observations.

 d. Lab equipment which includes:

 Celestial spheres.

 Lunar and stellar charts.

 Binoculars.

 Rock samples.

 (5) Lenses.

 (6) Spectroscopes.

 (7) Sky charts.

 6. Special Materials Required of Student

 Simple scientific calculator.

 7. Course Content

1. Astronomical units.
2. Celestial coordinates and constellations.
3. Use of telescopes and telescopic observations. Basic lens optics and the design of refracting telescopes.
4. Scale of the solar system.
5. Masses and density of planets.
6. Lunar phases and surface.
7. Stellar and emission line spectroscopy.
8. Stellar colors, magnitudes and distances.
9. Galaxy types and distances.

 8. Method of Instruction

 a Lecture and demonstrations preceding experiments.

 b Operate astronomer’s tools including: celestial spheres, star charts, telescopes, and spectroscopes.

 c. Films, photographs, illustrations and graphs. Computer simulations.

 d. Field trip to local planetarium and observations to provide further practical experience.

 9. Methods of Evaluating Student Performance

 a Written reports: experiments, demonstrating the ability to operate, use and/or understand astronomical aids covered.

 b Quizzes and final exam: objective questions on the basic concepts, definitions, terms and equipment.

10. Outside Class Assignments

 a. Required reading on specific texts, library research and completion of written laboratory work.

 b. Observations of positions of Sun, Moon, stars and planets.

 c. Outside reading to acquaint the student with literary and technical journals, maps, etc.

 d. Outside assignments such as constellation identification, meteor counts, comet and planet observations, etc.

11. Representative Texts

 a. Representative Text(s):

 *Astronomy 112 Laboratory Manua*l. El Cajon, CA: Grossmont College, 2022.

 b. Supplementary texts and workbooks:

 None

Addendum: Student Learning Outcomes

Upon completion of this course, our students will be able to do the following:

1. Employ laboratory equipment to obtain measurements
2. Interpret data obtained in an experimental setting
3. Communicate experimental results in a coherent manner