I. Basic Course Information

A. Course Number and Title: PHYS-130 Astronomy

B. Date of Proposal: February, 2007

C. Sponsoring Department: Science & Engineering

D. Semester Credit Hours: 4

E. Weekly Contact Hours:
   - Lecture: 3*
   - Laboratory: 2*
   *On-line course. Hour equivalents if offered on campus.

F. Prerequisites: MATH 023 Algebra Mod II

G. Laboratory Fees: Yes*

II. Catalog Description

Prerequisite: MATH 023 Algebra Mod II
This course studies periodic changes in the night sky, astronomical instrumentation, the solar system, stars, nebulae and galaxies, and cosmology. Laboratory exercises will utilize simulations and night-sky observations. May be used to fulfill one semester of a laboratory science requirement for non-science majors, or as an elective for science majors.

III. Statement of Course Need

The course Introduction to Astronomy (PHYS-120) is essentially a non-laboratory, non-observational astronomy course. Since many lab exercises can be done with the naked eye or with simulations and images available on the Web, the opportunity now exists to create a laboratory version, which can be given either as a web-based course, or as a hybrid course combining classroom, laboratory, observational, and web-based modules.

IV. Place of Course in College Curriculum

A. The course is a General Education course in Science (Lab)
• Free elective

B. Course transferability: Fully transferable as an Astronomy survey course.

V. Outline of Course Content

• Getting acquainted, getting organized, the nature of science and astronomy.
• Astronomical cycles, calendars, celestial guideposts
• Planets, Astrology, Archaeoastronomy, Greek Astronomy
• Renaissance Astronomy and the Copernican revolution
• The physics of astronomy: gravitation, light, and telescopes
• General overview of the solar system
• Earth and moon, eclipses and tides
• Planets, terrestrial and jovian
• More on planets. Also asteroids, comets and meteorites
• The Sun
• Stars in general. The HR diagram
• Binaries, variables, clusters, stellar evolution
• Galaxies
• Modern Cosmology, and searches for extra terrestrial intelligence.

VI. Educational Goals and Learning Outcomes

Educational Goals

Students will:

A. Develop an appreciation and understanding of the ways in which astronomical knowledge in particular, and scientific knowledge in general, is obtained. (G. E. 4, 7)

B. Develop an awareness of the universe around them—from the microscopic to the largest known structures. (G. E. 3, 7)

C. Engage in direct astronomical observations (G. E. 3, 7)

D. Connect observational data to astronomical concepts and theories. (G. E. 3, 7)

Learning Outcomes

Students will be able to:

• Make observations of the sky, observing the motions of celestial objects.
• Prepare written reports analyzing their observations.
• Apply mathematical concepts to the motions of stars, planets, etc.
• Utilize a variety of print, electronic, and internet resources to explore the field of astronomy.

VII. Modes of Teaching and Learning

• On-line lecture/discussion
• Laboratory (Observations of the sky)
• independent study

VIII. Papers, Examinations, and other Assessment Instruments

• laboratory reports
• exams
• final exam
• on-line discussions

IX. Grade Determinants

• laboratory reports
• exams
• final exam
• on-line discussions

X. Texts and Materials


(Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

XI. Resources

None

XII. Honors Options

Not applicable.