RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

PHYS – 120 INTRODUCTION TO ASTRONOMY

I. Basic Course Information

A. Course Number and Title: PHYS-120 Introduction to Astronomy

B. New or Modified Course: Modified

C. Date of Proposal: Semester: Fall Year: 2016

D. Effective Term: Fall 2017

E. Sponsoring Department: Science & Engineering

F. Semester Credit Hours: 3

G. Weekly Contact Hours: Lecture: 3
Laboratory: 0
Out of class student work per week: 6

H. Prerequisite: MATH 030- Intermediate Algebra

I. Laboratory Fees: None

J. Name and E-Mail Address of Department Chair:
Dr. Sarah Imbriglio, sarah.imbriglio@raritanval.edu

II. Catalog Description

Prerequisite: MATH 030 – Intermediate Algebra.

This course studies periodic changes in the night sky, astronomical instrumentation, the solar system, stars, nebulae and galaxies, and cosmology. The scientific method will be used to develop an understanding of the astronomical universe. May be used to fulfill one semester of a science requirements for non-science majors, or as an elective for science majors.

III. Statement of Course Need

A. Introduction to Astronomy is a popular non-lab science elective for non-science majors. It also is appropriate as an introduction to the field for science students who are interested in astronomy and the origin or the approach to science today.

B. There is no lab component.
C. Course transferability; Introduction to Astronomy is a common offering in most four-year colleges. This course generally transfers as an Astronomy general education course.

IV. Place of Course in College Curriculum

A. Free elective

B. The course is a General Education course in Science (non-lab).

C. This course meets a program requirement for a non-lab science elective for non-science majors

D. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites.

V. Outline of Course Content

A. Introduction and the Nature of Science
B. Application of the Scientific Method in Astronomical Research: Hypothesis, Experimentation, Data Analysis, Theory Formation
C. Viewing the Sky, Understanding Astronomical Cycles
D. Ancient Astronomy
E. Ptolemaic model of the solar system, the Legacy of the Greeks
F. Copernican model of the solar system
G. Birth of modern Astronomy (Copernicus, Brahe, Kepler, Galileo, Newton)
H. Light/Electromagnetic Radiation, what it tells us about the Universe
I. Optics and instrumentation
J. The Solar System – planets, our Sun
K. Stars – Stellar Evolution, the HR diagram
L. Stellar Endings; Novae; Supernovae
M. Galaxies and Cosmology; Life in the Universe

VI. General Education and Course Learning Outcomes

A. General Educational Learning Outcomes

At the completion of the course, students will be able to:

1. Utilize the scientific method to develop an understanding of the astronomical universe (NJ-GE3*)
2. Prepare written reports of observations (NJ-GE1)
3. Apply mathematical concepts to the motion of stars, planets and other celestial objects (NJ-GE2*)
4. Utilize a variety of print, electronic and internet media to explore the field of astronomy (NJ-GE3, 4, IL)

(* embedded critical thinking)

B. Course Learning Outcomes

See above

C. Assesment Instruments

1. Observational Reports using the Scientific Method (required)
2. Quizzes
3. Exams
4. Research Paper (required)

VII. Grade Determinants

A. Exams
B. Observational Reports using the Scientific Method
C. Homework
D. Quizzes
E. Research Paper (required)

Primary Modes of Teaching and Learning

A. Lecture
B. Data Collection and Analysis
C. Planetarium Visits
D. Links to on-line videos and quizzes

VIII. Texts and Materials

A. suggested textbook
B. astronomy web sources
C. computer based planetarium programs available on the web
D. journals/magazines available in school library

The specific text which may be featured is: *Horizons: Exploring the Universe,* 13th Edition, M. Seeds and D. Backman (Cengage Learning).

(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.)

IX. Resources

A. RVCC Planetarium
B. RVCC Observatory
C. RVCC Library
D. RVCC Computer Labs

X. Honors Option

Not applicable