COMMON COURSE OUTLINE: Course discipline/number/title: ESCI 1124 Solar System Astronomy

A. CATALOG DESCRIPTION
1. Credits: 4
2. Hours/Week: 3 lec / 2 lab
3. Prerequisites (Course discipline/number): Appropriate score on RCTC Placement test with needed score into developmental reading.
4. Co-requisites (Course discipline/number):
5. MnTC Goals (if any): Goal 2/Critical Thinking, Goal 3/Natural Sciences

This course is a survey of the solar system. It includes study of the Earth and Moon, the planets and their satellites as well as asteroids, meteors and comets. Study includes the history of astronomy from ancient times leading up to our modern view of the sun and planets. Topics include light and telescopes, planetary surfaces and atmospheres, the origin of planetary systems and the search for life in the universe. Students will also be introduced to striking beauty of our solar system as revealed through photographs, written work and direct experience through the telescope. Lab work is supplemented by astronomical observations at the RCTC observatory.

B. DATE LAST REVISED (Month, year): March, 2011

C. OUTLINE OF MAJOR CONTENT AREAS:
Topics may include:
1. History of astronomy
2. Orbits and Gravity
3. The Earth-Moon System
4. Radiation and Spectra
5. The Telescope and Other Instruments
6. The Earth as a Planet
7. The Moon
8. Mercury
9. Venus
10. Mars
11. Jupiter
12. Saturn
13. Uranus
14. Neptune
15. Pluto and other dwarf planets
16. Planetary Rings
17. Satellites
18. Comets
19. Asteroids and Meteorites
20. Origin of the Solar System

D. LEARNING OUTCOMES (GENERAL): The student will be able to:
1. Describe the characteristics of objects in the solar system.
2. Explain astronomical influences on the Earth such as seasons and tides.
3. Explain the phases of the moon.
4. Apply the physical laws that govern the bodies in our solar system.
5. Refute incorrect interpretations of solar system phenomena
7. Perform laboratory experiments in astronomy including analysis of data and sources of error and uncertainty.

E. LEARNING OUTCOMES (MnTC):
Goal 2/Critical Thinking: The student will be able to:
1. Gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive, and conscious of possible bias in the information selected.
2. Imagine and seek out a variety of possible goals, assumptions, interpretations, or perspectives, which can give alternative meanings or solutions to given situations or problems.
E. LEARNING OUTCOMES (MNTC): Continued . . .
   3. Analyze the logical connections among the facts, goals, and implicit assumptions relevant to a problem or claim; generate and evaluate implications that follow from them.
   4. Recognize and articulate the value assumptions, which underlie and affect decisions, interpretations, analyses, and evaluations made by ourselves and others.

Goal 3/Natural Sciences: The student will be able to:
   1. Demonstrate understanding of scientific theories.
   2. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, student’s laboratory experience in the collection of data, it’s statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
   3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.

F. METHODS FOR EVALUATION OF STUDENT LEARNING:
Methods of evaluation may include:
   1. Written exams
   2. Essays
   3. Writing assignments
   4. Homework
   5. Quizzes
   6. Students will also be assessed on core outcomes of communication, critical thinking and aesthetic response. Additional assessment will be done via the Astronomy Diagnostic Test or similar assessment vehicle.

G. RCTC CORE OUTCOME(S) ADDRESSED:
   - Communication
   - Critical Thinking
   - Global Awareness/Diversity
   - Civic Responsibility
   - Personal/Professional Accountability
   - Aesthetic Response

H. SPECIAL INFORMATION (if any):
Included in the initial lab session is a discussion on general safety hazards and safety equipment. During the pre-lab instruction of labs involving hazardous materials or equipment, students are given information pertaining to the use, safety precautions, and disposal of these materials or equipment. The instructor directs all students to wear the necessary protective equipment while working with any hazardous chemicals. A copy of Material Safety Data Sheets for chemicals used is available in the lab.