COURSE ABBREVIATION: ASTR 1010

CREDIT HOURS: 3 semester hours

COURSE TITLE: Astronomy of the Solar System

PREREQUISITE: Exit or exemption from Learning Support mathematics and exit or exemption from Learning Support reading or ENSL 0090 with a "C" or better

CATALOG DESCRIPTION
Astronomy from the early ideas of the cosmos to modern observational techniques. The solar system planets, satellites and minor bodies are studied. The origin and evolution of the solar system are studied.

EXPECTED EDUCATIONAL RESULTS
As a result of completing this course, the student will be able to:
1. Identify the contributions made to astronomy by the following people: Ptolemy, Copernicus, Kepler, Galileo, and Newton;
2. Identify the phases of the moon and their causes;
3. Identify the causes of eclipses;
4. Relate the historical development of man's view of the universe from the Geocentric Model to modern interpretations;
5. Identify the laws* which describe and govern planetary motion and qualitatively predict the implications of these laws; (*Kepler's laws and Newton's law of gravitation)
6. Describe and account for the physical properties of the Earth such as structure, surface features, and the composition and evolution of the atmosphere;
7. Describe the motions of the Earth and relate them to our system of time keeping (daily, monthly, seasonally, and yearly);
8. Compare and contrast the terrestrial and jovian planets including the following:
   1. interior structure,
   2. surface features,
   3. atmospheres,
   4. satellites and rings,
   5. magnetic fields;
9. Identify the planets based on their unique significant properties and describe those properties;
10. Identify the planets based on their unique significant properties and describe those properties;
GENERAL EDUCATION OUTCOMES
This course has primary responsibility for general education outcome number six: Recognize and apply scientific inquiry in a variety of settings. It is intended that the course meets this objective in the following ways:

1. Any science class deals inherently with scientific inquiry, by the nature of the course. This, therefore, will be an underlying theme throughout the course.
2. Coverage of the above specific objectives will give direct instruction toward the general objectives: 1, 4, 5, 9.

COURSE CONTENT
I  Introduction to Astronomy
   Required Topics:
   A   The motion of the Sun and stars
   B   The phases of the moon
   C   Eclipses
   D   The scientific method
   Recommended Topics
   E   The scale of the Universe
   F   Celestial coordinates
II  The Copernican Revolution
   Required Topics
   A   The geocentric universe
   B   The heliocentric Model of the solar system
   C   Kepler’s laws of planetary motion
   D   Newton’s Laws
   Recommended Topics
   E   Galileo
   F   Tides
III  The Solar System
   Required Topics
   A   Planetary properties
   B   Terrestrial and jovian planets
   C   The overall layout of the solar system
   D   The origin of the solar system
IV The Earth
Required Topics
A Internal Layers
B Plate Tectonics
C Atmospheric Structure
D Atmospheric Dynamics
E Geomagnetism
Recommended Topics
F Seismic Waves
G Greenhouse effect
H Atmospheric evolution

V The Moon
Required Topics
A Internal Structure
B Maria and Highlands
C Lunar Surface features
Recommended Topics
D Lunar Exploration
E Origin and history

VI The Terrestrial Planets
Required Topics
A The interior of Mercury
B The surface of Mercury
C The surface of Venus
D The atmosphere of Venus
E The surface of Mars
F The atmosphere of Mars
G Atmospheric evolution on Earth, Venus, and Mars
Recommended Topics
H Robotic exploration
I Possible life on Mars

VII The Jovian Planets
Required Topics
A Atmospheric structure
B Atmospheric dynamics
C Internal structure
D Magnetism
E Axial tilt of Uranus
Recommended Topics
E Discoveries of Uranus and Neptune
F Robotic exploration
G Internal heat sources
VIII Moons and Rings of the Jovian planets and Pluto
   Required Topics
   A The Galilean moons of Jupiter
   C The large moons of Saturn and Neptune
   D The midsized jovian satellites
   E Saturn’s spectacular rings
   F The rings of Jupiter, Uranus, and Neptune
   G Pluto in bulk
   Recommended Topics
   H The discovery of Pluto
   I The formation of planetary rings
   J Pluto’s origin

IX Interplanetary Debris
   Recommended Topics
   A Asteroids
   B Comets
   C Meteorites
   D Meteor showers
   E Impacts

ASSESSMENT OF EDUCATIONAL RESULTS
The college believes in the academic value of giving final exams that are comprehensive in
nature; however, the college also values the discretion of the faculty member to determine
appropriate assessment methods. The departments on each campus and/or individual instructors
will construct a detailed syllabus based on the Common Course Outline for implementation in
each class.

EFFECTIVE DATE: October 2003          APPROVED DATE: October 2003

Updated:       June, 1995.
                      May, 1997 - Final exams now required.
                      May, 1998 - revised for semester conversion
                      March 2001- revised to reflect current catalogue
                      March 2002- course number and description changed
                      Sept. 2003- assessment statement from Faculty Handbook adopted, required/recommended topics
                      Separated
                      Oct. 2003- course content outline updated