A. Course Description

Credits: 4

Prerequisites: MATH 098 Introduction to Mathematical Thinking
OR MATH 102 Mathematics of Sustainability or placement at or above College Algebra level on the University's assessment test.

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week :

MnTC Goals: Goal 03 - Natural Science

This course examines the evolution of the universe and the movements within the solar system and life cycles of stars. It is designed for students with a natural interest and fascination for planets, stars, and the universe. The class has access to a large telescope, a planetarium and color slides of recent space probes. Also, it explores special topics of interest including supernovas, quasars, gas giant planets and other wonders of the unfolding universe. Lab included. Intended for general education students and students majoring in Life Sciences Teaching.

B. Course Effective Dates: 08/17/2004 - 05/04/2011 05/05/2011 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Communicate their experimental findings, analyses, and interpretations both orally and in writing.
2. Demonstrate quantitative reasoning skills and competency with arithmetic and elementary statistics at a level appropriate for graduates of bachelors degree programs.
3. Demonstrate understanding of scientific facts and theories in astronomy.
4. Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.
5. Formulate and test hypotheses by experiment in astronomy, including the collection of data, statistical and graphical analysis of results, and interpretation of its sources of error and uncertainty.
6. Recall, describe and apply the concepts, knowledge and vocabulary of astronomy at the level necessary for informed citizenship and success in teaching General Science at the grades 5-8 level.
7. Understand and describe the technology, both ancient and modern, used for astronomical observations; and use methods for naked-eye observations to acquire an appreciation for and an understanding of the astronomy of the local night sky.
8. Understand and explain the properties and origins of astronomical objects; the range of distances and time scales that apply to various astronomical objects and phenomena; and why astronomical objects (Sun, Moon, planets, stars) appear to move the way we see them move both from a geocentric and heliocentric point of view.
9. Use quantitative and qualitative problem solving skills to understand the laws of motion, gravity and light.

E. Learning Outcomes (MN Transfer Curriculum)
Goal 03 - Natural Science

1. 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, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.

2. Demonstrate understanding of scientific theories.

3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.

4. Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.

G. Special Information

Note: First day attendance required except by instructor permission.