

# Bemidji State University

## GEOL 2730: Introduction to Planetary Science

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: \*.\*

Lab Hours/Week: \*.\*

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: Goal 03 - Natural Science

An introduction and examination of the solar system, planets, satellites, asteroids, comets, and meteorites. Atmospheric phenomena, magnetic fields, cosmic particles and the human presence in Space are included. Includes laboratory-like activities and exercises. Liberal Education Goal Area 3.

**B. COURSE EFFECTIVE DATES:** 12/03/1997 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Planetary motions and forces
2. Development of modern astronomy
3. Basic properties of the Sun and planets
4. Solar anatomy and activity
5. Properties of the planets
6. Studying planets from a distance and from up close
7. Meteorites as samples of the early solar system
8. Meteorite types, determining ages of materials
9. Asteroid locations and types, asteroid families and individuals
10. Comet history and orbits
11. Comet anatomy, origins, families, and evolution
12. The moon, lunar geography and exploration
13. Impact cratering and history
14. Lunar volcanism and surface processes
15. Mercury's orbit, rotation and geogaphy
16. Tides and interiors of the moon and Mercury; origins of the moon and Mercury
17. Earth's surface and interior, plate tectonics, oceans and atmosphere
18. Venus surface and atmosphere
19. The Runaway Greenhouse, Venus surface processes and history
20. Mars: Exploration and general properties
21. Life on Earth, Life on Mars; Goldilocks and the three planets
22. Jupiter and Saturn atmospheres and weather; magnetospheres
23. Properties and interiors of Uranus and Neptune
24. Atmospheres and magnetospheres of the Outer Planets; Pluto

#### **D. LEARNING OUTCOMES (General)**

1. become familiar with the solar system "geography", features and phenomena
2. gain a basic understanding of the major topics that comprise the field of planetary science and the questions that remain to be addressed
3. become familiar with the history of the solar system and the planets and with the processes that have operated on their surfaces and interiors over time.
4. begin to integrate this knowledge into a broader understanding through the application of comparative planetology.
5. gain a practical understanding of some techniques that are applied in planetary research.
6. complete lab-like activities that have direct application to understanding planetary environments and the solar system.

#### **E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

Goal 03 - Natural Science

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, students' laboratory experience in the collection of data, its 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.
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.

#### **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

#### **G. SPECIAL INFORMATION**

None noted