Minnesota State University Moorhead

GEOS 360: Planetary Science

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 2

Lab Hours/Week: 2

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: Goal 03 - Natural Science

A synthesis of current knowledge of the members of the solar system and the origin and evolution of planetary systems. Lab included. MnTC Goal 3.

B. COURSE EFFECTIVE DATES: 12/28/2001 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Stellar astronomy, solar evolution, nucleosynthesis, Hertsprung-Russel diagram
2. Geochemistry, partitioning, chemical differentiation
3. Impact processes, surface age dating
4. Tectonic processes
5. Behavior of materials (plastic, elastic, viscous, elastico-viscous, elastico-plastic)
6. Volcanism
7. Space weathering, erosion
8. Weather, condensation, winds, phase diagrams
9. Survey of planets and moons

D. LEARNING OUTCOMES (General)

1. Student can explain the basic processes that shape a planet.
2. Student can read and interpret a variety of graphs and maps.
3. Student can explain how we know what we know about particular aspects of our solar system.
4. Student can engage in critical thinking and reasoning as applied to geological and planetary problems.
5. Student can understand and interpret clouds and wind patterns.
6. Student can interpret the likely cause of a variety of features on a planetary surface.
7. Students can solve a variety of problems involving chemical differentiation or changes in humidity with temperature.
8. Student can explain the basic causes of phases of the moon, eclipses, and seasons.
9. Student can give an overview of the various methods that can be used to infer the nature of distant planets or stars.
10. Student understands the different ways that materials behave and how changes in temperature, pressure, duration of stress, or composition might effect that behavior.

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