HIBBING COMMUNITY COLLEGE
COURSE OUTLINE

COURSE TITLE & NUMBER: Solar System Astronomy: ASTR 1050
CREDITS: 3 (Lecture 2 / Lab 1)
PREREQUISITES: None

CATALOG DESCRIPTION:
Solar System Astronomy is an introductory course investigating our earliest view of the cosmos from a historical perspective, examining in detail the objects in the Solar System as shown by recent discoveries. It includes laboratories investigating some of the constellations of the sky and other labs related to the planets.

OUTLINE OF MAJOR CONTENT AREAS:
1. A modern view of the universe
   A. The scale of the universe
   B. The history of the universe
   C. Motions of the earth
2. The night sky
   A. Patterns in the night sky; the constellations
   B. The reason for the seasons
   C. The moon
   D. The ancient mystery of the planets
3. The history of astronomy and the nature of science
   A. The ancient roots of science
   B. Ancient Greek astronomy
   C. The Copernican revolution
   D. The nature of science
4. Understanding Motion, Energy and Gravity
   A. Describing motion
   B. Newton’s laws of motion
   C. Conservation laws in astronomy
   D. Gravity
5. Light
   A. Basic properties of light and matter
   B. Learning from light
   C. Collecting light with telescopes
6. Formation of the solar system
   A. A brief tour of the solar system
   B. The nebular theory of solar system formation
   C. Explaining the major features of the solar system
   D. The age of the solar system
7. Earth and the terrestrial worlds
   A. Earth as a planet
   B. The moon and Mercury
   C. Mars
   D. Venus
8. Jovian planet systems
   A. Gas giant descriptions
   B. Jovian planet satellites
   C. Jovian planet rings
9. Asteroids, comets and dwarf planets
   A. Classifying small bodies
   B. Asteroids
   C. Comets
   D. Pluto and the Kuiper Belt
   E. Cosmic collisions
10. The sun
    A. Structure of the sun and stars
    B. Nuclear fusion
    C. The sun-earth connection

COURSE GOALS/OBJECTIVES/OUTCOMES:
1. Students will be able to describe the scale and history of the universe.
2. Students will learn to recognize the major constellations.
3. Students will understand the reason for the seasons as well as the motion of the moon and planets in the night sky.
4. Students will describe the history of astronomy from the ancient Greeks through the Copernican revolution.
5. Students will understand Newton’s laws of motion and gravity.
6. Students will be able to describe basic properties of light and matter.
7. Students will be able to explain the formation of the solar system.
8. Students will learn basic ideas about the eight planets of the solar system as well as the major moons.
9. Students will understand the difference between asteroids, comets and dwarf planets.
10. Students will be able to describe the structure and power source in our sun.
11. Students will perform laboratory experiments pertaining to classroom topics.

MNTC GOALS AND COMPETENCIES MET:
Natural Sciences

HCC COMPETENCIES MET:
Working Productively and Cooperatively
Communicating Clearly and Effectively

METHODS FOR EVALUATING STUDENT LEARNING:
The final grade is determined by the average of exams, lab write ups, assignments and a final exam.

AASC APPROVAL DATE: November 15, 2017

REVIEW DATE: November 2022