Faculty members are required to have the outline submitted to the Academic Affairs Office. The course outline is the form used for approval of new courses by the Academic Affairs and Standards Council.

DEPT. **PHYS**  COURSE NUMBER: **1150**

NUMBER OF CREDITS: **3**  Lecture: **2**  Lab: **1**

<table>
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<tr>
<th>Course Title:</th>
<th>Survey of Astronomy</th>
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**Catalog Description:**
Survey of Astronomy covers a general overview of the science of astronomy. Topics include the history of astronomy, the nature of science, celestial motion, phases of the moon, gravity, Kepler’s Laws, light and spectroscopy, the Solar System, stars, galaxies, and cosmology. There will be lab activities to accompany many of the topics.

**FULFILLS MN TRANSFER CURRICULUM AREA(S) (Leave blank if not applicable)**

Goal 1: Communication: ____ by meeting the following competencies:

Goal 2: Critical Thinking: ____ by meeting the following competencies:

Goal 3: Natural Sciences: __3__ by meeting the following competencies:
- Demonstrate understanding of scientific theories.
- 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.
- Communicate their experimental findings, analyses, and interpretations both orally and in writing.
- Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.

Goal 4: Mathematics/Logical Reasoning: ____ by meeting the following competencies:

Goal 5: History and the Social and Behavioral Sciences: ____ by meeting the following competencies:

Goal 6: The Humanities and Fine Arts: ____ by meeting the following competencies:

Goal 7: Human Diversity: ____ by meeting the following competencies:
Goal 8: Global Perspective: ____ by meeting the following competencies:

Goal 9: Ethical and Civic Responsibility: ____ by meeting the following competencies:

Goal 10: People and the Environment: ____ by meeting the following competencies:

**Prerequisites or Necessary Entry Skills/Knowledge:**

| MATH 0099 or permission of instructor |

**Topics to be Covered (General)**

- History of astronomy
- Motions on the celestial sphere
- Seasons
- Phases of the Moon
- Kepler's Laws of planetary motion
- Newton's Laws and gravity
- Spectroscopy and light
- Telescopes
- The terrestrial worlds
- The Jovian planets and their satellites
- Comets and asteroids
- The Sun
- Stellar Properties
- Stellar remnants
- Star clusters and Galaxies
- The structure and history of the Universe

**Student Learning Outcomes**

- Illustrate the current scientific understanding of the physical universe.
- Combine multiple techniques of the scientific process to various aspects of astronomy
- Demonstrate models of physical behavior as it relates to our knowledge of the universe
- Examine astronomical topics and their impacts on past and current society.

See SAMPLE EXPECTED LEARNING OUTCOMES STATEMENTS and ACTION VERB LIST FOR COURSE OUTCOMES in the Minnesota West Curriculum Development Manual which can be accessed at [https://www.mnwest.edu/faculty-resources/curriculum-manual](https://www.mnwest.edu/faculty-resources/curriculum-manual)

**Is this course part of a transfer pathway:**  Yes [ ]  No [X]

*If yes, please list the competencies below*

Revised 10/19