MASTER COURSE OUTLINE

A. ASTR 1000 Introduction to Astronomy

B. COURSE DESCRIPTION:

This introductory course covers the basic principles of astronomy and applies them to the study of our solar system and the life cycles of stars. Topics include motions in the night sky, gravitation, light and optics, solar system formation, planets, moons, asteroids, comets, the Sun, and stellar evolution.
MnTC (Goal 3/NS and 2/CT); (3 Cr – 3 lect, 0 lab)

C. *Core Theme: Critical Thinking **Discipline Area (if MnTC): Natural Sciences

D. RIVERLAND INSTIUTIONAL LEARNING OUTCOMES:

This course addresses the following Riverland Institutional Learning Outcome(s):
☒ ILO 1: critical thinking (*Core Theme Goal 2)*
☐ ILO 2: awareness of the larger global community (*Core Theme Goal 7 or 8)*
☐ ILO 3: ethical, engaged citizenship (*Core Theme Goal 9 or 10)*
☐ ILO 4: communication and collaboration (*Discipline Goal 1 and by any learning outcome(s) involving communication or collaboration)*

E. MAJOR CONTENT AREAS:

- Discovering the heavens
- Gravitation and the motions of the planets
- Light, optics and telescopes
- Solar system formation
- Planets and moons
- Small solar system bodies
- The Sun
- Stellar evolution

F. GOAL TYPES, OBJECTIVES, AND OUTCOMES:

GOAL	**OBJECTIVES** **Students will be able to**	**OUTCOMES** **The student will successfully**
MnTC Goal 3a	demonstrate understanding of scientific theories.	1. demonstrate an understanding of various astronomical theories.

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MnTC Goal 3c	communicate their experimental findings, analyses and interpretations both orally and in writing.	1. participate in astronomy-related, hands-on activities. 2. interpret results and draw conclusions based on activities & communicate the findings.
MnTC Goal 3d	evaluate societal issues from a natural science perspective, ask questions about the evidence presented and make informed judgments about science-related topics and policies.	1. demonstrate an understanding of how astronomy-related issues affect society.
MnTC Goal 2a	gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive and conscious of possible bias in the information selected.	1. gather information about astronomical bodies and evaluate if the behavior of these objects agrees with the predictions of astronomical theories. 2. evaluate the above information from a critical thinking perspective to identify sources of error or uncertainty.
MnTC Goal 2b	imagine and seek out a variety of possible goals, assumptions, interpretations and perspectives which can give alternate meanings or solutions to given situations or problems.	1. explain the consequences of various assumptions made in the theories learned and how different assumptions lead to different results.
MnTC Goal 2c	analyze the logical connections among the facts, goals and implicit assumptions relevant to a problem or claim; generate and evaluate implications that follow from them.	1. analyze various astronomical phenomena and determine the connections between them. 2. draw conclusions about an astronomical object based on its properties and behavior.
CS	demonstrate an understanding of astronomical motions and cycles as seen from Earth.	1. explain diurnal motion. 2. explain why seasons occur. 3. explain results of relative motion in the Sun-Earth-Moon system. 4. explain retrograde motion of planets.
CS	demonstrate an understanding of the structure of the solar system.	1. describe the properties and location in the solar system of the Sun, terrestrial planets, jovian planets, Kuiper belt, asteroids, comets, and Oort cloud.
CS	demonstrate an understanding of stellar evolution.	1. explain how stars form and evolve onto the main sequence. 2. describe how stars end their lives, depending on their masses.

G. SPECIAL INFORMATION:

This course may require use of the Internet, the submission of electronically prepared documents and the use of a course management software program. Students who have a

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disability and need accommodations should contact Accessibility Services at the beginning of the semester. This information will be made available in alternative format, such as Braille, large print, or current media, upon request.

H. COURSE CODING INFORMATION:

Course Code C/Class Maximum 48; Letter Grade

Revision date: 10/12/10; 4/10/18; 02/06/24
AASC Approval date: 05/08/18; 02/20/24

*These five MnTC Goals have been identified as Riverland Community College Core Themes. Every course in the Riverland Community College curriculum shall meet outcomes from one of these themes.
**These five MnTC Goals have been identified as Riverland Community College Disciplines. Riverland's MnTC courses also shall meet outcomes from a Discipline Area.

NOTE: The Minnesota Transfer Curriculum "10 Goal Areas of Emphasis" are reflected in the five required discipline areas and five core themes noted in the Riverland Community College program of study guide and/or college catalog.

***Riverland Community College Core Themes**	**MnTC Goal Number**
Critical Thinking (CT)	**2**
Human Diversity (HD)	**7**
Global Perspective (GP)	**8**
Ethical and Civic Responsibility (EC)	**9**
People and the Environment (PE)	**10**

****Riverland Community College Discipline Areas**	**MnTC Goal Number**
Communication (CM)	**1**
Natural Sciences (NS)	**3**
Mathematics/Logical Reasoning (MA)	**4**
History and the Social & Behavioral Sciences (SS)	**5**
Humanities and Fine Arts (HU)	**6**

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