



MASTER COURSE OUTLINE

A. PHYS 1000 Introduction to Physics

B. COURSE DESCRIPTION:

This is a one-semester survey course covering basic physics concepts and laws that govern everyday physical phenomena. This course is intended for students with no previous physics experience. Topics include mechanics, properties of matter, heat, waves, and electricity. Students will learn to apply basic physics principles through problem solving and laboratory experiments. The algebra skills required for this course are met by two years of high school algebra. Prerequisite: Student meets placement criteria for MATH 1050 (Math for Liberal Arts) or a higher-level math course. Corequisite: Students who do not meet math placement criteria will be required to take PHYS 0010 concurrently with PHYS 1000.

MnTC (Goal 3/NS and 2/CT); (3 Cr – 2 lect, 1 lab)

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

D. RIVERLAND INSTITUTIONAL 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:

- Mechanics
 - Motion—linear, projectile, rotational
 - Newton's laws of motion
 - Momentum
 - Energy
 - Gravity
- Properties of Matter
 - Atomic structure
 - Elasticity
 - Density

- Gas laws
- Radioactivity
- Heat
 - Temperature
 - Heat
 - Specific heat
- Waves
 - Vibrations
 - Waves
- Electricity
 - Electrostatics
 - Electric current

F. GOAL TYPES, OBJECTIVES, AND OUTCOMES:

<u>GOAL</u>	<u>OBJECTIVES</u> Students will be able to	<u>OUTCOMES</u> The student will successfully
<u>MnTC Goal 3a</u>	demonstrate understanding of scientific theories.	1. demonstrate an understanding of physics theories. 2. demonstrate the application of the theories to everyday physical phenomena.
<u>MnTC Goal 3c</u>	communicate their experimental findings, analyses and interpretations both orally and in writing.	1. perform physics experiments. 2. record, analyze, and draw conclusions from the data generated in the experiments. 3. communicate the experimental findings.
<u>MnTC Goal 3d</u>	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. formulate questions and make judgments about physics-related issues.
<u>MnTC Goal 2a</u>	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. record experimental data in laboratory experiments and draw conclusions based on interpretations of data. 2. identify sources of error in data-taking procedures.
<u>MnTC Goal 2b</u>	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. demonstrate how alternate assumptions can lead to alternate solutions to the same problem.
<u>MnTC Goal 2c</u>	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. solve physics problems that require logical connections between facts and assumptions pertaining to those problems and be able to pick the relevant formulas that are necessary in solving the problems.

		2. draw conclusions based on the solutions to problems.
<u>CS</u>	use a variety of measuring devices and sensors to collect data relevant to physical situations so that logical conclusions may be drawn.	1. use data collected to test hypothesis and draw conclusions about validity, demonstrated in a written report. 2. use data collected to verify the accuracy of models or theories, demonstrated in a written report.

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 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, B/Class Maximum 48, 24; Letter Grade

Revision date: 10/12/10; 04/10/18; 03/05/24

AASC Approval date: 05/08/18; 12/17/19; 04/16/24

*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

Riverland