

# North Hennepin Community College

## PHYS 1000: Conceptual Physics

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 0

Lab Hours/Week: 0

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: Goal 03 - Natural Science

This course is a combined lecture and laboratory course designed for people who want to learn about the fundamental laws and principles that form the basis of the working of the physical universe. This course helps the student understand and appreciate how and why a wide range of common and everyday physical phenomena occur. Topics include: laws of motion, work, energy, momentum, fluids, heat, vibration, wave motion, electricity, magnetism, and light. Some algebra is used in the presentation, so a mathematical preparation equivalent to Math 0902 is recommended. (3 hours lecture, 2 hours lab)

**B. COURSE EFFECTIVE DATES:** 09/10/1997 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Topics to be covered include: equations of motion, Newton's laws of motion, work, energy, momentum, fluids, waves, heat, electricity, magnetism, and light.

### D. LEARNING OUTCOMES (General)

1. Demonstrate an understanding of the scientific theories covered in this course at the appropriate mathematical level for this course. (MnTC Goal 3, Competency a; NHCC ELO 1)
2. Demonstrate skill in working with laboratory equipment. (MnTC Goal 3, Competency b)
3. Collect data, perform statistical and graphical analysis on this data, and appreciate sources of error and uncertainty at the appropriate mathematical level for this course. (MnTC Goal 3, Competencies b and c)
4. Clearly express mathematical ideas in writing at the appropriate mathematical level for this course. (MnTC Goal 3, Competency c)
5. Communicate experimental findings, analyses, and interpretations both orally and in writing at the appropriate mathematical level for this course. (MnTC Goal 3, Competency c)
6. Organize and present scientific material in a coherent manner at the appropriate mathematical level for this course. (MnTC Goal 3, Competency c)
7. Apply problem-solving skills at the appropriate mathematical level for this course. (NHCC ELO 2)
8. Integrate new skills into customary ways of thinking while developing problem-solving skills at the appropriate mathematical level for this course. (NHCC ELOs 1, 4)
9. Evaluate science-related societal issues using knowledge physics principles and how they can be used. (MnTC Goal 3, Competency d; NHCC ELO 3)

## **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**

1. Knowledge of Human Cultures and the Physical and Natural World--Through study in the sciences, mathematics, social sciences, humanities, histories, languages, the arts, technology and professions.
2. Intellectual and Practical Skills--Including: Inquiry and analysis; Critical and creative thinking; Written and oral communication; Quantitative literacy; Information literacy; Teamwork and problem solving.
3. Personal and Social Responsibility and Engagement--Including: Civic knowledge and involvement--campus, local and global; Intercultural knowledge and competence; Ethical reasoning and action; Foundations and skills for lifelong learning.
4. Integrative and Applied Learning--Including: Synthesis and advanced accomplishment across general education, liberal studies, specialized studies and activities in the broader campus community.