

# Dakota County Technical College

## PHYS 1100: College Physics I

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: 1

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: Goal 03 - Natural Science

This course is the first of two courses that cover non-calculus physics topics. These topics include: mechanics, concepts of energy and momentum, basic laws of motion, structure of matter, gas laws, heat and thermodynamics, waves and sound.

Meets MnTC Goal 3.

Prerequisites: None.

**B. COURSE EFFECTIVE DATES:** 08/21/2006 - Present

**C. OUTLINE OF MAJOR CONTENT AREAS**

#### **D. LEARNING OUTCOMES (General)**

1. understand and apply important concepts of physics
2. use the language of physics with reasonable competence
3. solve physics problems with reasonable skill
4. use techniques and procedures in the laboratory to gain experience with physical investigations
5. recognize and use a broad range of physical applications in the real world
6. explain natural phenomena with the laws of physics
7. describe interrelationships between physics and other sciences, the work and activities of practicing scientists in these fields
8. communicate orally and in writing the important ideas of physics
9. use scientific notation
10. define the relationship between position, velocity, and acceleration of an object in motion
11. state and explain Newton's laws
12. list the four fundamental forces of nature
13. define and understand momentum
14. apply the principles of projectiles to predict projectile motion
15. explain Kepler's three laws of planetary motion
16. calculate the acceleration due to gravity given a planet's mass and radius
17. state the definitions of work and energy
18. state the definition and understand kinetic energy
19. explain Pascal's Principle
20. define surface tension and state an example
21. solve problems using the continuity principle and Bernoulli's principle
22. explain viscosity
23. define temperature and specific heat capacity

#### **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.

#### **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

#### **G. SPECIAL INFORMATION**

None noted