

MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE

COURSE OUTLINE

DEPT. PHYS

COURSE NUMBER: 1202

NUMBER OF CREDITS: 4

Lecture: 3 Lab: 1 OJT 0

Course Title:
Fundamentals of Physics II

Catalog Description:
Fundamentals of Physics II continues PHYS 1201. Topics include Temperature and Heat transfer, Laws of Thermodynamics and heat engines, electric fields, electricity of direct circuits, electronics, magnetism, electromagnetism, optics, modern physics, and radioactivity. This course includes a lab.

Prerequisites or Necessary Entry Skills/Knowledge:
PHYS 1201 or permission of the instructor.

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

☒ Goal 3: Natural Sciences: 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.

Topics to be Covered
Introduction to Heat and Temperature (Optional)
Heat Energy Transfer (Optional)
Phase and Phase Changes (Optional)
The Laws of Thermodynamics (Optional)
The Ideal Gas Law (Optional)
Heat Engines (Optional)
Electric Charges, Forces, and Fields
Electric Potential and Electric Potential Energy
Electric Current and Direct Current Circuits, Kirchhoff's Circuits Rules

Magnetism
Magnetic Flux and Faraday's Law of Induction
Alternating-Current Circuits
Electromagnetic Waves
Geometrical Optics
Optical Instruments
Interference and Diffraction
Introduction to Quantum Physics and Atomic Physics
Nuclear Physics and Nuclear Radiation

Student Learning Outcomes	
Define physics concepts and their applications.	
Model physical behavior by performing hands-on activities and experiments.	
Develop problem solving techniques using mathematical models describing physical concepts.	
Analyze and interpret data collected in a variety of methods.	
Describe and interpret physical properties in action with real-world situations encountered in their everyday environment.	

Is this course part of a transfer pathway: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<small>*If yes, please list the competencies below</small>

Revised Date: 1/18/2022