

MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE

COURSE OUTLINE

DEPT. PHYS

COURSE NUMBER: 2122

NUMBER OF CREDITS: 5

Lecture: 4 Lab: 1 OJT 0

Course Title:
General Physics II

Catalog Description:
General Physics II continues Physics 2121. Calculus and vectors are used throughout. Uses laboratory-based instruction. Topics include heat and thermodynamics, heat engines, electric charges and forces, electric potential, electric fields, Gauss' Law, direct and alternating current circuits, capacitors and RC circuits, electronics, magnetism and magnetic fields, modern physics, and radioactivity. This course includes a lab.

Prerequisites or Necessary Entry Skills/Knowledge:
PHYS 2121 and MATH 1121, with MATH 1122 being taken concurrently or before.

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"/>	
*If yes, please list the competencies below	

Revised Date: 1/18/2022