Virginia Western Community College
PHY 242
University Physics II

Prerequisites
MTH 264 and PHY 241

Course Description

Teaches principles of classical and modern physics. Includes mechanics, wave phenomena, heat, electricity, magnetism, relativity and nuclear physics. Part II of II.

Semester Credits: 4 **Lecture Hours: 3** **Laboratory Hours: 3**

Required Materials

A calculator for exams and laboratory works

Textbook:
University Physics with MasteringPhysics access. Young & Freeman. 14th edition. Pearson Publishing.
ISBN: 9780133983623

Course Outcomes

At the completion of this course, the student should be able to:

- Understand the oscillatory motion and the wave properties.
- Describe the behavior of static electricity and electric fields.
- Explain the nature of electric currents, resistance, and electromotive force.
- Discuss the application of Ohm's Law and Kirchhoff's Rules to simple electric circuits.
- Describe the behavior of magnets and magnetic fields.
- Understand the Faraday's Law and its application.
- Discuss the geometrical theory of optics and its application to lenses and other optical instruments, including the human eye.
- Describe the wave theory of optics and investigate the phenomena of refraction, diffraction and interference.

Topical Description

Chapter 15	Mechanical Waves
Chapter 16	Sound and Hearing
Chapter 33	The Nature and Propagation of Light
Chapter 34	Geometric Optics
Chapter 35	Interference

Chapter 21	Electric Charge and Electric Field
Chapter 22	Gauss's Law
Chapter 23	Electric Potential
Chapter 24	Capacitance and Dielectrics
Chapter 25	Current, Resistance, and Electromotive Force
Chapter 26	Direct-Current Circuits
Chapter 27	Magnetic Field and Magnetic Force
Chapter 28	Sources of Magnetic Field
Chapter 29	Electromagnetic Induction
Chapter 30	Inductance
Chapter 31	Alternating Current
Chapter 32	Electromagnetic Wave

Laboratory Topics

Lab 1	Introduction. Safety. Fitting Curves
Lab 2	Standing Wave
Lab 3	Sound Wave
Lab 4	Snell's Law
Lab 5	Lens and Mirror
Lab 6	Mapping Equipotential Lines
Lab 7	Voltage Parallel and Serial Connection
Lab 8	DC Circuit and Kirchhoff's Rule
Lab 9	RC Circuit
Lab 10	Magnetic Forces on Wires
Lab 11	Magnetic Field and Faraday's Law
Lab 12	AC Circuit Demonstration

Notes to Instructors

None.