1. SP212 General Physics II

2. 4 credit hours, 3 recitation hours, 2 laboratory hours

3. Course coordinator: Prof Jeff Larsen

4. Textbook: Fundamentals of Physics, Halliday, Resnick and Walker, 10^{th} edition

   a. Supplemental materials: Wiley Plus online system

5. Specific course information

   a. Continuation of SP211.Topics include electricity, magnetism, simple circuits and light. Lectures, recitations, hands-on laboratories, and large-scale demonstration lectures are employed.

   b. Prerequisite: Physics I (SP211 or SP221) or approval of department chair.

   c. Required course

6. Specific goals for the course

   a. At the conclusion of the course, students will be able to:

      - Remember and recall statements of the definitions, concepts and laws that govern classical electricity, magnetism and light.
      - Describe the concepts and laws that govern classical electricity, magnetism and light.
      - Apply the concepts and laws of classical electricity, magnetism and light to solve both qualitative and quantitative single-step problems.
      - Analyze quantitative and qualitative problems involving two or more concepts and laws of electricity, magnetism and light.
      - Combine concepts and laws to solve such problems.
      - Evaluate how well the concepts and laws of electricity, magnetism, and light fit observations of physical phenomena.

   b. This course introduces the following Student Outcomes.

      - (a) an ability to apply knowledge of mathematics, science, and engineering
      - (b) an ability to design and conduct experiments, as well as to analyze and interpret data

- (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- (d) an ability to function on multidisciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (i) a recognition of the need for, and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

7. Topics covered:

- Coulomb's Law
- Electric Fields
- Gauss' Law
- Electric Potential
- Capacitance
- Current and Resistance
- DC circuits
- Magnetic Fields
- Sources of Magnetic Fields
- Inductance
- Electromagnetic Oscillation
- Maxwell's Equations
- Electromagnetic wave
- Images in Mirrors and Thin Lenses
- Interference and Diffraction