Course Outcomes [Related ME Program Outcomes in brackets]

1. Learn that a relatively small number of fundamental physics concepts form the basis of a wide variety of complex physical phenomena. [A1, A2, A3]
2. Learn that conceptual understanding can invariably be raised to the level of analytic and quantitative understanding by use of suitable mathematics. [A1, A2, A3]
3. Learn that the quantitative formulations so achieved can be used for problem solving and predicting outcomes of experiments. [A1, A2, A3]
4. Learn to apply this process to problem solving involving various natural phenomena, such as those encountered in electrostatics, dc and ac currents and circuits, magnetostatics, magnetic induction, electromagnetic waves, light and optics including both geometric and physical optics, as well as to an elementary understanding of the modern ideas of quantum physics. [A1, A2, A3]
5. Learn to relate the basic understanding and problem solving skills to concrete and practical examples. [A1, A2, A3]
6. Develop an elementary understanding of Maxwell's Equations. [A1, A2, A3]
1. COURSE NUMBER AND NAME: PHYS 24100 Electricity and Optics

2. CREDITS AND CONTACT HOURS: 3 credits
   a. Lecture – 2 days per week at 50 minutes for 16 weeks
   b. Recitation – 1 day per week at 50 minutes for 16 weeks

3. COURSE COORDINATOR OR INSTRUCTOR: L. Pyrak-Nolte

4. TEXTBOOK:

5. SPECIFIC COURSE INFORMATION:
   a. Catalog Description: Electrostatics, current electricity, electromagnetism, magnetic properties of matter. Electromagnetic waves, geometrical and physical optics. Typically offered in the fall, spring and summer.
   b. Prerequisites:
      PHYS 17200 – Modern Mechanics
   c. Status: Required

6. SPECIFIC GOALS FOR THE COURSE
   a. Course Outcomes: [Related ME Program Outcomes in Brackets]
      1. Learn that a relatively small number of fundamental physics concepts form the basis of a wide variety of complex physical phenomena. [A1, A2, A3]
      2. Learn that conceptual understanding can invariably be raised to the level of analytic and quantitative understanding by use of suitable mathematics. [A1, A2, A3]
      3. Learn that the quantitative formulations so achieved can be used for problem solving and predicting outcomes of experiments. [A1, A2, A3]
      4. Learn to apply this process to problem solving involving various natural phenomena, such as those encountered in electrostatics, dc and ac currents and circuits, magnetostatics, magnetic induction, electromagnetic waves, light and optics including both geometric and physical optics, as well as to an elementary understanding of the modern ideas of quantum physics. [A1, A2, A3]
      5. Learn to relate the basic understanding and problem solving skills to concrete and practical examples. [A1, A2, A3]
      6. Develop an elementary understanding of Maxwell's Equations. [A1, A2, A3]
   b. Related ME Program Outcomes:
      [Related ABET Outcomes Listed in Brackets]
      A1. Engineering Fundamentals; B3. Prof/Ethical Responsibility;
      A3. Experimental Skills; B5. Life-Long Learning;
      A4. Modern Engr Tools; C1. Leadership,
      A5. Design Skills; C2. Global Engineering Skills;
      A6. Impact of Engr Solns; C3. Innovation;
      B1. Communication Skills; C4. Entrepreneurship
      B2. Teamwork Skills

7. LIST OF TOPICS: See following page.