J. Sargeant Reynolds Community College Course Content Summary

Course Prefix and Number: PHY 242 Credits: 4

Course Title: University Physics II

Course Description (including lecture hours, lab hours, total contacts)

Teaches principles of classical and modern physics using calculus based models. Covers wave phenomena, optics, electricity and magnetism, an introduction to relativity, and nuclear physics. Students should consult the requirements of their individual program and transfer school to determine the correct course and the transferability of course to a senior institution. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

General Course Purpose

The credits earned in this course can be applied to the Science AS degree.

<u>Course Prerequisites/Corequisites</u> (Entry-level competencies **required** for enrollment)

Prerequisites: PHY 241 and MTH 174 or school approval.

<u>Course Objectives</u> (Each item should complete the following sentence.)

Upon completing the course, the student will be able to:

- a. Apply the language of physics.
- b. Explain and apply some of the basic laws of physics.
- c. Explain how the natural laws of physics are used both qualitatively and quantitatively and apply these laws to experimental situations using mathematical models.

Major Topics to be Included

- a. General nature and behavior of waves
- b. Standing waves and resonance
- c. Geometric optics
- d. Eye and some optical instruments
- e. Electric charge and Coulombs' Law
- f. Electric field
- g. Energy and power in electricity
- i. Magnetism
- j. Interaction of light and matter
- k. Einstein and special relativity

Effective Date of Course Content Summary (Month, Date Year): 2/16/09