

**J. Sargeant Reynolds Community College
Course Content Summary**

Course Prefix and Number: PHY 242

Credits: 4

Course Title: University Physics II

Course Description: Teaches principles of classical and modern physics on calculus math level. 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 senior institution. Part II of II. Prerequisites: PHY 241 and MTH 264 or school approval. 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.

Course Prerequisites and Co-requisites:

Prerequisites: PHY 241 and MTH 264 or school approval

Student Learning Outcomes:

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; and
- 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
- h. Magnetism
- i. Interaction of light and matter
- j. Einstein and special relativity

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