

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

Course Prefix and Number: PHY 241

Credits: 4

Course Title: University Physics I

Course Description: Teaches principles of classical and modern physics on calculus math level. Covers mechanics and heat. 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 I of II. Prerequisite or Co-requisite: MTH 264. 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:

Prerequisite or Co-requisite: MTH 264

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. Units and standard of measurements
- b. Nature and use of vectors
- c. Newton's three laws of motion
- d. Various types of motion
- e. Work, energy, and power
- f. Conservation of energy
- g. Nature and uses of impulse and momentum
- h. Molecular structure of matter
- i. Elasticity, springs, and simple harmonic motion
- j. Fluids at rest, liquids, and gases
- k. Fluids in motion
- l. Heat energy and its effects

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