SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: PHYS 232 Department: Physics

Course Title: College Physics 2 Semester: Spring Year: 1997

Objectives/Competencies

Course Objective	Competencies
1. Process Objectives. The process objective of this course is to have students be able to use the mathematics of physics to solve hypothetical problems presented in text form, and to model phenomena measured in laboratory. The topics and competencies required to meet this objective are listed on the right under "Competencies." These topics are described in detail in standard physics texts. Second course in series of three engineering courses: MP 132, MP 232, and MP 332.	1. Physics Process Competencies. At the end of this course, students will be able to use the mathematics of physics to solve hypothetical problems presented in text form, and to model phenomena measured in laboratory. Mathematical models of the physical world are listed below: a. A.C. Circuits b. Elements of solid-state physics c. Coulomb's law d. Gauss's law e. Capacitance f. Magnetism g. Ampere's law h. Biot-Savart law i. Faraday's law
2. Computational Tools for meeting Objectives. Physics students usually need some skill using computational tools like calculators and computers. This course assumes that	1. Computational Tools. This course assumes that students can use the following tools effectively when they ENTER

Course Objective	Competencies
students can use computational tools effectively when they ENTER the course so they can meet the physics course objectives outlined here.	this physics course. a. Scientific Calculator, trigonometric functions b. Scientific Calculator, statistical functions c. Scientific Calculator, exponents and logarithms
3. Mathematics. Physics courses often teach similar subject matter at different levels of sophistication. These levels are most clearly identified by the levels of mathematics used in particular courses. There are two important considerations concerning mathematics; the level of mathematical competency upon entering a physics course, and the mathematical competency added during the course.	1. Mathematics Competencies on Entry. In this physics course, students are presumed to be fluent in mathematics at the level of: a. Differential Calculus b. Integral Calculus
Mathematics Objectives. An objective of this course is to have students be able to apply several standard mathematical techniques in the solution of physics problems. These competencies are listed on the right under "Competencies."	Mathematics Competencies. At the end of this course students will be able to use several standard mathematical techniques. These topics are described in detail in standard mathematics texts. a. Differentiate polynomials in problem solving b. Differentiate trigonometric functions in problem solving c. Integrate polynomials in problem solving d. Integrate trigonometric functions in problem solving
4. Laboratory Objectives. The objective of the laboratory is to give students hands-on experience with laws of nature and conventions of physics. The laboratory experience emphasizes measurement and mathematical modeling. The topics in physics covered in the laboratory generally support topics emphasized in class.	1. Laboratory Competencies. At the end of the laboratory portion of this course, students will be able to: a. Follow instructions for laboratory procedures. b. Make measurements and collect data. c. Organize and present data as tables and graphs.

Course Objective	Competencies
	d. Interpret graphs and statistical data. e. Evaluate decay (or growth) curves. f. Plot data on linear graph paper. g. Plot data on semi-log graph paper. h. Mark error bars on graphs of measured data. i. Relate experimental data to mathematical models. j. Prepare a Lab Report.