Algebra/Trigonometry-Based Physics A

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| **C-ID Number** | PHYS 105 |
| **Discipline** | Physics |
| **Date Approved** | April 29, 2011 |

## General Course Description

This course is intended for students not majoring in physics or engineering but needing a one-year course in physics as a requirement for their major program.  The course is part of a two-semester sequence whose contents may be offered in other sequences or combinations.  Core topics include:  kinematics, dynamics, work and energy, momentum, fluids, and simple harmonic motion.

## Minimum Units

4.0

## Any rationale or comments

This course is the first semester of a two-semester sequence.  PHYS 105 is composed of topics that together with PHYS 110 constitute all of the topics included in PHYS 100.  Topics may be offered in varying sequences and combinations, including “floating topics”.  The floating topics may be placed in different courses in the sequence, but all must be covered during the two-semester sequence.  Since different colleges vary slightly in the order in which topics are presented, it is strongly recommended that students take the entire sequence at the same institution.

## Advisories/Recommendations

Prior completion of a course covering Trigonometry (C-ID MATH 851)

## Course Content

Vectors and Scalars Newton’s Laws Statics and Dynamics Translational Kinematics Rotational Kinematics Rotational Dynamics Work and Energy Momentum Gravitation Simple Harmonic Motion Fluids Laws of Thermodynamics Heat Engines Kinetic Theory Entropy “Floating topics” which may be included in this semester Mechanical Waves and Sound

## Laboratory Activities

Laboratory activities should cover the range of topics designated for lecture. The majority of labs should be hands-on activities with “real world” data collection as opposed to computer simulation.

## Course Objectives

Course Objectives: At the conclusion of this course, the student should be able to: Predict the future trajectory of an object in two dimensions with uniform acceleration. Analyze a physical situation with multiple constant forces acting on a point mass using Newtonian mechanics. Analyze a physical situation using concepts of work and energy. Analyze static and dynamic extended systems using the concepts of torque and angular acceleration. Laboratory Course Objectives: At the conclusion of the laboratory component of this course, the student should be able to: Analyze real-world experimental data, including appropriate use of units and significant figures. Relate the results of experimental data to the physical concepts discussed in the lecture portion of the class.

## Prerequisites

## Corequisites

## Methods of Evaluation

Examinations which include problem solving, exercises, final examinations, projects, homework problems, laboratory reports. \*Note that not all of the methods listed are required.

## Sample Textbooks

Typical Textbooks: Walker, James; Physics Cutnell, John D.; Johnson, Kenneth W.; Physics Serway, Raymond A.; Faughn, Jerry S. College Physics Typical Lab Manuals: Wilson, Jerry D.; Hernandez, Cecilia A.; Physics Laboratory Experiments Gastineu, John; Physics with Computers Sokoloff, David R.; Thornton, Ron; Laws, Priscilla; Real Time Physics: Active Learning Laboratories Modules 1 – 4 Laboratory manuals developed on site.

## Notes