BUTTE COLLEGE
COURSE OUTLINE

I. **CATALOG DESCRIPTION**

PHYS 51 - Problem Solving Strategies for PHYS 41 **1 Unit(s)**

Prerequisite(s): NONE
Co-requisite(s): PHYS 41
Recommended Prep: NONE
Transfer Status: CSU
51 hours Lab

This course is a supplement to PHYS 41 and is intended to enhance the students problem solving skills in the areas of vectors, statics, kinematics, dynamics, momentum, energy, rotational motion, oscillatory motion, and fluid mechanics. Pass/No Pass Only.

II. **OBJECTIVES**

Upon successful completion of this course, the student will be able to:

A. reduce a physical problem to its elemental parts.
B. identify unknown physical quantities.
C. employ appropriate mathematical techniques to generate a solution that accurately describes the physical behavior.
D. describe how the solution will change when physical parameters change.

III. **COURSE CONTENT**

A. **Unit Titles/Suggested Time Schedule**

Lab

Topics	Hours
1. Measurement, Dimensions & Units, Scientific Notation	3.00
2. Displacement, Velocity & Acceleration	3.00
3. Coordinates, Vectors, Components & Unit Vectors	3.00
4. Projectile Motion, Circular Motion & Relative Motion	3.00
5. Inertia, Force & Free-Body Diagrams	3.00
6. Newton's Laws of Motion, Centripetal Force, Fundamental Forces, Friction & Fictitious Forces	6.00
7. Vector Dot Product & Work-Energy Theorem	3.00
8. Conservation of Energy	3.00
9. Linear Momentum & Impulse	3.00
10. Rotational Motion & Torque	3.00
11. Vector Cross Product & Angular Momentum	3.00
12. Stability & Elasticity	3.00
13. Gravity, Orbital Motion & General Relativity	6.00
14. Oscillations	3.00
15. Fluid Statics & Fluid Dynamics	3.00
Total Hours	51.00

IV. **METHODS OF INSTRUCTION**

A. Collaborative Group Work
B. Discussion
C. Problem-Solving Sessions

V. **METHODS OF EVALUATION**

A. This course is offered Pass/No Pass only. Students are graded on participation as judged by the instructor. Participation includes: working on assigned problems, showing solutions to instructor, making suitable corrections, and (optional) writing solutions on board to share with class. Students must attend and participate in 11 of 15 sessions to earn the Pass grade.

VI. **EXAMPLES OF ASSIGNMENTS**

A. Reading Assignments
B. Writing Assignments
C. Out-of-Class Assignments

VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

A. Panunto, M.. PHYS 51 Exercises & Problems. Butte College, 2009.

Materials Other Than Textbooks:

A. Current text being used in PHYS 41
B. An electronic calculator is required.

Created/Revised by: Michael Panunto
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