PHYS 101L Principles of Physics l Laboratory

PHYS101L is designed to reinforce topics presented in PHYS 101 lectures. Through scientific experimentation, students will improve their understanding of basic concepts in mechanics while developing their foundation of the scientific process. Laboratory work includes the setting up and running of physics experiments, whether hands on or online. Regular activities include data taking, data presentation, data visualization, data analysis, fitting, drawing of conclusions, writing logbooks. Logbooks are booklets where the process entailed in the design, carrying out and drawing of conclusions is described, and they are an integral part of this course.

(Pre-requisites/ Co-requisites: PHYS 101)

Course Learning Outcomes:

By the end of the course, students will be able to:

1. Gain improved understanding of the basic concepts behind kinematics, dynamics, equilibrium of rigid bodies, work, energy, collisions, and rotation, while being able to address alternative scenarios using the hands-onexperience acquired in the laboratory
2. Demonstrate effective use of communication methods in relation to scientific experiments pertaining to classical mechanics
3. Use basic statistical tools to analyze and draw conclusions from data taken on scientific experiments pertaining to classical mechanics
4. Use Microsoft Excel tools to represent and analyze data taken on scientific experiments pertaining to classical mechanics.
5. Work in teams while carrying out scientific experiments

Textbook & Course Materials:

- Principles Physics Laboratory Manual, David H. Loyd, 4th Edition (Cengage)
- Provided by the instructor

Course Content:

1. Measurement and Uncertainty
2. Motion and Video Analysis in One Dimension
3. Motion and Video Analysis in Two Dimensions
4. Continued Motion and Video Analysis in Two Dimensions and revision.
5. Newton's 2nd Law and Atwood's Machine
6. Newton's 2nd Law applications and Equilibrium
7. Conservation of Energy and Momentum