

**STATE UNIVERSITY OF NEW YORK !  
COLLEGE OF TECHNOLOGY !  
CANTON, NEW YORK !**



**MASTER SYLLABUS**

**COURSE NUMBER – COURSE NAME  
PHYS 125 – PHYSICS LABORATORY I**

**Created by: Dr. Feng Hong**

**Updated by: Dr. Lawretta Ononye**

**Canino School of Engineering Technology !**

**Department: Physics !**

**Semester/Year: Fall 2018 !**

- A. **TITLE:** Physics Laboratory I
- B. **COURSE NUMBER:** PHYS 125
- C. **CREDIT HOURS:** (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)

# Credit Hours: 1  
# Lecture Hours: 1 per week  
# Lab Hours:        per week  
  Other:            per week

Course Length: 15 Weeks

- D. **WRITING INTENSIVE COURSE:** Yes  No

- E. **GER CATEGORY:** None:  Yes: GER 2 Natural Sciences !  
*If course satisfies more than one: GER !*

- F. **SEMESTER(S) OFFERED:** Fall  Spring  Fall & Spring

- G. **COURSE DESCRIPTION:**

Physics Laboratory I is a laboratory course to accompany PHYS 121 (College Physics I). Students will have laboratory experiments concerning one and two dimensional translational mechanics and graphical analysis.

- H. **PRE-REQUISITES:** None  Yes  If yes, list below:

**CO-REQUISITES:** None  Yes  If yes, list below:

PHYS 121 or permission of instructor

**I. STUDENT LEARNING OUTCOMES: (see key below)**

By the end of this course, the student will be able to:

<u>Course Student Learning Outcome</u> <u>[SLO]</u>	<u>Program Student Learning Outcome</u> <u>[PSLO]</u>	<u>GER</u> <i>[If Applicable]</i>	<u>ISLO &amp; SUBSETS</u>	
a. Understand the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement, and data collection, experimentation, evaluation of evidence, and employment of mathematical analysis		2	1-Comm Skills 2-Crit Think 4-Soc Respons	W CA T Subsets
b. Application of scientific data, concepts, and models in physics		2	1-Comm Skills 2-Crit Think 4-Soc Respons	W CA PS T
c. Use computer assisted data collection and analysis.		2	1-Comm Skills 2-Crit Think 4-Soc Respons	W CA T Subsets
		2	ISLO ISLO ISLO	Subsets Subsets Subsets Subsets
		2	ISLO ISLO ISLO	Subsets Subsets Subsets Subsets

<b>KEY</b>	<b><u>Institutional Student Learning Outcomes [ISLO 1 – 5]</u></b>
<b>ISLO #</b>	<b>ISLO &amp; Subsets</b>
<b>1</b>	<b>Communication Skills</b> Oral [O], Written [W]
<b>2</b>	<b>Critical Thinking</b> <i>Critical Analysis [CA], Inquiry &amp; Analysis [IA], Problem Solving [PS]</i>
<b>3</b>	<b>Foundational Skills</b> <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
<b>4</b>	<b>Social Responsibility</b> <i>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</i>
<b>5</b>	<b>Industry, Professional, Discipline Specific Knowledge and Skills</b>

\*Include program objectives if applicable. Please consult with Program Coordinator !

J. **APPLIED LEARNING COMPONENT:** Yes  No

If YES, select one or more of the following categories:

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Classroom/Lab | <input type="checkbox"/> Civic Engagement              |
| <input type="checkbox"/> Internship               | <input type="checkbox"/> Creative Works/Senior Project |
| <input type="checkbox"/> Clinical Placement       | <input type="checkbox"/> Research                      |
| <input type="checkbox"/> Practicum                | <input type="checkbox"/> Entrepreneurship              |
| <input type="checkbox"/> Service Learning         | (program, class, project)                              |
| <input type="checkbox"/> Community Service        |  |

K. **TEXTS:**

N/A

L. **REFERENCES:**

None

M. ! **EQUIPMENT:** None  Needed: Existing physics laboratory equipment will be used.

N. ! **GRADING METHOD:** A-F

O. ! **SUGGESTED MEASUREMENT CRITERIA/METHODS:**

- Lab reports
- Projects
- Participation

P. **DETAILED COURSE OUTLINE:**

N/A

Q. **LABORATORY OUTLINE:** None  Yes

- I. **Graph Plotting and Graphical Analysis**  
Prepared data will be plotted by hand. The same data is then plotted using computer software.
- II. **Graphical Analysis**  
Additional graphical analysis will be done with the aid of computers.
- III. **Tools for Scientific Thinking - Investigations #1, 2, 3**  
Sonar will be used to relate position and motion with computer generated graphs.
- IV. **Force Table**  
Analytical and graphical solutions to vector addition of equilibrium forces will be checked out on a force table.

- V. Tools for Scientific Thinking - Investigation #4 !**  
**Sonar will be used to investigate velocity. !**
- VI. Tools for Scientific Thinking - Investigations# 5, 6**  
**Sonar will be used to investigate acceleration.**
- VII. Acceleration of Gravity**  
**The acceleration of free falling objects will be determined.**
- VIII. Forces and Motion**  
**The acceleration of carts along a track and experiencing a constant force is measured.**
- IX. Plotting Data - The Spring**  
**The behavior of loaded springs is studied.**
- X. Measurement and Significant Figures**  
**Areas, volumes and time are measured with attention to accuracy and precision.**
- XI. Projectile Motion**  
**Small plastic balls are fired from a spring gun. Calculated and measured ranges are compared.**
- XII Work and Energy**  
**Students will determine the work done on a (nearly) frictionless cart and show that the work done is equal to the increase in kinetic energy of the cart. Furthermore, they will show that the increase in energy of the cart is equal to the decrease in potential energy of the falling weight that supplies the force on the.**