Course Number: 15464  
Meeting Time: Tuesday 11:00am – 1:30pm  
Room Number: EH 2109  
Instructor: Dr. Eric Collins  
Email: eric.collins@csun.edu  
Office: Eucalyptus Hall 2113  
Office Hours: M 9:30-10:30  
Textbook: General Physics I 100AL Laboratory Manual  
Recommended Co-requisite: PHYS 100A  

Course Description:  
This course is the first in the Physics 100 series laboratory practices. This laboratory covers basic mechanics, measurement and observation technique, and quantitative physical analysis. The students should consult with their 100A textbook for matters dealing with theory.  
Note: The course is designed to be independent of the lecture course PHYS 100A.  

Course Objective:  
To understand the role of experiments in the scientific method and how errors in measurements affect the results.  
To be able to analyze data.  

General Education:  
This course, fulfills the Subject Exploration: Natural Sciences requirements of General Education. This course satisfies the following GE Student Learning Objectives (SLOs):  
SLO 1: Demonstrate an understanding of basic knowledge, principles, and laws in the natural sciences.  
SLO 2: Explain how the scientific method is used to obtain new data and advance knowledge.  
SLO 3: Demonstrate an understanding of the logical foundations and boundaries of science.  
SLO 5: Demonstrate competence in applying the methods of scientific inquiry.  

The course SLOs are met by learning the role that errors play in measurement including how to measure these errors, and how they affect the results via propagation of errors. Understanding the importance of recording the conditions of the experiment, how the measurements were done, and what the measurements were. Learning how to analyze the data collected and using the results to prove or disprove a conjecture/ theory. Understanding the role that experimentation plays in verifying the laws of nature and the significance of the scientific method.  

Course Schedule:  

<table>
<thead>
<tr>
<th>Day</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 21</td>
<td>Intro/Safety/Uncertainties*</td>
</tr>
<tr>
<td>Jan 28</td>
<td>Propogation of Errors and Measurement of Length</td>
</tr>
<tr>
<td>Feb  4</td>
<td>Free Fall*</td>
</tr>
<tr>
<td>Feb 11</td>
<td>Vector Addition of Forces</td>
</tr>
<tr>
<td>Feb 18</td>
<td>Air Resistance and Curve Fitting*</td>
</tr>
<tr>
<td>Feb 25</td>
<td>Centripetal Force</td>
</tr>
<tr>
<td>Mar  4</td>
<td>Collision and Coefficient of Restitution*</td>
</tr>
<tr>
<td>Mar 11</td>
<td>Simple Harmonic Motion</td>
</tr>
<tr>
<td>Mar 18</td>
<td>Simple Pendulum*</td>
</tr>
<tr>
<td>Mar 25</td>
<td>Standing Waves on a String</td>
</tr>
<tr>
<td>Apr  1</td>
<td>-OFF-</td>
</tr>
<tr>
<td>Apr  8</td>
<td>-SPRING BREAK-</td>
</tr>
<tr>
<td>Apr 15</td>
<td>Speed of Light*</td>
</tr>
<tr>
<td>Apr 22</td>
<td>Density and Specific Gravity</td>
</tr>
<tr>
<td>Apr 29</td>
<td>-OFF-</td>
</tr>
<tr>
<td>May  6</td>
<td>Practical Test</td>
</tr>
</tbody>
</table>
Course Requirements and Methods of Evaluation:

No drinks or food items are allowed in the lab.

1. Attendance and participation are MANDATORY. As per University Attendance Policy, students who miss the first week of class will lose the right to remain in the class and must FORMALLY WITHDRAW from the course themselves. Failure to do so, will result in a WU (= “F” in GPA calculation) grade for the course and/or be ADMINISTRATIVELY WITHDRAWN from the course by the Associate Dean.

2. Any unexcused missed labs after the first week will result in a score of zero for these labs. If excused, students are strongly urged to make it up in another lab. If this cannot be accomplished, the instructor can renormalize the score at the end of the semester.

3. Read the text of the lab manual for the next experiment thoroughly before the lab.

4. Work in groups of two. The names of all the members of a group need to be recorded along with your data. In the case that there is an odd number of students in the class, one group of three is permissible.

5. Take data directly using a pen, NOT a pencil. After you have obtained the experiment’s data, you may leave and complete any required calculations outside of the lab. Have your instructor initial your data before leaving the lab. You should attach this signed data to your report. Photocopies are NOT permitted.

6. There are two types of Laboratory Experiments you will be performing. Those experiments that are the CONTROLLED LABORATORY experiments and the LABORATORY AT HOME experiments. Students will turn in a report for each laboratory. Each report is worth 20 points.

7. Reports for Controlled Laboratory Experiments:
   (a) The data sheet
   (b) Data analysis including completed calculations and graphs
   (c) Answers to questions

8. Reports for Take Home Experiments:
   (a) Graphs, Screen Shots and other materials requested on Moodle.
   (b) Answers to questions.
   (c) One page summary of what you did, your results and possible improvements.

8. For grading purposes, laboratory report for a given week is due at the beginning of the next meeting laboratory period. (Late reports turned in within 24 hours of the due date will lose 4 points from their total. No reports shall be accepted after that.)

9. You must be punctual. If you are late, there may be penalties:
   (a) Being late to lab (10 to 20 min) lose 2 pts
   (b) (20 to 45 min) lose 5 pts
   (c) Do not show up if you are going to be more than 45 minutes late. It constitutes a missed lab.

10. There will be a practical exam that is worth 40 points at the end of the semester (see date below). This consists of simple measurements or tasks that you should know from being actively involved in all the labs you will be performing.

11. If you have a question, ask your instructor. However, keep in mind that you will benefit from the lab in direct proportion to your efforts to think through problems and to solve them. Please try to figure them out before asking.

Grading Criteria:

1. The lowest score from these 12 reports shall be dropped. The maximum score from the lab reports is 220 points. The maximum score for the course including the final is 260 points.

2. The grade distribution will be as follows:
   A 225 – 260
   B 200 - 224
   C 175 – 199
   D 150 – 174
   F below 150

We use the +/- system so in each range (no A+), the low end will be minus and the high end plus.