Syllabus

Course: P116 Thursday 5 – 7:50 pm Darwin Hall 308
Instructor: Dr. So Young Han, hanso@sonoma.edu, www.sonoma.edu/users/h/hanso/
Office Hours: Thursday 2-4 pm Darwin 300B, Tel.: 664-3242

Course Description: The laboratory component of the calculus based physics P114. It covers classical mechanics, momentum, energy conservation, rotation, and simple harmonic oscillations. GE: Category B1 and GE laboratory requirements.

Prerequisite: Previous or concurrent enrollment in P114

University Policies
There are important University policies that you should be aware of, such as the add/drop policy; cheating and plagiarism policy, grade appeal procedures; accommodations for students with disabilities and the diversity vision statement. http://www.sonoma.edu/uaffair/policies/studentinfo.shtml

Accommodations for Students with Disabilities
If you need disability related accommodations for this class, such as a note taker, test taking services, special furniture, use of service animal, etc., please contact the office of Disabled Student Services (DSS) located in Salazar Hall, Room 1049, Tel: 664-2677

Objective:

1. Reinforce physics concepts learned from lectures with hand-on experiments.
2. Prepare future experimental physicist
3. Practice leadership and cooperative working skills.

From above reasons, followings are expected in this lab

1. Your goal is not to blindly follow lab procedures, generate preliminary results, and leave.
2. You are the main operator in this lab. You need to know what you are doing in each step of your action.
3. Always try to obtain the best. Don’t be satisfied with a proper/expected result. Think about how you can make it better.
4. The group with the best results (fast) will be rewarded bonus points.
5. When you obtain data from your measurement (sometimes with large errors), think about what this result means and why you have these errors in your measurements. If you can obtain logical scientific reasoning for your errors/and results, you will be also rewarded bonus points.
6. Your laboratory manual and instructor would act only as your guides. The given procedure on the manual is only an outline and you are encouraged to upgrade/modify with proper reasons.

Materials to bring: Lab worksheet (Download it each week from www.sonoma.edu/users/h/hanso) Pre-lab report (Download it and finish it before labs), Calculator, Scantron for the daily quizzes, Three-ring binder (½ inch) for all returned work. A Lab notebook (Grid)
**Attendance:** Attendance is mandatory. You can make up only one lab at the end of the semester. 1/2 point deduction from lab scores for every 15 late minutes. It is your responsibility to check in late.

**Grade:**
- Pre-Lab report: 15%
- Lab notebook: 10%
- Lab worksheet (one per group): 15%
- Daily quiz: 20%
- Individual Lab Report: 40%

A [93 above], A- [92-89], B+ [88-86], B [85-83], B- [82-79], C+ [78-76], C [75-73], C- [72-69], D [68-60], F [Below 60]

**Lab Procedures**

- Lab Introductory Lecture
- Instruments Set up and Measurements
- Short Calculation, Measurement
- Data Analysis and Evaluations
- Discussion and Developing Concepts

*Grades are based on an absolute scale, not a curve. To pass you cannot miss more than 3 labs.

*Quiz
You will have a quiz at the end of the lab. The quiz covers pre-lab report, introductory lectures, and procedures. You cannot make up a missed quiz. Your lowest quiz will be dropped.

*Lab worksheet
Download and print the lab worksheet from [www.sonoma.edu/users/h/hanso](http://www.sonoma.edu/users/h/hanso) before the lab. Complete the worksheet at least 15 minutes before the lab ends. Turn one lab worksheet per group before you leave. (Don’t forget to write your name on it.)

*Individual lab report
You have one week to complete a formal individual lab report. You may submit a late report no later than 1 week after the due. You will have 10% grade reduction for late lab report and pre-lab report. Your lab report should not be more than 3 pages.

*Lab-note
Write down as much as possible in your lab note. Ex) Plans, predictions, hypothesis, short calculations, graphs and figures. Your lab-note will be collected at the end of the semester.
Individual Lab Report Format

Title] [Date: [Group Name:]
Name: Partners:

Purpose]
Short abstract and objective of the lab. (~1-2 sentences)

Concepts]
Describe concepts and theory used in the lab. What is the physics behind the lab? Include all physics equations and constants used. (~1-2 paragraphs)

Equipment and Setup]
List of all equipments used
A block diagram of the instrument set up with labels

Procedures]
1. Describe each step and number steps.

Data analysis]
Show your raw data measured.
All data should be labeled and should have proper units.
Show all calculation and works. (Ex) 2.0 x 3.0=6.0
Present raw data and calculated values neatly using available tools such as tables and graphs.

Discussion and Conclusion]
Compare your data with theory.
Evaluate your data.
What is a possible source of error? How can you improve your measurement? (Be specific and explain. ‘human error’ or ‘being careful” is not good enough.)

Do your part.]
What was your role in the group. (Write down what you did physically in the lab.)

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Tentative Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1</td>
<td>(Feb 4)</td>
<td>Introduction</td>
</tr>
<tr>
<td>W2</td>
<td>(Feb 11)</td>
<td>LAB1. Error Analysis and Data Studio</td>
</tr>
<tr>
<td>W3</td>
<td>(Feb 18)</td>
<td>LAB2. Linear Acceleration</td>
</tr>
<tr>
<td>W4</td>
<td>(Feb 25)</td>
<td>LAB3. Newton’s Laws of Motion</td>
</tr>
<tr>
<td>W5</td>
<td>(Mar 4)</td>
<td>LAB4. Force</td>
</tr>
<tr>
<td>W6</td>
<td>(Mar 11)</td>
<td>LAB5. Frictional Forces</td>
</tr>
<tr>
<td>W7</td>
<td>(Mar 18)</td>
<td>LAB6. Projectile Motion</td>
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<tr>
<td>W8</td>
<td>(Mar 25)</td>
<td>LAB7. Energy Conservation</td>
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<tr>
<td>W9</td>
<td>(Apr 1)</td>
<td>Furlough; No Lab</td>
</tr>
<tr>
<td>W10</td>
<td>(Apr 8)</td>
<td>Spring Break</td>
</tr>
<tr>
<td>W11</td>
<td>(Apr 15)</td>
<td>LAB8. Work</td>
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<tr>
<td>W12</td>
<td>(Apr 22)</td>
<td>LAB9. Conservation of Momentum and Energy</td>
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<tr>
<td>W13</td>
<td>(Apr 29)</td>
<td>LAB10. The Rocket</td>
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<tr>
<td>W14</td>
<td>(May 6)</td>
<td>LAB11. Rotation</td>
</tr>
<tr>
<td>W15</td>
<td>(May 13)</td>
<td>LAB12. Simple Harmonic Oscillations</td>
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<tr>
<td>W16</td>
<td>(May 20)</td>
<td>LAB13. Make Up Lab</td>
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