Introduction to Physics I Laboratory. Syllabus

Physics 002. Fall 2019

Meeting times    Wed 2:45-5:45, Th 1:15-4:15, or Fri 1:15-4:15
Instructor       Mari-Anne M. Rosario
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what is this class? course description and course goals

Physics 2 is the laboratory that accompanies Physics 1. Topics include Newtonian mechanics, vibrations and oscillations, waves and sound, and thermodynamics. Concurrent enrollment in Physics 1 is required. This course is an opportunity to

- gain hands on experience with physical phenomena in mechanics. That is, we’ll
  - connect real-time observations with the variables and equations we use to describe them
  - use theoretical models to predict how a system behaves in real-time
- be introduced to experimental methods. This includes
  - calibrating equipment and practicing techniques to make measurements more precise
  - identifying and reporting your measurement’s precision (instrumental, random, definition uncertainty, absolute and fractional/percent uncertainties)
  - carrying out calculations and data analysis using a spreadsheet, mathematical computing package, or a programming language (e.g. excel, Matlab, Python)
- develop skills to communicate scientific and technical ideas. This includes
  - organizing and visualizing your data and results with tables and plots
  - comparing your results with expected or prior results (e.g. theoretical fits, comparing values)
  - explaining your ideas using words, equations, numerical data, and graphs

how is the final grade assigned? assessment

Pre-labs
Pre-labs are assignments due at the start of lab to get you thinking about the ideas used in the lab before the actual lab session. These will not be accepted late, even for good reason.

Weekly lab evaluations.
This may be a writeup to describe an aspect of the experiment, a task to demonstrate your measurement methods or to predict the behavior of the system, or a quiz. Often done at the end of each lab meeting.

Lab performance
Measurement skill: appropriate and skilled use of equipment, good quality data
Experimental practice: engaging with the experimental design, revisiting measurements and analysis, organized setup and method
Collaboration: contributes, encourages contributions from others, listens to feedback
what’s going on this semester? topics and calendar (tentative)

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<th>week starting</th>
<th>Lab</th>
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<tbody>
<tr>
<td>1. 09.02</td>
<td>Measurement</td>
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<tr>
<td>2. 09.09</td>
<td>Motion in 1D</td>
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<td>3. 09.16</td>
<td>Projectile motion</td>
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<td>4. 09.23</td>
<td>Newton’s law</td>
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<td>5. 09.30</td>
<td>Friction</td>
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<td>6. 10.07</td>
<td>Circular motion</td>
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<td>7. 10.14</td>
<td>Energy</td>
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<td>8. 10.21</td>
<td>MIDTERM HOLIDAY</td>
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<td>9. 10.28</td>
<td>2D collisions</td>
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<td>10. 11.04</td>
<td>Equilibrium</td>
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<td>11. 11.11</td>
<td>Simple harmonic motion</td>
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<td>12. 11.18</td>
<td>Waves</td>
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<td>13. 11.25</td>
<td>THANKSGIVING HOLIDAY</td>
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<tr>
<td>14. 12.02</td>
<td>Practicum: air balloons</td>
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<tr>
<td>15. 12.09</td>
<td>Finals week</td>
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what to bring to lab?

- Thumbdrive, access to Google drive, iCloud, or any way to back up your work.
- Scientific calculator. Non-graphing is fine. The app on your phone is also fine.

miss a class? attendance and makeup policy

Attendance is required. An absence is a 0 (zero) for that lab. You can make up a lab if you have an approved reason. Let me know the reason within two days. Up to 2 labs may be made up.

Talk to me if there are severe or extended circumstances that affect your performance in class.

academic honor code? yes!

“As an honor code institution that is built on trust, we are a community that is committed to fostering the development of scholars that practice integrity in all academic endeavors.”¹ This course operates under the premises of the Academic Honor Code, including the expectation that you and I will work to uphold high standards of integrity. This means representing yourself and your work honestly, and supporting and encouraging others to do the same.

It’s common and expected that you’ll work with others — currently as a student, and in the future as a scientist or engineer. What you submit should be your work and reflect your understanding. If you include snippets of other people’s work, give them credit.² There is no acceptable reason for your work to look exactly like someone else’s.

help from outside this class? College resources

- STEM Center: Assumption Hall 2nd floor, Sunday to Thursday afternoon and evenings. 925.631.6282
- Student Disability Services: FAH190 925.631.4358 sds@stmarys-ca.edu
- Student Engagement and Academic Success: FAH 925.631.4349 seas@stmarys-ca.edu

¹directly from https://www.stmarys-ca.edu/academic-honor-council/academic-honor-code
²Much like a reference in a paper. Like this footnote, or the first footnote.