PHYSICS 2341 Physics I Laboratory

Spring 2021

Class Web page: https://jpastro.net/PHYS2341/syll-Phys2341.html (this page!)

Instructor: **Dr. Jason Pinkney**
Office hours in 111 Science Annex at these times : 9-10 am T, 2-3 pm W, and 10-12 Th.
Email j-pinkney@onu.edu or call 419-772-2740.
Instructor's Home page: https://jpastro.net

Section CRN, Time and Place:
PHYS2341-02 CRN: 30783, Time and place: Tues 12:00-2:45 pm, Meyer 121 (TA=Sarah Tucker)
PHYS2341-03 CRN: 30784, Time and place: Tues 3:00-5:45 pm, Meyer 121 (TA=Sarah Tucker)

Course Description:
This is the lab associated with Physics 2311 (Physics I) and Physics 2111 (General Physics 1). The student will perform experiments in Newtonian mechanics (projectile motion, collisions, conservation of energy, etc), Oscillatory motion (the pendulum), and thermodynamics (specific heat, thermal expansion).

Prerequisites: You should be taking PHYS 2311 (or PHYS 2111) concurrently with this lab. It is also acceptable, but not ideal, to have already taken PHYS 2311 or PHYS 2111.

Manual: You need to buy the orange manual "Experiments in Mechanics, Waves, and Thermodynamics", the Physics I lab manual, for $13. You no longer need to buy a quad-ruled notebook, but instead should buy a notebook (quad-ruled still ok) from which you can cleanly remove sheets to be turned in. Buy your lab manual from the instructor on the first day of class. Bring cash, preferably exact change. If that fails, then find Dr Pinkney during his office hours in SciAnx 111.

EXTRA Materials

Error Propagation rules.
Example of error propagation (applied to calorimetry). In this PDF file, I have taken a student's lab measurements (top left side) and used them to calculate the specific heat of copper, C_{Cu}.
Hyperphysics A nice supplement to your textbook which can be used to review concepts and equations.

Grading:
Your final letter grade is determined based on the average of your lab report scores. Each lab is scored out of 10 points. The scores are determined by your TA with guidance (a rubric) from your instructor. The instructor will take the scores from the TA and convert them into a grade. Typically, 90% and up is an A and 80-90% is a B. However, if the class mean is very high compared to other sections, the instructor will compare notebooks between sections to see if an adjustment is needed. Thus, the A cut-off could be raised to 91 or even 92% in order to keep different sections consistent.

Course Policies

Attendance is essential for labs. If you miss a lab completely you get a 0 for that particular lab. If you miss and have a valid excuse (emergencies, sports or music activities, illness) we can no longer allow you to make up labs during another lab section. However, the instructor may be able to open up the lab for a few people to carry out their experiment (mostly independently) during non-lab hours.

Groups and social distancing. We need to divide our size 20 labs into groups of 10 in order to maintain social distancing in the class. Those with last names beginning with A-J will attend for the first 1 hr 20 minutes, K-Z will

attend for the last 1 hr 20 minutes and there will be a 5 minute transition period in the middle. While doing labs in groups of 2, maintain a 6 ft separation by having one person use a computer to produce the plots and data tables for their group, while the other person has direct contact with the equipment. You can alternate roles from one week to the next.

Calculators. I encourage you to have a calculator in this lab.

Food and drink. Please do not bring food and drink into the lab. I want to avoid trash, clutter, and spills on the lab tables. A bottled drink that is stored in your backpack is acceptable.

ONU Health and Safety Policy. In accordance with the Universityâs COVID-19 safety plan and the Polar Pledge, all students will wear face coverings at all times in academic buildings.Â Additionally, students are to maintain a social distance of 6 feet when possible, especially when in conversation with others, during academic course meetings, and while waiting for a classroom to open. No eating or drinking will be allowed during course meetings. Students who violate this policy will be asked to leave the building immediately and must comply with this request. Additionally, students will be reported to the Office of Student Conduct for adjudication. Students who are unable to wear a face covering will need to make arrangements for accommodations with the Student Disability Coordinator prior to or during the first week of classes. (www.onu.edu/disability-services).

Schedule:

Week of	Group "1" (A-J)	Group "2" (K-Z)
W1 (1/19)	Informational meeting	Informational Meeting
W2	(1) Measurements in Physics	(1) Measurements in Physics
W3	(2) Graphs and Motion	(2) Graphs and Motion
W4	(3) Acceleration of Gravity	(3) Acceleration of Gravity
W5	(4) Projectile Motion	(4) Projectile Motion
W6	(5) Force Vectors	(5) Force Vectors
W7	(6) Uniform Circ Motion	(6) Uniform Circ Motion
W8	(7) Conservation of Energy	(7) Conservation of Energy
W9	(8) Cons of 1D Momentum	(8) Cons of 1D Momentum
W10	(9) 2D Cons of Momentum	(9) 2D Cons of Momentum
W11	(10) The Pendulum	(10) The Pendulum
W12	(11) Oscillatory Motion	(11) Oscillatory Motion
W13	(12) Thermal Expansion	(12) Thermal Expansion
W14	(13) Specific Heat	(13) Specific Heat
W15	(14) Entropy	(14) Entropy

Other Mandatory Syllabus Information:

Special Accomodations	Academic Honesty (Append. F, p. 97)	Title IX