FLORIDA POLYTECHNIC UNIVERSITY

Welcome to PHY2048L – Physics 1 Laboratory

This course is part of the STEM core, a set of six critical and foundational courses consisting of mathematics, chemistry, physics, programming, and STEM applications. These courses build the skills and conceptual understanding you need to succeed in all degree programs. Completing these courses early in your university education builds the foundation for academic success in Florida Poly's STEM degrees and creates a smooth path to degree completion.

The STEM core courses share many of the same course policies. Moreover, the courses strive to set consistent expectations of what it means to take responsibility for your own out of class learning and honing your skills to do university-level work. They are challenging, so make these STEM Core courses a priority!

Academic Integrity

All students are expected to adhere to the highest standards of academic integrity. Violations of academic integrity include actions such as cheating, plagiarism, use of unauthorized resources, illegal use of intellectual property, and inappropriately aiding other students. Such actions undermine the central mission of the university and negatively impact the value of your Florida Poly degree. Suspected violations will be fully investigated, possibly resulting in an academic integrity hearing and sanctions against the accused student if found in violation. Sanctions range from receiving a zero on the exam or assignment, to expulsion from the university. Do not compromise your integrity for a perceived short-term gain. More information about Florida Poly's academic integrity policies and procedures can be found here: https://floridapoly.edu/wp-content/uploads/2017/07/FPU-5.005-Academic-Integrity-7.29.14.pdf#search=academic%20integrity

Course Information

- **Course Number and Title:** PHY 2048L Physics 1 Laboratory
- **Credit Hours:** 1
- **Academic Term:** Fall 2024

Course Meeting Information

Section	Instructor	Meeting Time	Room
1	Ms. Manimegalai Ramamourty	Tue 10:00-11:50 am	IST 1051
2	Ms. Manimegalai Ramamourty	Tue 1:00-2:50 pm	IST 1051
5	Dr. Justin Reyes	Wed 10:00-11:50 am	IST 1051
6	Dr. Emad Fouad	Wed 1:00-2:50 pm	IST 1051
7	Dr. Justin Reyes	Wed 3:00-4:50 pm	IST 1051
8	Ms. Manimegalai Ramamourty	Thu 10:00-11:50 am	IST 1051
9	Ms. Manimegalai Ramamourty	Thu 1:00-2:50 pm	IST 1051
10	Dr. Bradford Barker	Thu 3:00-4:50 pm	IST 1051
11	Dr. Justin Reyes	Fri 10:00-11:50 am	IST 1051
12	Dr. Emad Fouad	Fri 1:00-2:50 pm	IST 1051
13	Dr. Justin Reyes	Fri 3:00-4:50 pm	IST 1051

Instructor Contact and Office Hours

All office hours will be in the instructor's office listed in the table below.

Sections	Instructor	Email and Office	Monday	Tuesday	Wednesday	Thursday	Friday
6 and 12	Dr. Fouad	efouad@floridapoly.edu BARC					
1, 2, 8, and 9	Ms. Ramamourty	mramamourty@floridapoly.edu IST1051A: Physics Lab Prep Room					
5, 7, 11, and 13	Dr. Reyes						
10	Dr. Barker	bbarker@floridapoly.edu BARC					

Course Details

Official Catalog Course Description:

- **Course Description:** This laboratory for PHY 2048: Physics 1 provides practical applications of Newtonian and wave mechanics.
- Prerequisite: None
- **Co-requisite:** PHY 2048 - Physics 1

Required Texts and Materials:

- **Required Text:** No textbook required.
- **Equipment and Materials:** PASCO Capstone Software (available with student licenses) and Laboratory Experiment Stations, Virtual (PhET) Simulations, Microsoft Word (to be prepared by the student) or other document editor for lab report submission.
- PASCO Capstone Software license key for downloading Capstone:
- Website: https://www.pasco.com/downloads/
- License key: 19f5c-t30o8-4c3m0-pdmop-g1ggu-pge1p

Course Objectives:

Upon successful completion of this course, you should be able to:

- **Demonstrate** the ability to perform experiments relevant to Physics 1 concepts.
- **Analyze** the data obtained from the laboratory experiments.
- **Interpret** the results and graphs based on the defined Physics Laws and Principles.
- **Write** proper Lab Reports.

Course Learning Outcomes: Upon completion of the course, students should be able to

- **Demonstrate** the skills in performing laboratory experiments.
- **Generate,** read, and interpret graphs and data.
- **Calculate** the error analysis from experimental results and theoretical known values.
- **Apply** principles of scientific inquiry.

Alignment with Program Outcomes:

Program Learning Outcomes and General Education Competencies may be found in the Academic Catalog (http://catalog.floridapoly.edu/).

Student Learning Outcomes (SLO) Table

Course Learning Outcome	Learning Level	Program Learning Outcome
Demonstrate the skills in performing laboratory experiments.	**Remember** Recognize Recall	1 - an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics 6 - an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
Generate, read, and interpret	**Apply and**	3 - an ability to communicate effectively with a range of audiences

graphs and data	**Analyze** Execute Implement Differentiate Organize	
Calculate the error analysis from experimental results and theoretical known values.	**Understand** **Interpret** Compare Explain	1 - an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
Apply principles of scientific inquiry	**Evaluate** Check Critique	1 - an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics 3 - an ability to communicate effectively with a range of audiences

Academic Support Resources

- **Library**: Students can access the Florida Polytechnic University Library through the University website and Canvas, on and off campus. Students may direct questions to library@floridapoly.edu.
- **Peer Learning Strategists (PLS)**: Are specially trained student leaders who help their peers strategize approaches to course content and work through solution methods. PLS work in collaboration with the courses they support so the content and methods are aligned with your instructors' expectations. Students can meet with a PLS in The Learning Center, which is located on the first floor of the Innovation, Science and Technology (IST) building in room 1019.
- **Academic Success Coaches**: All students at Florida Poly are assigned an Academic Success Coach. Your Academic Success Coach can assist you with academic success strategies. Please visit the Student Success Center on the second floor of the IST building to meet with an Academic Success Coach.
- **Writing Center**: Located on the second floor of the IST (2059/2061), the Writing Center helps students to develop their writing and presentation skills. Consultations are available in person and virtually. For more details, visit floridapoly.edu/writingcenter.

Course Policies

Requirements and Evaluation

Your grade will be based on:

(5%) Attendance and Participation
(20%) Pre-Lab Quizzes
(40%) Lab Report Submission
(15%) Midterm Exam (Quiz and Lab Report)
(20%) Final Exam (Quiz and Lab Report)

Grading Scale

Below is the grading scale that will be used in the course. (See also University Grading Policy).

Grade	A	B+	B	B-	C+	C	D	F
Percentage	≥ 90%	89%-87%	86%-83%	82%-80%	79%-77%	76%-70%	69%-60%	< 60%
GPA	4.0	3.33	3.0	2.67	2.33	2.0	1.0	0.0

Attendance and Participation

- Students in this course are expected "to attend all of their scheduled University classes and to satisfy all academic objectives as defined by the instructor" (University Policy, FPU-5.0010AP).
- A+ Attendance will be used to track attendance. Falsifying attendance for yourself or for another student is an act of academic dishonesty and is considered a violation of the university's academic integrity policy.
- Students should not come to class if they are feeling ill, particularly you have been directed by a health professional to quarantine. Students who are experiencing an emergency situation that aligns with an academic exercise of consequence (e.g., /a Common Exam) should work with CARE Services at care@floridapoly.edu.
- If you must miss class for a justifiable reason, then please make sure that the absence is excused in a timely manner. Please contact your instructor as soon as possible to discuss your options in this scenario (see Late Work and Missed Labs).

- If you are late by 15 minutes or more, you will be considered absent for that lab session.
- Any unexcused absence will result in a grade of zero for that week's lab report.

Quizzes

- Every lab will have an associated quiz to be completed as part of your grade.
- Quizzes will be posted on Canvas.
- The due dates are set by the instructor. For most weeks, the quiz will be a Pre-Lab Quiz, due at 11:59 pm on the day before the lab.

Lab Reports

- **LAB REPORT SUBMISSION:** A laboratory report will be required covering the work in each lab session. These reports will include tables of data, graphs, and a description of what you did during the lab and answers to the questions. In general, the lab reports have a due date set by your course instructor in CANVAS. Lab reports will not be accepted late unless you succeed in convincing the instructor that you have a special problem. All the lab reports will be considered to secure 40% of your final grade. The instructions and format for submitting the lab report are given below.

- **General Remarks of Lab Report:** Writing a lab report is the only way your instructor will know what you have done during the lab and how well you have understood the process and the results. Part of your lab experience should be learning how to organize and present your work in a scientific way. There is no framework that can be used as a "one size fits all", therefore this lab report framework below should only be used as an example.

- Any lab report should have the following features:
    - It should be concise but should also contain the necessary details and well-developed explanations.
    - It should be organized. You should enable the reader to quickly find the information he or she may be interested in.
    - It should contain all the relevant information and reasoning. You should enable the reader to validate your conclusion.
    - No plagiarism is permitted as it is against the ethical principles. You must submit your own work.
- A possible way to achieve this is using the following framework:
    - **Title of the Lab:** Team Members involved; Instructor Name; Date of Experiment performed; Date of Submission

    - **Objective:** State what you want to achieve in this experiment. A formal way to do this is to state a question or hypothesis that you want to address.

    - **Method:** You should include a summary of the lab procedure in your words; do not merely copy what is in the manual or Pasco Capstone Software. This section should demonstrate your understanding of what exactly you measured and how you measured it.

    - **Data tables, graphs, calculation:** In this section you should include the raw data you measured (generally, an estimate of the error should accompany all measured values) and all your answers to the questions asked within the Pasco Capstone software. Be sure to present your data in an organized manner (e.g., a data table) and to include units. You are expected to save the results as a screen capture jpeg from your Pasco Capstone software and insert any tables or plots into your word document report at the appropriate position alongside a description of the figure in your own words.

    - **Uncertainty & Error:** You cannot draw any final conclusions from your data until you think carefully about how well you can trust your data and what factors may have affected or biased it. Additionally, you must often propagate the error from your measurements through your calculations and graphs. Remember that error is not just an assessment of what might have gone wrong; it represents the *mathematical* precision that the lab results were able to achieve.

    - **Conclusion:** Finally, after all this work, go back and answer the question you stated in the beginning. Does your data allow you to support or reject your hypothesis, or is the data inconclusive? Also do you have anything you can compare your results with (e.g., a value

in the literature, a second measurement, a measurement with a different method, other lab groups)? How well does it compare to such a value?

MODEL RUBRIC FOR LAB REPORT SUBMISSION:

Lab Report Submission Rubric

Criteria	Ratings	Pts
Report Format (Title, Student and Partner Name, Date, Etc.).	1 = Everything complete. 0.75 = One format element (Title, title, author, partner, etc.) missing. 0.5 = Two format elements missing. 0 = No format elements present.	1.0 pts
Objective	1 = Objective is correct and clearly stated. 0.75 = Missed point of the Objective. 0 = Objective is missing from the report.	1.0 pts
Method	1 = Enough information for the unfamiliar reader to understand how you did the experiment. List of equipment. 0.75 = Statement of procedure is incomplete. 0.5= No statement of procedure or missing equipment list. 0 = Method is missing from the report.	1.0 pts
Data tables, graphs, calculation & Error Analysis	5 = All slides, tables, graphs are shown in their proper order, and all questions satisfactorily answered. -0.25 for each data table error incorrectly answered question. ‘ -0.5 for graphs, calculation, each missing graph or table. -1.0 for each missing slide. -1.0 if slides are out of proper order. 0 = This section is missing from the report.	5.0 pts
Uncertainty and Error Discussion	1 = identified significant contributions to uncertainty and error and quantified impact on results. 0.5 = identified significant contributions to uncertainty and error but didn't quantify impact on results. 0= No uncertainty and error report with the laboratory report submission.	1.0 pts
Conclusion	1 = Summary report of the laboratory observation and conclusion of the experimental results supporting with underlying Physics concepts. 0.75 = Summary report supported with inappropriate Physics concepts or principles. 0 = No summary report with the laboratory report submission	1.0 pts
Total Points:		10.0

Exams

There will be two Exams held in this class – one each at the middle and at the end of the term. These will occur during the usual class session.

- Each Exam will consist of a Quiz that will only be available during the exam session. This will account for half of your exam score. **For the Final Exam, this will be a comprehensive quiz covering all previous labs.**
- You will be required to submit the Lab Report for the Exam experiment during the exam period. The same rubric will be used for the Exam Lab Report as the other Lab Reports.
- Absences are not eligible for makeup exams. Contact your instructor if you have any conflicts but be aware that

makeup exams are only permitted in exceptional circumstances.

Late Work and Missed Labs

- You are responsible for submitting your assignments on time.
- **Late lab reports will be accepted for up to one day after their due date with a 20% penalty.** Late work will not be accepted after that period. Extensions to submission deadlines are not generally granted.
- Make-up labs will only be permitted with proper documentation and in certain unavoidable circumstances. Contact your instructor before the lab to request this permission. If granted, an alternate makeup lab time will be scheduled no more than one week past the original lab date.
- Any missed labs outside of the circumstances mentioned above are not eligible for rescheduling. There will be a single makeup lab opportunity during the last week of classes that will provide an opportunity to regain points lost due to absence.

Official Email Address

Florida Polytechnic University email is the official method of communication for the University. Students are required to check their email frequently (at least once per day). We cannot reply to any email received from an address other than those that end in floridapoly.edu.

University Policies

Reasonable Accommodations

The University is committed to ensuring equal access to all educational opportunities. The University, through the Office of Disability Services (ODS), facilitates reasonable accommodation for students with disabilities and documented eligibility. It is the student's responsibility to self-identify as a student with disabilities and register with ODS to request accommodation.

If you have already registered with ODS, please ensure that you have requested an accommodation letter for this course through the ODS student portal and communicate with your instructor about your approved accommodation as soon as possible. Arrangements for testing accommodation must be made in advance. Accommodation is not retroactive.
If you are not registered with ODS but believe you have a temporary health condition or permanent disability requiring accommodation, please contact ODS as soon as possible.

The Office of Disability Services (ODS):
DisabilityServices@floridapoly.edu
(863) 874-8770
The Access Point
ODS website: www.floridapoly.edy/disability

Accommodations for Religious Observances, Practices and Beliefs

The University will reasonably accommodate the religious observances, practices, and beliefs of individuals in regard to admissions, class attendance, and the scheduling of examinations and work assignments. (See University Policy.)

Title IX

Florida Polytechnic University is committed to ensuring a safe, productive learning environment on our campus that prohibits sex discrimination and sexual misconduct, including sexual harassment, sexual assault, dating violence, domestic violence, and stalking. Resources are available if you or someone you know needs assistance. Any faculty or staff member you speak to is required to report the incident to the Title IX Coordinator. Please know, however, that your information will be kept private to the greatest extent possible. You will not be required to share your experience. If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the Florida Polytechnic University Ombuds Office, BayCare's Student Assistance Program, 1-800-878-5470 and locally within the community at Peace River Center, 863-413-2707 (24-hour hotline) or 863-413-2708 to

schedule an appointment. The Title IX Coordinator is available for any questions to discuss resources and options available.

Academic Integrity

The faculty and administration take academic integrity very seriously. Violations of academic integrity regulation include actions such as cheating, plagiarism, use of unauthorized resources (including but not limited to use of Artificial Intelligence tools), illegal use of intellectual property, and inappropriately aiding other students. Such actions undermine the central mission of the university and negatively impact the value of your Florida Poly degree. Suspected violations will be fully investigated, possibly resulting in an academic integrity hearing and sanctions against the accused student if found in violation. Sanctions range from receiving a zero on the exam or assignment, to expulsion from the university. Repeat offenders are subject to more severe sanctions and penalties. Do not compromise your integrity for a perceived short-term gain.

Recording Lectures

Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal educational use. Recordings may not be used as a substitute for class participation or class attendance. Recordings may not be published or shared in any way, either intentionally or accidentally, without the written consent of the faculty member. Failure to adhere to these requirements is a violation of state law (subject to civil penalty) and the student code of conduct (subject to disciplinary action).

Recording class activities other than class lectures, including but not limited to lab sessions, student presentations (whether individually or part of a group), class discussion (except when incidental to and incorporated within a class lecture), and invited guest speakers is ***prohibited****.*

Course Schedule

The course schedule is tentative and subject to change as a result of extreme weather, changes made by the registrar's office or for some other unforeseen reasons. Any updates to these schedules will be announced in class and on Canvas.

Tentative PHY2048L Schedule – Fall 2024

Week	Tuesday/ Wednesday/ Thursday/ Friday
8/20-8/25 *Week 1*	Overview of Syllabus Introduction of Capstone Software and Universal Interface Hardware Lab 0: Graph Matching
8/26-8/30 *Week 2*	Lab 1: Error Analysis and Plotting Graphs
9/2-9/6 *Week 3*	Lab 2: Introduction to Measurement – Simple Pendulum
9/9-9/13 *Week 4*	Lab 3: Velocity and Acceleration
9/16-9/20 *Week 5*	Lab 4: Projectile Motion
9/23-9/27 *Week 6*	Lab 5: Force and Acceleration
9/30-10/4 *Week 7*	Lab 6: Atwood's Machine
10/7-10/11 *Week 8*	Midterm: Work-Energy Theorem
10/14-10/18 *Week 9*	Lab 7: Coefficients of Friction
10/21-10/25 *Week 10*	Lab 8: Hooke's Law and Elastic Potential Energy
10/28-11/1 *Week 11*	Lab 9: Impulse and Momentum
11/4-11/8 *Week 12*	Lab 10: Newton's Second Law for Rotation
11/11-11/15 *Week 13*	Lab 11: Spring and Mass Oscillations
11/18-11/22 *Week 14*	Final: Standing Waves on a String
11/25-11/29 *Week 15*	Thanksgiving Holiday No Class
12/2-12/6 *Week 16*	Tuesday (12/3) and Wednesday (12/4): Make-up Labs Thursday (12/5) and Friday (12/6): Reading Days, No Class