FLORIDA SOUTHWESTERN STATE COLLEGE

School of Pure and Applied Sciences

Physical Science

Instructor Information

Instructor: Marius Coman
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Course Information

Course: PHY 2048L, GENERAL PHYSICS I LABORATORY (GENERAL PHYSICS I LABORATORY)
Section Number: 201
Course Reference Number: 15621
Delivery Method: Traditional
Campus: Collier

Credit Hours: 1 Credits - 2 Lab Hours

Course Description: This laboratory course accompanies PHY 2048 and is the first part of a sequence of two courses. The sequence includes investigations that illustrate and explore concepts and principles related to force and motion, work and energy, rotation, gravity, properties of matter, electric charges and currents, resistance and capacitance, magnetism and electromagnetic induction, optics, and nuclear radiation. The course is designed to encourage the concept of "learning by doing" and enhance student learning of physical concepts. It introduces students to experimental procedures, techniques and

equipment; it involves setting up the laboratory equipment, collection of data, interpretation of experimental data and preparation of a lab report.

Course Location

Wednesday 8:00 am - 9:45 am

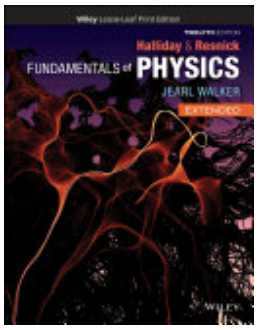
E - 109 Collier campus

Prerequisites/Co-requisites

Course Prerequisites: Demonstration of readiness for college-level computation and communication ; and MAC 2311 with a minimum grade of "C".

Course Co-requisites: PHY 2048

Required Course Materials



Fundamentals of Physics, Extended
ISBN: 9781119773511
Authors: David Halliday, Robert Resnick, Jearl Walker
Publisher: John Wiley & Sons
Publication Date: 2021-10-12
Additional Information
None.

Topic Outline

Topic Outline:

- Experimental uncertainty (errors) and data analysis
- Measuring density
- Acceleration of gravity

- Addition and resolution of forces
- Atwood machine
- Friction
- Centripetal force
- Work and energy
- Projectile motion: the Ballistic Pendulum
- Torques, equilibrium, and center of gravity
- Simple harmonic motion
- Simple pendulum
- Archimedes' principle
- Standing waves
- Air column resonance

Course Assessment

This course will be assessed by a combination of class participation, graded lab activities and reports, module/unit quizzes, and/or a comprehensive final exam.

Student Learning Outcomes

All courses at Florida SouthWestern State College contribute to the General Education Program by meeting one or more of the following General Education Competencies:

Communicate clearly in a variety of modes and media.
Research and examine academic and non-academic information, resources, and evidence.
Evaluate and utilize mathematical principles, technology, scientific and quantitative data.
Analyze and create individual and collaborative works of art, literature, and performance.
Think critically about questions to yield meaning and value.
Investigate and engage in the transdisciplinary applications of research, learning, and knowledge.
Visualize and engage the world from different historical, social, religious, and cultural

approaches.
Engage meanings of active citizenship in one’s community, nation, and the world.

A. General Education Competencies and Course Outcomes

1. Listed here are the course outcomes/objectives assessed in this course which play an integral part in contributing to the student's general education along with the general education competency it supports.

General Education Competency: Evaluate

Course Outcomes or Objectives Supporting the General Education Competency Selected:

- Describe the principle of dimensional analysis and use it to derive approximate expressions of physical laws.
- Identify the SI system of units and analyze the differences between base and derived units.
- Interpret the laws of motion and apply them to solve problems in one and two dimensions.
- Differentiate between and among the concepts of work, energy, power, and conservation of energy; examine the applications of these concepts, and use them to interpret and explain natural phenomena.
- Define the concept of center of mass and use it to analyze the motion of a system of particles.
- Describe the law of conservation of momentum, examine its applications, and use it to interpret and analyze natural phenomena.
- Apply the concepts of momentum and energy to explain collisions.
- Describe the concept of circular motion and use it to solve problems.
- Use the laws of rotational kinematics and compare linear motion with rotational motion.
- Describe the law of gravitation and use it to explain natural phenomena; combine this law with the laws of motion to explain planetary orbits.
- Analyze the conditions for static and rotational equilibrium and critically discuss how the concept of torque relates to natural phenomena.

- Describe the concepts related to fluid pressure and buoyancy; discuss natural phenomena and its relationship to Bernoulli's equation.
- Explain the properties of waves, oscillations, and the Doppler Effect; apply these concepts to explain their influence on natural phenomena.

B. In accordance with Florida Statute 1007.25 concerning the state's general education core course requirements, this course meets the general education competencies for science.

- Students will demonstrate the ability to critically examine and evaluate scientific observation, hypothesis, or model construction, and to use the scientific method to explain the natural world.
- Students will successfully recognize and comprehend fundamental concepts, principles, and processes about the natural world.

C. Other Course Objectives/Standards

- None

Attendance Policy

Attendance in class is your responsibility. As mentioned below a big part of your grade is derived from the lab reports.

This course/lab is designed to encourage experiential learning of the physics concepts “by doing” through hands on investigations. Reflecting upon this experience, making generalizations based on experiments enables you to tackle new situations effectively.

Requirements for Students

The lab report is due at the end of each laboratory session, each laboratory report is completed and submitted individually.

Lab Safety and Best Practices

Students are expected to follow any and all safety guidelines or procedures as directed by their instructor. Some basic best practices that should be followed in all laboratory classes are:

1. Closed-toe shoes should be worn at all times.
2. Hands should be washed before and after all lab activities.
3. Food should never be consumed in laboratory classrooms.
4. Do not attempt to clean broken glassware yourself. Please alert your professor to any cracked or broken glass. Your instructor will dispose of these in designated containers.
5. Follow your professor's instructions on chemical or biological waste disposal to ensure correct disposal in designated containers.
6. If your instructor requires that you wear any Personal Protective Equipment (PPE – including, but not limited to, safety goggles, aprons, gloves, and face masks), please wear them as instructed to do so.

Grading Policy

Your final grade is calculated as a weighted average; the weights for lab reports, quizzes and the exam are specified in the following table:

Assessment tool	**Weight in %**
13 Lab Reports	70.0
13 Quizzes	20.0
1 Exam: an experiment in itself	10.0
Total:	**100**

$$\text{Final Grade} = \overline{\text{Lab Reports}} \times \frac{70}{100} + \overline{\text{Quizzes}} \times \frac{20}{100} + \textit{Exam} \times \frac{10}{100}$$

$$\overline{\text{Quizzes}} = \sum_{i=1}^{13} \text{Quiz}_i$$

$$\overline{\text{Lab Reports}} = \sum_{j=1}^{13} \text{Lab Report}_j$$

The following range will be used to determine your final course grade:

Grade Percent	Letter Grade
90-100	A
80-89.9	B
70-79.9	C
60-69.9	D
Below 60	F

Withdrawals: It is the student's responsibility to withdraw officially from any class that they cease to attend. Failure to do so will result in the recording of an "F" grade.

(Note: The "incomplete" grade ["I"] should be given only when unusual circumstances warrant. An "incomplete" is not a substitute for a "D," "F," or "W." Refer to the policy on "incomplete grades.)

LATE WORK POLICY:

Class Schedule

Date	Experiment
Aug 24	Experimental Uncertainty (Error) and Data Analysis
Aug 23	Measurement Instruments (Mass, Volume, and Density)
Sep 3	Uniformly Accelerated Motion: free-fall
Sep 6	The Addition and Resolution of Vectors
Sep 13	Newton's Second Law: The Atwood Machine
Sep 20	Friction
Sep 27	Work and Energy
Oct 4	Conservation of Linear Momentum, Ballistic pendulum
Oct 11	Centrifugal Force
Oct 18	Torques, Equilibrium, and Center of Gravity
Oct 25	Archimede's principle, buoyancy
Nov 1	Simple Harmonic Motion
Nov 8	Speed of sound
Nov 15	Standing Waves
Nov 22	Exam Period of oscillations for SHM
College closed	Sep 4, Nov 10-11, Nov 23- 26

Canvas Schedule

Date	Assignment Name	Assignment Type	Points
9/30	Lab Ballistic Pendulum	Assignment	100
6/1	Lab Ballistic Pendulum	Assignment	100
9/2	Lab 2 Errors and Uncertainties associated with measurements	Assignment	100

Date	Assignment Name	Assignment Type	Points
9/13	Force Table Experiment, Resolution of vectors, Static Equilibrium	Assignment	100
9/14	Quiz 1 Experimental Uncertainty and Data Analysis	Quiz	104.65
9/16	Lab 4 Free Fall & Reaction Time	Assignment	100
9/23	Quiz Uniformly Accelerated Motion, Free Fall	Quiz	100.1
9/27	Lab 5 Atwood machine	Assignment	100
9/30	PHY2048L-Quiz-Atwood-Machine	Quiz	12
11/1	Weight versus mass lab	Assignment	100
11/10	Archimede's principle, buoyant force, specific density	Assignment	100
11/16	Hooke's Law Exam	Assignment	100
	Torques paper submission	Assignment	100
	Speed of sound paper submission	Assignment	100

Date	Assignment Name	Assignment Type	Points
	Friction paper submission	Assignment	100

Academic Integrity Policy

At FSW, we believe in the power of honesty and integrity as the pillars of academic excellence. As part of our college community, it's crucial that you understand the importance of these values in your academic journey. All work submitted by students for credit in this course is required to adhere to FSW's Academic Integrity Policy. This means cheating on coursework is unacceptable, will receive a "0" grade, and may be subject to disciplinary action. FSW faculty may use Turnitin, Packback, CheckGPT, or similar tools to evaluate coursework for plagiarism and/or artificial intelligence (AI) generated content.

Cheating or other academic misconduct can include, but is not limited to:

- Copying information from published or unpublished sources (online or in print) without citing those sources.
- Copying someone else's work or allowing someone else to copy yours.
- Submitting written work generated by AI as your own without direct authorization from your professor.
- Submitting work for credit that has already been submitted for credit in another class, even if you wrote it.
- Unethical distribution or use of exam content.

According to the Academic Policies and Procedures section of the College Catalog, "Those in charge of academic tasks have an obligation to make known the standards and expectations of acceptable academic conduct. Each student has an obligation to know and understand those standards and expectations." As such, each student should review the policies and procedures outlined in the Academic Integrity Policy and expect that any violation of these policies will be subject to disciplinary action.

If you have any questions about these principles, reach out to your professor. They are here to help you succeed. Let's work together to maintain an honest, vibrant learning environment at FSW!

Institution Policies

Programs for Students with Disabilities

Florida SouthWestern State College, in accordance with the Americans with Disabilities Act and the College's guiding principles, offers students with documented disabilities programs to equalize access to the educational process. Students needing to request an accommodation in this class due to a disability, or who suspect that their academic performance is affected by a disability should contact the Office of ADAptive Services at the nearest campus. The office locations and telephone numbers for each campus are located on the Office of ADAptive Services website.

Reporting Title IX Violations

Florida SouthWestern State College, in accordance with Title IX and the Violence Against Women Act, has established a set of procedures for reporting and investigating Title IX violations including sexual misconduct. Students who need to report an incident or need to receive support regarding an incident should contact the Equity Officer at equity@fsw.edu. Incoming students are encouraged to participate in the Sexual Violence Prevention training offered online. Additional information and resources can be found on the College's website.

School Policies

Extra Credit: All extra credit opportunities offered in any School of Pure and Applied Science course must be offered equally to all students in the class, and cannot account for more than 5% of the overall course grade.

Tutoring and Support Services

Academic Tutoring

FSW provides professional in-person and online tutoring through its Tutoring Centers located inside the campus library. Tutoring Centers consist of Math Center, Writing Center, and the Peer-Tutoring Center. In addition to on-campus tutoring services, the College provides all students 24/7 access to Tutor.com.

For additional help with this course, the student may:

1. Meet with the Professor during posted office hours.
2. Seek On-Campus Assistance: Each Campus, as well as the Hendry/Glades Center, has at least one place where students can go for assistance with academics. All are available to each student, regardless of the location or type (on-campus, online, etc.) of the class.
3. Request a tutor from the Florida SouthWestern State College Peer Tutoring Center.
4. Use the Online 24/7 Tutoring Services (tutor.com). Look for the link in your Canvas course navigation menu.
5. Use the **FSW Math Tutorials** link located in Canvas for additional math resources (videos, links to resources, etc.) by topic.

BUCS Care Services

Bucs Care Services is focused on educating and informing the community through caring, advocacy, and supportive endeavors. FSW cares about our student's holistic development and wellness. We believe that for all students to be successful, support must be given on an emotional, social, physical, and intellectual basis.

Care Services include:

- Wellness Hub (Mindfullness@FSW)
- Care Pantry
- Mental Health Services
- Public Health Resources
- Active Minds
- Homeless Student Resources

If you feel you are struggling and need to speak with someone concerning personal issues, please do not hesitate to contact the Care Services office via email (bucscare@fsw.edu) or phone (239-489-9046) for community resources and group counseling.

All of these services are available to the student at no additional cost.

Any other information or class procedures or policies

Only those students enrolled in class, or those persons who have authorization to be in attendance for a particular class, will be permitted to attend the class.

TECHNICAL DIFFICULTIES: Students who experience technical difficulties must contact the professor immediately and attach a screenshot of the issue. If technical problems continue with students' personal computers, it is their responsibility to contact technical support and/or use the computers available on Florida SouthWestern State College campuses to complete the assignments.

This Syllabus is subject to reasonable changes at the discretion of the professor. From time to time, this syllabus may need to be amended for pedagogical reasons, and the instructor will notify students via announcements or email of any changes, additions, and/or deletions to the syllabus.