FLORIDA SOUTHWESTERN STATE COLLEGE

School of Pure and Applied Sciences

Physical Science

> *The mission of Florida SouthWestern State College is to provide affordable and exceptional academic, cultural and workforce opportunities in a supportive environment that productively transforms the lives of our students and enhances the economic vitality of the communities we serve.*

Instructor Information

Instructor: Marius Coman, Ph. D.
Office Location: N-230 Collier campus
Office Hours:
Under Announcements in canvas
Phone Number: 2397323721
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Course Information

Course: PHY 2048, GENERAL PHYSICS I (GENERAL PHYSICS I)
Section Number: 201
Course Reference Number: 14674
Delivery Method: Traditional
Campus: Collier

Credit Hours: 4 Credits - 4 Lecture Hours

Course Description: This calculus-based course serves as the first in a two-part series, covering topics like kinematics, dynamics, energy, momentum, rotational motion, fluid dynamics, oscillatory motion, and waves. Designed for science and engineering majors, the course integrates critical thinking, analytical skills, and real-world applications.

Course Location

WEISS HEALTH SCIENCES HALL N - 212 , 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 2048L

Topic Outline

Topic Outline:

- Systems of measurement, and dimensional analysis
- Motion in one, two, and three dimensions
- Newton's Laws and their applications
- Work, energy, and conservation of energy
- Systems of particles, collisions, center of mass, and conservation of linear momentum
- Rotational motion and centripetal acceleration
- Conservation of angular momentum
- Gravity
- Static and rotational equilibrium, and elasticity
- Fluids, Archimedes' principle, and Bernoulli's equation

- Oscillations and waves

Student Learning Outcomes

General Education Core Course State Standards

In accordance with Florida Statute 1007.25, this course satisfies the General Education core in Distribution Area **Natural Science** and meets the state outcomes for **PHY 2048.**

Student Learning Outcomes:

- Students will solve analytical problems describing different types of motion, including translational, rotational, and simple harmonic motion.
- Students will apply Newton's laws, and conservation laws to solve analytical problems of mechanics.
- Students will identify and analyze relevant information presented in various formats such as graphs, tables, diagrams, and/or mathematical formulations.
- Students will solve real world problems using critical thinking skills and knowledge developed from this course.

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 oscillations, waves and the Doppler Effect; apply these concepts influence natural phenomena.

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 academic misconduct on coursework is unacceptable, will receive a "0" grade, and may be subject to disciplinary action. FSW faculty may use tools to evaluate coursework for plagiarism and/or artificial intelligence (AI) generated content.

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.

Institution Policies

Programs for Students with Disabilities

Florida SouthWestern State College (FSW), 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 if academic performance is affected by a disability should contact the Office of ADAptive Services.

Reporting Title IX Violations

In accordance with Title IX and the Violence Against Women Act (VAWA), FSW has established a set of procedures for reporting and investigating Title IX violations. Students who need to report an incident or receive support should contact the Equity Officer at equity@fsw.edu. Additional information and resources can be found on the College's website.

Financial Aid and Attendance Verification

In accordance with Federal Regulations, FSW is responsible for verifying student attendance and engagement in classes before federal financial aid funds are distributed. In order to demonstrate both your attendance and engagement in this class, you will need to complete the attendance verification assignment within the first week of class for every registered class. To complete the assignment, click on the "Attendance Verification" link on the Canvas course menu. Additional information and resources can be found on the College's Financial Aid website.

School Policies - School of Pure and Applied Sciences

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.

Course Assessment

This course will be assessed by a combination of class participation, graded homework assignments, module/unit quizzes/exams, and/or a comprehensive final exam.

Requirements for Students

Quizzes/Tasks

There will be weekly online assignments/quizzes covering the material.

Classroom tasks will be administered each session; they consist of conceptual and/or calculated questions. Classroom tasks account for 10 % of the grade. There will be no make-ups for classroom tasks.

Exams

During an exam formulas and constants will be provided. If you miss an exam you must contact the professor as soon as possible in order to schedule a make-up exam; however, you will receive zero points for that exam **unless you have a substantiated unforeseen occurrence or a written excuse from a physician, the Dean, or an academic advisor**.

The final exam is cumulative. All exams will include calculated/numerical questions, multiple choice questions and a few short answer questions, and a request to interpret some drawings/graphs or to construct them.

Tutoring and Support Services

Academic Tutoring

FSW provides professional math, writing, and peer tutoring through its Tutoring Centers located inside the campus libraries and at the Hendry/Glades Center. In addition to FSW's Tutoring Center, the College also provides all students with access to online tutoring through Brainfuse, accessible through your Canvas course shell. **All of these services are available to the student at no additional cost.**

For additional help with this course, you should:

1. Connect with your Professor in class, during posted office hours, through email, or Canvas Inbox.
2. Seek On-Campus Assistance: Each Campus, as well as the Hendry/Glades Center, has a tutoring center where students can get help with academics. Every student can use these services regardless of the location or type of class (on-campus, online, etc.).
3. Request a tutor from FSW's Peer Tutoring Center.
4. Log in to Brainfuse using the "Tutoring" link in your Canvas course navigation menu for 24/7 online tutoring services.

Care Services

Care Services provides wellness and mental health support, information, and resources for all FSW students. For more information, please visit the Care Services website.

Library Services

Located on the Charlotte, Collier, and Lee Campuses and the Hendry/Glades Center, FSW libraries offer a wide array of services, resources, instruction, and facilities to support academic research. Many services are available on-line, including access to librarians for research consultations, eReserves, and reference databases. Visit the Library Services website for additional information.

Attendance Policy

- Attendance in class is your responsibility. As mentioned, part of your grade is derived from participation in classroom's tasks/discussions. Physics is an interesting subject and previous studies showed classroom attendance and interaction has a great impact on understanding the concepts and thus influence the final grade.
- If a student has to miss a class for any reason, it is the responsibility of the student to make up the missed work promptly, using the companion web site or otherwise. All assignments are due at their assigned times, regardless of absence.

Grading Policy

Your final grade is calculated as a weighted average; the weight for exams and homework/assignments is specified in the following table:

Assessment tool	Weight in %
4 Exams	50.0
10 Classroom tasks/class participation	10.0
12 Assignments/ Quizzes	40.0
Total:	100

Your final grade is calculated as a weighted average:

$$\text{Final Grade} = \overline{\text{Exams}} + \overline{\text{Assignments}} \times \frac{40}{100} + \overline{\text{Tasks}} \times \frac{10}{100}$$

$$\overline{\text{Exams}} = (\text{Exam}_1 + \text{Exam}_2 + \text{Exam}_3) \times 0.3 + \text{Final Exam} \times 0.2$$

$$\overline{\text{Tasks}} = \sum_{i=1}^{10} \text{Task}_i$$

$$\overline{\text{Assignments}} = \sum_{j=1}^{12} \text{Assignment}_j$$

There are no "Make-ups" for exams.

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

Grade Percent	Letter 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:

Assignments/quizzes/lab reports are due on the due date.
If an assignment/quiz/lab report is submitted late, **2 points will be subtracted per day, for up to 5 days**.

Assignments will be extended **if and only if** you have a substantiated unforeseen occurrence or a written excuse from a physician, the Dean, or an academic advisor.

There are no "Make-ups" for examinations. If you miss an exam due to a documented extenuating circumstance you must contact the professor as soon as possible; however, you will receive zero points for that exam **unless you have a substantiated unforeseen occurrence or a written excuse from a physician, the Dean, or an academic advisor.**

Inclusive Access - Required Textbook Materials

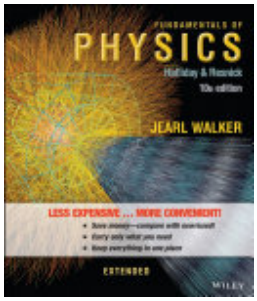
Your enrollment in this course allows you to participate in the FSW/BibliU Inclusive Access program. In partnering with BibliU, FSW's new campus bookstore, you will have access to all required course materials on day one of class at prices unavailable elsewhere.

The required materials for this course are currently available in your course Canvas shell. For help accessing your course materials, visit BibliU's FSW Student Support page.

If you decide you do not want to purchase the course materials provided to you as part of this program, you can opt out of the program in your Canvas course by following the BibliU opt-out instructions. If you are a dual-enrolled student, you are automatically part of the inclusive access program and you should not opt-out.

IMPORTANT! Please note that if you opt-out, you will be responsible for obtaining the required course materials on your own.

Required Course Materials



Fundamentals of Physics, Extended
ISBN: 9781119798606
Authors: David Halliday, Robert Resnick, Jearl Walker
Publisher: John Wiley & Sons
Edition: 12

Visit the FSW Bookstore to find any course materials and other resources.

Class Schedule

Week	Lecture Topics (+ if time permits)
1.	Chapter 1, Systems of Measurement: Units, Conversion of Units, Dimensions of Physical Quantities, Scientific Notation, Significant Figures and Order of Magnitude; Chapter 2, Motion in One Dimension: Displacement, Velocity, and Speed, Acceleration, Motion with Constant Acceleration, Integration,
2.	Chapter 3, Vectors: The Displacement Vector, General

	Properties of Vectors, Position, Velocity, and Acceleration, Chapter4, Motion in Two Dimensions; Projectile Motion
3.	Exam 1
4.	Chapter 5, Newton's Laws: The Law of Inertia, Force, Mass, Newton's Second Law, The Force Due to Gravity, Newton's Third Law; Chapter 6 (selected topics), Applications of Newton's Laws: Friction, Circular Motion
4.	Chapter 7, Chapter 8,Work and Energy: Work and Kinetic Energy, Power, Potential Energy
5.	Chapter 8, Conservation of Energy
6.	Exam 2
7.	Chapter 9, Conservation of Momentum: The Center of Mass, Finding the Center of Mass by Integration, Conservation of Momentum, Kinetic Energy of a System, Collisions
8.	Chapter 10, Rotational motion: Angular Velocity and Angular Acceleration, Torque, Moment of Inertia, and Newton's Second Law for Rotation, Rotational Kinetic Energy;
9.	Chapter 11, Conservation of Angular Momentum: Angular Momentum, Torque and Angular Momentum, Conservation of Angular Momentum;
10.	Exam 3
11.	Chapter 12, Static Equilibrium and Elasticity: Conditions for Equilibrium, Some Examples of Static Equilibrium, Stability of Rotational Equilibrium

12.	Chapter 13, Gravity: Kepler's Laws, Newton's Theory of Gravity, Gravitational Potential Energy, The Gravitational Field
13.	Chapter 14, Fluids: Density, Pressure in a Fluid, Buoyancy and Archimedes' Principle, Bernoulli's equation
14.	Chapter 15, Oscillations: Simple Harmonic Motion, Energy in Simple Harmonic Motion Chapter 16, Chapter 17, Waves: Simple Wave Motion, The Doppler Effect, *Superposition and Standing Waves
Final Exam	**Final Exam is Cumulative, proctored,** **Wednesday, December 3rd, 10:00 AM - 11:50 AM** .
*Selected topics	

For a detailed schedule of quizzes/assignments see the Canvas Schedule.

Note: the instructor retains the right to modify the dates with advance notification to students.

Any other information or class procedures or policies

Only those persons enrolled in a 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.