PENSACOLA STATE COLLEGE

Physics with Calculus I – Section Syllabus
PHY2048, Section P1021
Summer 2025, Session C

Instructor: Mr. D. Thor Garber
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Final Exam Date: TBD
Last Date of Drop/Add: 6/16/2025
Last Date for Student to Withdraw: 7/22/2025

Course Description:

Emphasis on fundamental principles, the quantitative and mathematical aspects of the subject. For engineers and physics majors, optional for chemistry majors. Includes a study of mechanics and thermodynamics. A free use of calculus methods and derivations lay the foundation for basic principles.

Class Meeting Time: M_T_W_Th | 9:45 AM - 11:20 AM
Class Location: Pensacola Campus, Building 17, Room 1777
Credits: 3

Prerequisites:

Offered: FA, SU, SP

Distribution: Meets AA General Education Core, Natural Sciences (Physical Sciences) requirement.

Required Textbooks and Instructional Materials:

University Physics; ISBN 9781938168277; Openstax

Methods of Evaluation:
At minimum, the instructor will cover content which aligns with statewide and institutional learning outcomes for the course. The instructor will measure student performance using the following:

Grade calculation: Your final grade is based on your Homework and Exams
Percentage break-down: Homework: 10%

Exams (3 Tests + Final): 90%

Grade Point Average:

A (90−100%)	B+ (87−90%)	B (80−87%)	C+ (77−80%)
C (70−77%)	D+ (67−70%)	D (60−67%)	F (< 60%)

Student Expectations: Students enrolled in this course can expect the following:

1. Clearly identified course objectives;
2. Productive class meetings;
3. A positive learning environment;
4. Opportunities for appropriate student participation;
5. Effective instruction;
6. Positive and appropriate interactions;
7. Assistance with meeting course objectives during and beyond class hours;
8. Evaluation of student performance and appropriate and timely feedback; and
9. Clear and well-organized instruction.

General Education Student Learning Outcomes:

Critical Thinking: The student analyzes, evaluates, and, if necessary, challenges the validity of ideas, principles, or data in order to develop informed opinions, probable predictions, or defensible conclusions.

Scientific and Mathematical Literacy: The student properly identifies and applies scientific or mathematical principles and methods.

Information Literacy: The student effectively locates, evaluates, and applies information from a variety of sources.

Course Learning Outcomes:

1. Describe the motion of objects moving at constant velocity or constant acceleration.
2. Find the magnitude and direction of the resultant vector obtained by adding several vectors.
3. Find the horizontal range of a projectile.
4. Write Newton's Laws of motion and Gravitation.
5. Describe and understand the concept of inertia.
6. Explain the difference between static and kinetic friction.
7. Draw a complete free-body diagram for a typical mechanics problem.
8. Apply Newton's 2nd Law to analyze the motion of an object along an inclined plane.
9. State and know how to apply the Work-Energy Theorem.
10. Compute the kinetic energy of a moving body.
11. Find the gravitational potential energy of a body near the surface of the Earth.
12. Apply the Law of Conservation of Energy.
13. Locate the center of mass of a rigid body.
14. Find the linear momentum of a moving body.
15. Write down the linear impulse-momentum principle.
16. Apply the law of conservation of linear momentum to analyze elastic, inelastic and plastic collisions of particles.
17. Compute the thrust of a rocket.

18. Find the angular velocity, angular acceleration and centripetal force acting on a body moving in a circular path.
19. Apply Kepler's Laws and conservation of angular momentum to describe the motion of a comet.
20. Understand the concepts of torque and moment arm.
21. Find the moment of inertia of a solid sphere.
22. Use the reference circle model to describe the vibrational motion of an oscillating system.
23. Compute the heat exchanged during a process where a phase change occurs.
24. List and describe the three basic processes of heat transfer.
25. Apply the 1st law of thermodynamics to find the temperature change in an adiabatic process.
26. Apply the 2nd law of thermodynamics to find the efficiency of a Carnot engine.

Academic Dishonesty Statement:
Pensacola State College is committed to upholding the highest standards of academic conduct. All forms of academic dishonesty, to include plagiarism and cheating, are prohibited. Penalties for academic dishonesty include but are not limited to one or more of the following: the awarding of no credit on the assignment, a reduction in the course grade, or the assignment of a final course grade of F and removal from the course. See the College Catalog for more details: https://pensacolastate.smartcatalogiq.com/2024-2025/catalog/student-handbook/student-responsibilities/plagiarism-and-academic-cheating/

Student Email Accounts:
Pensacola State College provides an institutional email account to all students enrolled in courses for credit. PirateMail is the official method of communication, and students must use PirateMail when communicating with the College. In cases where companion software is used for a particular class, email may be exchanged between instructor and student using the companion software.

Flexibility:
It is the intention of the instructor to accomplish the objectives specified in the course syllabus. However, circumstances may arise which prohibit the fulfilling of this endeavor. Therefore, this syllabus is subject to change. When possible, students will be notified of any change in advance of its occurrence.

ADA Statement:
Students with a disability that falls under the Americans with Disability Act or Section 504 of the Rehabilitation Act, it is the responsibility of the student to notify Student Resource Center for ADA Services to discuss any special needs or equipment necessary to accomplish the requirements for this course. Upon completion of registration with the Student Resource Center for ADA Services office, specific arrangements can be discussed with the instructor.

Pirates CARE Student Resource Center
As a student, you may experience challenges that can interfere with your academic and personal success. These can include things such as basic needs (food, housing, transportation, healthcare, etc.), increased anxiety, depression, substance use, grief, or other stressful experiences. The Pirates CARE Student Resource Center provides free services to students, including emergency aid, campus food pantries, career clothing closets, connections to local resources for basic needs support, and confidential mental health counseling services provided in-person or via telehealth.

You can contact the Pirates CARE Student Resource Center at 850-484-1759 or by email at PiratesCARE@pensacolastate.edu. More information about our services can be found online at www.pensacolastate.edu/PiratesCARE.

For additional 24/7 crisis help, the Crisis Text Line can be accessed by texting “GULF” to 741-741, and the Suicide Lifeline can be reached by phone at 9-8-8.

Equity Statement:
Pensacola State College does not discriminate against any person on the basis of race, color, national origin, sex, disability, age, ethnicity, religion, marital status, pregnancy, sexual orientation, gender identity or genetic information in its programs, activities, and employment. For inquiries regarding the College’s nondiscrimination policies, contact the Executive Director of Institutional Equity and Student Conduct, 1000 College Blvd., Building 5, Pensacola, Florida 32504, (850) 484-1759.

Security Statement:
Pensacola State College is committed to encouraging all members of the College community to be proactive in personal safety measures. In case of emergency, students should ensure that they are aware of the building exit closest to each of their classrooms, as well as all alternative building exits in case circumstances require using a different route.

Emergency Statement:
In the case of severe weather or other emergency, the College administration maintains communication with appropriate state and local agencies and makes a determination regarding the cancellation of classes. Notices of cancellation will be made through the College's PSC Alert system and on the College's website.