Physics 2325.002 – Spring 2024

Technical Physics I

Department of Physics, Engineering and Astronomy, Stephen F. Austin State University

Instructor: Dan Bruton, PhD
Email: dbruton@sfasu.edu
Office: STEM 102, 113C or 319
Phone: 936-468-2360
Text: 936-666-0902
Office Hours: 12-3pm Mon & Wed or by appointment via www.danbruton.com/meeting
Class Meetings: MWF 11:00 AM - 11:50 AM STEM 201; Friday 12:00-12:50pm, STEM Room 103 (recitation)
Course Home Page: https://D2L.sfasu.edu

Course Description
Presentation of the principles of mechanics and heat. Computation of lecture and laboratory grades into one grade; same grade is recorded for both lecture and laboratory. 3 Credit Hours
Co-requisite(s): PHYS 2125

Text and Materials
"University Physics, Vol 1 & Vol 2 (Free Online)", OpenStacks
Online Book: https://openstax.org/details/books/university-physics-volume-1
Lab Manual: "Physics 2125", Available in the Student Center Bookstore

All other materials required for the course will be communicated to the student on D2L (the course website) throughout the semester.

Grading Policy
Each major exam will be graded on a 100-point scale. All exams (including the final) are weighted equally, and the lecture portion of the course accounts for 75% of the total course average. The lecture and lab grades will be combined as shown below and the same letter grade will be recorded for both lecture and lab.

\[
\text{Course Average} = 0.60 \times (\text{Exam Average}) \\
+ 0.15 \times (\text{Average of Homework}) \\
+ 0.25 \times (\text{Average from PHYS 2125 Lab})
\]

Letter grades are based on the ranges below.

- A: 90.0 - 100
- B: 80.0 - 89.9
- C: 70.0 - 79.9
- D: 60.0 - 69.9
- F: < 60.0

Attendance Policy
Attendance will be taken using completed assignments in D2L. PHYS 2325 will be delivered as a live-stream course in Zoom on Monday, Wednesday, and Friday from 11:00am to 11:50am and Friday at 12:00pm to 12:50pm (for recitation). The Zoom link will be provided via email and in D2L. This means that there will be no face-to-face classes for this course unless the conditions improve before the end of the semester. There will be some opportunities to visit face-to-face with me during office hours but there will be no face-to-face requirement for the course.

Exams
There will be four major exams, each covering a limited amount of lecture and text material. The final exam will not be comprehensive. The dates of these exams are listed in the course outline attached to this page. Students will have one week after each exam to review the exams and discuss the grades. No make-up exams will be given except in the case of an excused absence. An official written notice is required for an excused absence within three days of the exam. Any makeup exam must be taken within three days of the missed exam. Students who make below a 70 on an exam should visit with the instructor before the next exam.
**Homework Assignments**

The due dates for each homework assignment will be posted in D2L. Homework will be electronically submitted for grading via D2L. Your homework problems will be of professional quality and professionally presented. They will be complete in themselves to the extent that any competent person can determine the following: (a) the problem you are solving, (b) your method of solution, and (c) your answer. To assure these things you must adhere to the following rules.

- Use 8 ½ x 11 in. Engineering Paper (with grid) or the Handouts Provided
- Write in pencil on only one side of the paper when using Engineering Paper.
- Each problem must be started on a new page when using Engineering Paper.
- Staple homework in the upper left corner and leave flat (not folded) before submitting for grading.
- Include the following when working a problem: problem number and statement, sketch, definition of variables used in the solution, units, vector arrows, numbering of equations when needed for clarity, organized steps in the solution, and identification of the answers with boxes. Required graphs should be attached to the back of the problem. Several problems will be selected for grading from each set.

**Classroom Policies**

For the benefit of your fellow students and your instructor, you are expected to practice common courtesy about all course interactions. For example:

- Be considerate toward your classmates and instructor and arrive to class on time.
- Avoid classroom distractions. Be attentive in class: stay awake, do not browse social media, etc.
- If you are late to class or must leave early, please inform your instructor in advance.

**Academic Integrity (A-9.1)**

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

**Definition of Academic Dishonesty**

Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit. Please read the complete policy at [http://www.sfasu.edu/policies](http://www.sfasu.edu/policies)

**Withheld Grades Semester Grades Policy (A-54)**

Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

**Students with Disabilities**

To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to [http://www.sfasu.edu/disabilityservices/](http://www.sfasu.edu/disabilityservices/).
Mental Health and Wellness
SFASU values students' mental health and the role it plays in academic and overall student success. SFA provides a variety of resources to support students' mental health and wellness. Many of these resources are free, and all of them are confidential.

On-campus Resources:
- SFASU Counseling Services
  www.sfasu.edu/counselingservices
  3rd Floor Rusk Building
  936-468-2401
- SFASU Human Services Counseling Clinic
  www.sfasu.edu/humanservices/139.asp
  Human Services Room 202
  936-468-1041

Crisis Resources:
- Burke 24-hour crisis line 1(800) 392-8343
- Suicide Prevention Lifeline 1(800) 273-TALK (8255)
- Crisis Text Line: Text HELLO to 741-741

Acceptable Student Behavior
Classroom behavior should not interfere with the instructor's ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed. Please read the complete policy at http://www.sfasu.edu/policies

Email Communication
All official course communication will be made using your SFA Jacks account. You must use your SFA email account for all communications. You will be notified via your SFA Jacks email account about grades and attendance. It is important to practice good email communications in college courses. Use "PHYS 2325" in the subject of your email messages. Use complete sentences and capitalization when appropriate. The body of your email messages should begin with your instructor's name and end with your name.

Course Content
- ✓ Linear and Rotational Motions
- ✓ Newton's Laws of Motion
- ✓ Work-Energy Principles
- ✓ Momentum-Impulse Principles
- ✓ Gravitational Processes
- ✓ Oscillatory Motion
- ✓ Hydrostatics and Hydrodynamics
- ✓ Heat and Thermodynamics

Student Learning Outcomes
By the end of the course, a successful student will be able to:
- Demonstrate the ability to apply Newton's laws to the study of mechanical systems.
- Describe the laws of thermodynamics.
- Solve mechanics and thermodynamics problems using conservation principles.

Program Learning Outcomes
- The student will demonstrate proficiency in the basic and applied fields of physics.
- The student will develop good experimental technique, including proper setup and care of equipment, conducting experiments, and analyzing results in order to observe physical phenomena, assess experimental uncertainty, and make meaningful comparisons between experiment and theory.
- The student will develop effective written and oral communications skills, especially the ability to transmit complex technical information in a clear and concise manner.
# Physics 2325
Spring 2024

## EXAM 1
- Chapter 3: Motion Along a Straight Line
- Chapter 4: Motion in Two and Three Dimensions
- Chapter 5: Newton's Laws of Motion
- Chapter 6: Applications of Newton's Laws

## EXAM 2
- Chapter 7: Work and Kinetic Energy
- Chapter 8: Potential Energy and Conservation
- Chapter 9: Linear Momentum and Collisions
- Chapter 10: Fixed-Axis Rotation

## EXAM 3
- Chapter 11: Angular Momentum
- Chapter 12: Static Equilibrium and Elasticity
- Chapter 13: Gravitation
- Chapter 14: Fluid Mechanics

## EXAM 4
- Chapters 15: Oscillations
- Volume 2 Ch1: Temperature and Heat
- Volume 2 Ch2: The Kinetic Theory of Gases

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