**TECHNICAL PHYSICS I**

**DEPARTMENT OF PHYSICS AND ASTRONOMY**

**CO-REQUISITES:** MTH 233, PHY 241L

**MEETING TIME:** 10:00 a.m.-10:50 a.m. TTh and 11:00 a.m.-11:50 a.m. F

**ROOM:** 201 STEM Building

**INSTRUCTOR:** Walter L. Trkosko

**CONTACT INFO:** wttrikosko@sfasu.edu, tel: 468-3001

**OFFICE:** 207-C STEM Building

**OFFICE HOURS:** 9:00 a.m.-10:00 a.m. MWF 2:00 p.m.-3:00 p.m. TR or by appointment

**TEXT:** Essential University Physics (Third Edition) Richard Wolfson and 24 I Laboratory Manual

**COURSE CONTENT:**

Technical Physics I (PHYS 2325) is a presentation of the principles of mechanics and heat. The following chapters will be covered.

I. MECHANICS

1. Motion in a Straight Line
2. Motion in Two and Three Dimensions
3. Force and Motion
4. Using Newton's Laws
5. Work, Energy, and Power
6. Gravity
7. Conservation of Energy
8. Systems of Particles
9. Rotational Motion
10. Rotational Vectors and Angular Momentum

II. OSCILLATIONS, WAVES, AND FLUIDS

10. Oscillatory Motion
11. Fluid Motion

III. THERMODYNAMICS

12. Temperature and Heat
14. The Second Law of Thermodynamics

**PROGRAM LEARNING OUTCOMES:**

*I cannot teach anybody anything. I can only make them think*  

Socrates

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 communication skills, especially the ability to transmit complex technical information in a clear and concise manner.

**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.

**GENERAL EDUCATION CORE CURRICULUM:**

The Texas Higher Education Coordinating Board has identified six core learning objectives: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Teamwork, Personal Responsibility, and Social Responsibility. SFA is committed to the improvement of its general education core curriculum by regular assessment of student performance on these six objectives.

By enrolling in TECHNICAL PHYSICS I, you are also enrolling in a Core Curriculum Course that fulfills the Communication Skills requirement. You will see this course on your D2L list.
At one point during the semester, you will receive an assignment that fulfills both the requirements of this course and the needs of Stephen F. Austin State University’s Core Curriculum Assessment Plan with the Texas Higher Education Coordinating Board. When you complete this one assignment, you need to upload the assignment to both your standard course dropbox determined by your Instructor and the “Core Curriculum” dropbox. The Core Curriculum dropbox will be identified by the Objective for which work is being collected. (Examples: Critical Thinking, Teamwork, Social Responsibility, Empirical & Quantitative Skills, Personal Responsibility, Communication Skills-Written, Communication Skills-Written & Visual, and Communication Skills-Oral & Visual.) Please note that this only applies to the approved assignment. All other assignments should be submitted according to regular class operations. When you complete the assignment mentioned above, you will upload the assignment to both the TECHNICAL PHYSICS I dropbox and the Communication Skills dropbox. Please note that this only applies to the specific assignment listed in the matrix below. All other assignments should be submitted according to regular class operations. If you have any questions, please see your instructor, or contact the at Office of Student Learning and Institutional Assessment at (936) 468-1130.

The chart below indicates the core objectives addressed by this course, the assignment(s) that will be used to assess the objectives in this course and uploaded to the D2L Communication Skills dropbox this semester, and the date the assignment(s) should be uploaded to the D2L Communication Skills dropbox. Not every assignment will be submitted for core assessment every semester. Your instructor will notify you which assignment(s) must be submitted for assessment in the D2L Communication Skills dropbox.

**HOMEWORK (120):** “Problems worthy of attack prove their worth by hitting back.” Piet Hein (1905-1996). Throughout the semester problems will be assigned which are intended to illustrate the principles covered in the lecture. These problems represent the minimum number that the student should work in order to obtain some understanding of the concepts and will count 120 points toward your final grade.

**EXAMS (360):** There will be three exams as indicated on the calendar. These exams will consist of several problems taken from the problems at the end of the chapter, from the examples worked out in the text or from other sources. These exams will be given in room 201 at 10:00 a.m. on the dates indicated.

- **EXAM #1** Chapters 1-3
- **EXAM #2** Chapters 4-8
- **EXAM #3** Chapters 9-15

The student is expected to know and understand the equations required for the exams. These exams will count a maximum of 120 points each toward the final grade. Students will have four days after an exam is returned to discuss any possible errors made in the grading thereafter no changes will be made in the grade. The student is expected to be present for all exams.

**FINAL EXAM (120):** The Final Exam will be comprehensive with emphasis on Chapters 16-19. The Final will be worth a maximum of 100 points toward the final grade and will be given Wednesday December 12, 2018 from 10:30 a.m. to 12:30 p.m.

**LAB GRADE (200):** The laboratory grade will count a maximum of 200 points toward the final grade (25% of the final grade). The lecture and lab grades will be combined into a single grade and the same grade will be recorded for the lecture and the lab.

**FINAL GRADE (800):** The maximum total points possible will be 800 and a final grade will be assigned according to the following:

- 720-800 A
- 640-719 B
- 560-639 C
- 480-559 D
- 000-479 F

**ATTENDANCE:** You are expected to attend every class. If you have more than three unexcused absences, your grade will be decreased by one letter grade. If you arrive more than 10 minutes late you will be marked as tardy and three tardy marks count as an absence. If you become ill or have a restroom emergency during the lecture, please excuse yourself quietly. If you need to study for another class, the library is available. If you need to nap, that is best done at home – not in the classroom.

**SUGGESTIONS FOR MAKING A GOOD GRADE:**

- Read your textbook.
- Attend classes regularly and punctually.
- Do your homework yourself.
- Review both lecture and laboratory material daily (Don’t cram; would you attempt a month’s worth of nutrition in a single meal?).
- Participate fully in lab exercises.
- Develop and practice good note taking skills.
- Ask questions in class.

**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/academic_integrity.asp](http://www.sfasu.edu/policies/academic_integrity.asp)

**COURSE ASSESSMENT:** The lecture part of the course requirements and method of evaluation are set by the individual instructor for the course. The method of evaluation is frequently based on outside exercises (homework) and scores from in-class and/or take-home examinations. In the determination of the final grade for both the lecture and the lab, the laboratory grade carries a weighting factor of one whereas the lecture part of the final grade carries a weighting factor of three. The same grade is recorded for both the lecture and the laboratory.

**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/)