Mechanics and Heat
PHY 131.001

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Office Hours: Monday, 3pm-5pm, Tuesday and Thursday, 1pm-3pm, or by appointment.
Class meeting time and place: 103 STEM Building, MWF, 10:00-10:50 AM

Course Description:
Study of the fundamental principles of mechanics and heat. Lecture and laboratory grades are computed into one grade, and the same grade is recorded for both lecture and lab. Prerequisites: MTH 138, or permission from the department chair. Corequisite: PHY 131L

Text and Materials:
College Physics, Sears & Zemansky’s (Young, Adams, & Chastain), ISBN – 10 0134172531
PHY 131 Lab Manual (produced by the Department of Physics, Engineering and Astronomy)

Grading Policy:
The laboratory and lecture grades will be combined to form a single grade for both PHY131 and PHY131L as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Grade Range</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Portion</td>
<td>25 %</td>
<td>90-100 %</td>
<td>A</td>
</tr>
<tr>
<td>Exam 1, Chapters 1-3</td>
<td>15 %</td>
<td>80-89 %</td>
<td>B</td>
</tr>
<tr>
<td>Exam 2, Chapters 4-6</td>
<td>15 %</td>
<td>70-79 %</td>
<td>C</td>
</tr>
<tr>
<td>Exam 3, Chapters 7-10</td>
<td>15 %</td>
<td>60-69 %</td>
<td>D</td>
</tr>
<tr>
<td>Final Exam, Comp, Chapters 11 &amp; 13-16</td>
<td>18 %</td>
<td>&lt; 60 %</td>
<td>F</td>
</tr>
<tr>
<td>Homework</td>
<td>12 %</td>
<td></td>
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Attendance Policy:
If you are going to miss class for a university excused absence you should notify the instructor in advance in writing. It is your responsibility to make arrangements to make up any missed work. If you are sick it is your responsibility to abide by university guidelines in dealing with your absence. The final grade of any student will be dropped a letter grade for each unexcused absence over three. It is the responsibility of the student to provide documentation of any excused absence to Dr. Adams within one week of the absence. Failure to provide the documentation within one week of the absence will result in the absence being considered unexcused.

Course Requirements:
✦ Students are required to study chapters 1-11 & 13-15 from the course text.
✦ Students will complete 12 laboratory exercises in the co-requisite lab and take a final exam over them at the end of the semester. Labs will begin the week of Sep. 2nd.
✦ Homework assignments (math oriented problems that involve learned physics principles) will be given to illustrate the principles covered in lecture. Due dates will be provided with the assignments, and no late work will be accepted.
✦ There will be four major tests including the final. All exams will be night exams, except for the final exam. Students should become familiar with the policies on cheating and plagiarism.
### Course Calendar:

<table>
<thead>
<tr>
<th>Course</th>
<th>Section</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 131.001</td>
<td>MWF: 10:00am</td>
<td>STEM103</td>
<td></td>
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</tbody>
</table>

#### Course Content:

**Ch 1:** Models, Measurements and Vectors

**Ch 2:** Motion Along a Straight Line

**Ch 3:** Motion in a Plane

**Ch 4:** Newton's Laws of Motion

**Ch 5:** Exam 1, Chs 1-3, 6-8 pm

**Ch 6:** Circular Motion and Gravitation

**Ch 7:** Work and Energy

**Ch 8:** Momentum

**Ch 9:** Rotational Motion

**Ch 10:** Dynamics of Rotational Motion

**Ch 11:** Exam 3, Chs 7-10, 6-8 pm

**Ch 12:** Fluid Mechanics

**Ch 13:** Temperature and Heat

**Ch 14:** Temperature and Heat

**Ch 15:** Thermal Properties of Matter

**Finals:** 10:45 AM
Program Learning Outcomes:
This is a general education core curriculum course and no specific program learning outcomes for this major are addressed in this course.

General Education Core Curriculum Objectives/Outcomes:

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>Course Assignment</th>
<th>Date Due in LiveText</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Thinking Skills (CO 1)</td>
<td>To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.</td>
<td>Addressed in Week 2 during development of equations of motion by analytic and observational methods.</td>
<td></td>
</tr>
<tr>
<td>Communication Skills (CO 2)</td>
<td>To include effective development, interpretation and expression of ideas though written, oral, and visual communication.</td>
<td>Addressed week in co-requisite 131 lab week 1, the graphical representation of data.</td>
<td></td>
</tr>
<tr>
<td>Empirical and Quantitative Skills (CO 3)</td>
<td>To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.</td>
<td>Addressed in Week 6 in discussing Newton’s Universal Law of Gravitation and its discovery.</td>
<td></td>
</tr>
<tr>
<td>Teamwork (CO 4)</td>
<td>To include the ability to consider different points of view and to work</td>
<td>Addressed week 7 in use of Energy to solve different kinematics problems.</td>
<td></td>
</tr>
<tr>
<td>Personal Responsibility</td>
<td>To include the ability to connect choices, actions and consequences to ethical decision-making.</td>
<td>Addressed week 1 while discussing course syllabus.</td>
<td></td>
</tr>
<tr>
<td>Social Responsibility</td>
<td>To include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities.</td>
<td>Addressed week 1 while discussing course syllabus.</td>
<td></td>
</tr>
</tbody>
</table>

Student Learning Outcomes:
By the end of the course, successful students will be able to:
1. Demonstrate the ability to apply Newton’s laws to the study of mechanical systems
2. Describe the laws of thermodynamics
3. Solve mechanics and thermodynamics problems using conservation principles
4. Demonstrate skills developed in critical thinking, communication (written and visual), empirical and quantitative analysis, and teamwork.

Expected Time Requirements for Class:
Meets 3 hrs/wk for 15 weeks, and also meets for a 2-hour final examination. This is a problem oriented class and lab with homework problems. The lecture and lab combine for 6 hours of contact time each week and the work outside of classes each week for the combined courses averages much more than 12 hours in working homework problems, reading the book to understand the theories used in lecture and in homework problems and exams, reading the lab manual to prepare for the lab experiments done each week, writing up the lab experiments, and studying for exams which include major exams and possibly short lecture quizzes.
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

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/.

Student Code of Conduct: Policy 10.4
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. 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 policy 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 iCare: Early Alert Program at SFA. Information regarding the iCare program is found at https://www.sfasu.edu/judicial/earlyalert.asp or call the office at 936-468-2703.