University Physics I Syllabus
Dallas College Cedar Valley Campus

Contacting Your Instructor
Instructors typically respond to emails from students within 24 hours. However, over the weekend and holiday periods responses may be delayed. Find out more about contacting your instructor.

Instructor Contact Information
Name: Zachary Taylor
Email: zxt0001@dcccd.edu
Office Hours: To be announced
Division Office and Phone: Building M, Room M217, 972-860-5211

Course Information
Course Title: University Physics I
Course Number: PHYS 2425
Section Number: 1481
Semester/Year: Fall 2020
Credit Hours: 4
Class Meeting Time/Location: Online
Certification Date: 09/05/2020
Last Day to Withdraw: 11/12/2020

Course Prerequisites
Required: MATH 2413.

Course Description
The first semester of calculus-based physics sequence for science, computer science, and engineering majors. The principles and applications of classical mechanics, including
harmonic motion, physical systems and thermodynamics are studied with emphasis on problem solving. Performance of basic laboratory experiments supporting theoretical physics principles and applications of classical mechanics, including harmonic motion, physical systems and thermodynamics. Also includes experimental design, data collection and analysis, and preparation of laboratory reports. (3 Lec., 3 Lab.)

**Student Learning Outcomes**

Upon successful completion of this course, students will:

- Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration. Solve problems involving forces and work.
- Apply Newton's laws to physical problems.
- Identify the different types of energy.
- Solve problems using principles of conservation of energy.
- Define the principles of impulse, momentum, and collisions.
- Use principles of impulse and momentum to solve problems.
- Determine the location of the center of mass and center of rotation for rigid bodies in motion.
- Discuss rotational kinematics and dynamics and the relationship between linear and rotational motion.
- Solve problems involving rotational and linear motion. Define equilibrium, including the different types of equilibrium.
- Discuss simple harmonic motion and its application to real-world problems.
- Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.
- Conduct basic laboratory experiments involving classical mechanics.
- Relate physical observations and measurements involving classical mechanics to theoretical principles.
- Evaluate the accuracy of physical measurements and the potential sources of error in the measurements.
- Design fundamental experiments involving principles of classical mechanics.
- Identify appropriate sources of information for conducting laboratory experiments involving classical mechanics.
Texas Core Objectives
The College defines essential knowledge and skills that students need to develop during their college experience. These general education competencies parallel the Texas Core Objectives for Student Learning. In this course, the activities you engage in will give you the opportunity to practice two or more of the following core competencies:

1. **Critical Thinking Skills** - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
2. **Communication Skills** - to include effective development, interpretation, and expression of ideas through written, oral, and visual communication
3. **Empirical and Quantitative Skills** - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
4. **Teamwork** - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal
5. **Personal Responsibility** - to include the ability to connect choices, actions, and consequences to ethical decision-making
6. **Social Responsibility** - to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

Required Course Materials
If your Dallas College course requires learning materials they will be provided as part of the IncludED program (dccd.edu/included) or as free materials you can access in your online course shell.

If you opt out of the IncludED program, you are responsible for obtaining all your required learning materials by the first day of the class. For more details, see **Institutional Policies**.

- Physics for Scientists and Engineers: A Strategic Approach with Modern Physics, 4th edition, Randall D. Knight.
- Computer
- Internet Access
- Phone camera, or app like CamScanner
- Current edition of JAVA. Click here for download link, download [JAVA SE].
Graded Work
The tables below provide a summary of the graded work in this course and an explanation of how your final course grade will be calculated.

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Summary of Graded Work

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Points</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>10 @ 25 points each</td>
<td>250 points</td>
</tr>
<tr>
<td>Labs</td>
<td>8 @ 25 points each</td>
<td>200 points</td>
</tr>
<tr>
<td>Lab Report</td>
<td>1 @ 50 points</td>
<td>50 points</td>
</tr>
<tr>
<td>Unit Exams</td>
<td>4 @ 50 points each</td>
<td>200 points</td>
</tr>
<tr>
<td>Final Exam</td>
<td>1 @ 300 points</td>
<td>300 points</td>
</tr>
</tbody>
</table>

TOTAL: 1000 points

Final Grade

<table>
<thead>
<tr>
<th>Points</th>
<th>Percentages</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>900-1000</td>
<td>90-100%</td>
<td>A</td>
</tr>
<tr>
<td>800-899</td>
<td>80-89%</td>
<td>B</td>
</tr>
<tr>
<td>700-799</td>
<td>70-79%</td>
<td>C</td>
</tr>
<tr>
<td>600-699</td>
<td>60-69%</td>
<td>D</td>
</tr>
<tr>
<td>0-599</td>
<td>0-59%</td>
<td>F</td>
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Description of Graded Work

**Homework:** The chapter quizzes each have questions you must answer over the chapters. The homework will be posted on eCampus.

**Labs:** The labs will consist of online simulations in which you will be asked to observe and take data over the physics phenomenon. You will turn in a worksheet for the lab on eCampus.
Lab Report: The report will be written after completing a selected lab in which you will write a thoughtout process of testing a theoretical model and relate physical finding to the model. You will follow specific guidelines for writing the report.

Unit Exams: The unit exams will be after completing all chapters in a unit. The exam will be a mixture of multiple choice, problem solving, and written response questions. The exam will be on eCampus.

Final Exam: The final exam will be on the last day of classes and is comprehensible. The final exam will be a mixture of multiple choice, problem solving, and written response questions. The final exam will be on eCampus.

Attendance and Your Final Grade
You are expected to participate in class. You will show participation through email, completing assigned tasks, and having a presence on eCampus during the Blackboard Collaborate. Failing to participate and being present on eCampus during the Blackboard Collaborate will result in a failed grade.

Late Work Policy
Late work will not be accepted, however extensions will be provided for assignments on a case by case basis. Please reach out to the instructor for the extension within an a reasonable time frame.

Institutional Policies
Institutional Policies include information about tutoring, Disabilities Services, class drop and repeat options, Title IX, and more.

Course Schedule

<table>
<thead>
<tr>
<th>Topic</th>
<th>Readings &amp; Assignments</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction and Motion</td>
<td>Chapters 1, 2, 3, and 4</td>
<td>Motion Lab &amp; Homework 1 and 2</td>
</tr>
<tr>
<td>Newton’s Laws</td>
<td>Chapters 5, 6, 7, and 8</td>
<td>Force Lab and Projectile Motion Lab &amp; Homework 3 and 4</td>
</tr>
<tr>
<td>Unit 1 Exam</td>
<td>Chapters 1 through 8</td>
<td></td>
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<tr>
<td>Energy and Energy Conservation</td>
<td>Chapters 9 and 10</td>
<td>Energy Lab &amp; Homework 5</td>
</tr>
<tr>
<td>Topic</td>
<td>Readings &amp; Assignments</td>
<td>Assignments</td>
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<tr>
<td>Momentum, Impulse, and Collisions</td>
<td>Chapter 11</td>
<td>Collision Lab &amp; Homework 6</td>
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<tr>
<td><strong>Unit 2 Exam</strong></td>
<td>Chapters 9 through 11</td>
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<tr>
<td>Rotation of Rigid Bodies</td>
<td>Chapter 12</td>
<td>Homework 7</td>
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<tr>
<td>Equilibrium, Elasticity, and Periodic Motion</td>
<td>Chapters 15 and 16</td>
<td>Spring Lab</td>
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<tr>
<td>Wave Motion</td>
<td>Chapter 17</td>
<td>Pendulum Lab &amp; Homework 8</td>
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<tr>
<td><strong>Unit 3 Exam</strong></td>
<td>Chapters 12, 15 through 17</td>
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<tr>
<td>Temperature, Heat, and Thermal Properties of Matter</td>
<td>Chapters 18 and 19</td>
<td>Thermal Properties Lab &amp; Homework 9</td>
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<tr>
<td>Laws of Thermodynamics</td>
<td>Chapters 20 and 21</td>
<td>Homework 10</td>
</tr>
<tr>
<td><strong>Unit 4 Exam</strong></td>
<td>Chapters 18 through 21</td>
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<tr>
<td>Final Exam</td>
<td>Comprehensive</td>
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8/1/20 Version