INSTRUCTOR’S INFORMATION
(Instructor reserves the right to amend this information as necessary.)

Semester and Year: Fall, 2019
Section: 81007 Class time and days:
Lecture: T & R, 2:00-3:20 Room: WH131
Lab: R, 11:00-1:50 Room: SH251
Instructor: Xiang-Ning Song Contact Info: Office: Room SH271. Phone: 972-238-6011
Fax: 972-238-6389 e-mail: SongX@dccc.edu
Office Hours: M & F: 3:40-4:30, T & Th: 3:30-4:30, Wed: 1:00-2:20

Last date to withdraw: 9/9 (without a “W”) or 11/14 (with a “W”).

Final Exam Day and time: 12/10, T 2:00-3:50 Room: WH131

Evaluation Procedures: The course grade is based on the quizzes, lab reports, averaged 4 unit
exams, and comprehensive final exam according to the following schedule:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW &amp; Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Lab Reports</td>
<td>20%</td>
</tr>
<tr>
<td>Averaged unit exams</td>
<td>40%</td>
</tr>
<tr>
<td>Comprehensive Final</td>
<td>30%</td>
</tr>
</tbody>
</table>

Grading Scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, and F<59%

Attendance Policy: Students are expected to attend all lecture and lab sessions. Missed quizzes,
examinations and lab experiments cannot be made up except religious holidays.
Class begins/ends: 8/26 to 12/12.

Required Materials:
University Physics I and II, OpenStax, free to download at OpenStax
Sapling Learning registration through the link on ecampus under HW menu
Lab manual on eCampus (free, but you are responsible to print and bring appropriate pages)

Course Information:
PHYS 2425 (4 Credit Hours) Offered at BHC, CVC, EFC, MVC, NLC, RLC: University Physics I
This is a Texas Common Course Number. This is a Core Curriculum course selected by the
colleges of DCCCD.
Prerequisite: MATH 2413 or concurrent enrollment in MATH 2413. DREA 0093 or English as a
Second Language (ESOL) 0044 or have met the Texas Success Initiative (TSI) standard in Reading.
Course Description: The first semester of a calculus-based physics sequence for science, computer
science, and engineering majors. Topics include classical mechanics, harmonic motion and
thermodynamics with emphasis on problem solving. Laboratory experiments supporting the topics
are required. (3 Lec., 3 Lab.)
Coordinating Board Academic Approval Number 4001015403
COURSE OBJECTIVES/LEARNING OUTCOMES

1. Lectures: 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.

2. Labs: 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.

Policies and Suggestions for Student Success:

1. Exams, Homework and Quizzes: There are 4 unit exams and one comprehensive final exam in this course. You will be given homework for each chapter. It is crucial that you complete and understand every assignment on the Sapling Learning site. I encourage you to work as groups on these assignments. We will have many quizzes consisting of assigned problems and current topic questions at the start of most class periods.

2. Lab and Lab Reports: (1) Lab manual on eCampus is free, but you are responsible to print and bring appropriate pages. Most of the experiments will have a pre-lab assignment that is to be completed and checked by your instructor at the beginning of the lab class before the experiment. The completed lab report will be turned in at the beginning of the following lab class. (2) The lab report should have your name, date, title of this experiment, essay, data & calculation, questions, and pre-lab assignment. (3) A scientific calculator, metric ruler, protractor, loose-leaf paper, and graph paper must be brought to each Lab session. (4) During the Lab, group of 2-4 students could work together in data collection and analysis. Lack of participation and collaboration will affect your grade. (5) Before leaving the Lab session, let the instructor check your data sheet. Return all apparatus to its appropriate location. Clean up the Lab table.

3. Helpful Information: Tutors are available for all subject areas in the Center for Tutoring and learning Connections (located in M-216) and Science Corner (located in the 2nd floor of Sabine).

4. Attendance Policy: In order to be successful students must attend and participate in enrolled courses.

5. Academic Progress: Students are encouraged to discuss academic goals and degree completion with their instructors. Specific advising is available throughout the semester. Check Admission Process for more details.

6. Food and Beverage Policy: It is also the college policy that food, water and drinks are prohibited in all technology classrooms, including all lab rooms.

7. Institution Policies: Institutional Policies relating to this course can be accessed using the link below. These policies include information about tutoring, Disabilities Services, class drop and repeat options, Title IX, and more. Institutional Policies from the following link Institution Policies

8. Lab Safety: Students entering a lab setting should wear shoes that enclose the entire foot and clothing that covers the body (at least) to the knee.

9. Syllabus Change Disclaimer: The instructor reserves the right to amend a syllabus as necessary.
**Units of Instruction/Class Calendar:**

(1) Physics 2425 Tentative Lecture and Exam Schedule.

<table>
<thead>
<tr>
<th>Lecture</th>
</tr>
</thead>
</table>
| Ch. 1 Units and Measurements  
HW Assignments on ecampus  
Ch 2 Vectors  
HW Assignments on ecampus  
Ch. 3 Motion in a Straight Line  
HW Assignments on ecampus  
Ch. 4 Motion in Two or Three Dimensions  
HW Assignments on ecampus |

**Exam #1 Ch. 1 – 4**

<table>
<thead>
<tr>
<th>Lecture</th>
</tr>
</thead>
</table>
| Ch. 5 Newton's Laws of Motion  
HW Assignments on ecampus  
Ch 6 Applying Newton's Laws  
HW Assignments on ecampus  
Ch. 7 Work and Kinetic Energy  
HW Assignments on ecampus  
Ch. 8 Potential Energy and Conservation of Energy  
HW Assignments on ecampus |

**Exam #2 Ch. 5 – 8**

<table>
<thead>
<tr>
<th>Lecture</th>
</tr>
</thead>
</table>
| Ch. 9 Momentum, Impulse, and Collisions  
HW Assignments on ecampus  
Ch. 10 Rotation of Rigid Bodies  
HW Assignments on ecampus  
Ch. 11 Angular Momentum  
HW Assignments on ecampus  
Ch. 12 Equilibrium and Elasticity  
HW Assignments on ecampus |

**Exam #3 Ch. 9 – 12**

<table>
<thead>
<tr>
<th>Lecture</th>
</tr>
</thead>
</table>
| Ch. 13 Gravitation  
HW Assignments on ecampus  
Ch. 14 Fluid Mechanics  
HW Assignments on ecampus  
Ch. 15 Periodic Motion  
HW Assignments on ecampus  
Ch. 16 Temperature and Heat (Vol II ch1)  
HW Assignments on ecampus  
Ch. 17 Thermal Properties of Matter (Vol II ch2)  
HW Assignments on ecampus  
Ch. 18 The First Law of Thermodynamics (Vol II ch3)  
HW Assignments on ecampus  
Ch. 19 The Second Law of Thermodynamics (Vol II ch4)  
HW Assignments on ecampus |

**Exam #4 Ch. 13 – 19**

<table>
<thead>
<tr>
<th>Lecture</th>
</tr>
</thead>
</table>
| Ch. 13 Gravitation  
HW Assignments on ecampus  
Ch. 14 Fluid Mechanics  
HW Assignments on ecampus  
Ch. 15 Periodic Motion  
HW Assignments on ecampus  
Ch. 16 Temperature and Heat (Vol II ch1)  
HW Assignments on ecampus  
Ch. 17 Thermal Properties of Matter (Vol II ch2)  
HW Assignments on ecampus  
Ch. 18 The First Law of Thermodynamics (Vol II ch3)  
HW Assignments on ecampus  
Ch. 19 The Second Law of Thermodynamics (Vol II ch4)  
HW Assignments on ecampus |

**Comprehensive Final Exam :** 12/10 T 2:00-3:50  **Room:** WH131

*Note: The guidelines and days in this syllabus are subject to change, deletion, or amendment at the discretion of the instructor.*
### (2) RLC, SH251 / Fall 2019 / Physics 2425 Lab Schedule

<table>
<thead>
<tr>
<th>Availability Dates</th>
<th>Experiment Number/manual</th>
<th>Lab Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/26-8/31</td>
<td>1</td>
<td>Lab 1: Measurements</td>
</tr>
<tr>
<td>9/3-9/7</td>
<td>2</td>
<td>Lab 2: Linear Motion: Measuring g Value (9/2 class skips this lab.)</td>
</tr>
<tr>
<td>9/9-9/14</td>
<td>3</td>
<td>Lab 3: Force Table: Equilibrium and Vectors</td>
</tr>
<tr>
<td>9/16-9/21</td>
<td>4</td>
<td>Lab 4: Projectile Motion</td>
</tr>
<tr>
<td>9/23-9/28</td>
<td>5</td>
<td>Lab 5: Dynamics of a Rolling Cart</td>
</tr>
<tr>
<td>9/30-10/5</td>
<td>6</td>
<td>Lab 6: Centripetal Acceleration</td>
</tr>
<tr>
<td>10/7-10/12</td>
<td>7</td>
<td>Lab 7: Kinetic Energy and Potential Energy</td>
</tr>
<tr>
<td>10/14-10/19</td>
<td>8</td>
<td>Lab 8: Impulse and Momentum</td>
</tr>
<tr>
<td>10/21-10/26</td>
<td>9</td>
<td>Lab 9: Dynamic Carts/Collisions &amp;Momentum</td>
</tr>
<tr>
<td>10/28-11/2</td>
<td>10</td>
<td>Lab 10: Ballistic Pendulum</td>
</tr>
<tr>
<td>11/4-11/9</td>
<td>11</td>
<td>Lab 11: Rotational Inertia of a wheel</td>
</tr>
<tr>
<td>11/11-11/16</td>
<td>12</td>
<td>Lab 12: Simple Harmonic Motion</td>
</tr>
<tr>
<td>11/25-11/27</td>
<td></td>
<td>Lab time: Lecture/test</td>
</tr>
<tr>
<td>12/2-12/7</td>
<td>14</td>
<td>Lab 14: Mechanical Equivalent of Heat</td>
</tr>
<tr>
<td>12/9-12/12</td>
<td></td>
<td>No Lab</td>
</tr>
</tbody>
</table>

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