Course Syllabus
Physics 2425 – 71024
Fall 2020
Northlake Campus

Instructor Information
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Office Hours: Contact by email
Division Office and Phone: Contact by email

Course Information
Course Title: Physics
Course Number: Phys 2425
Section Number: 71024
Semester/Year: Fall 2020
Credit Hours: 4
Class Meeting Time/Location: Lec MTWRFS INET – Lab MTWRFS INET
Certification Date: 09/04/2020
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

Following the successful completion of this course, students will:

1. Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration.
2. Apply Newton’s laws to linear and circular motion.
3. Identify the different types of energy.
4. Solve problems using principles of conservation of energy.
5. Use conservation of linear momentum and energy to solve problems.
6. Determine the location of the center of mass and center of rotation for rigid bodies in motion.
7. Solve rotational kinematics and dynamics problems.
8. Demonstrate an understanding of equilibrium, including the different types of equilibrium, by solving specific problems.
9. Discuss simple harmonic motion and its application to real-world problems.
10. Solve problems involving the First and Second Laws of Thermodynamics.

Learning Outcomes for Laboratory:

1. Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.
2. Conduct basic laboratory experiments involving classical mechanics.
3. Relate physical observations and measurements involving classical mechanics to theoretical principles.
4. Evaluate the accuracy of physical measurements and the potential sources of error in the measurements.
5. Design fundamental experiments involving principles of classical mechanics.

Learning Activities, Outcomes, and Assessment

1. Learning Activity: The students will review and analyze Newton’s Laws as they are applied to solving problems. **Learning Outcomes:** Students will calculate the acceleration in the uniform accelerated motion. **Assessment:** test problem

2. Learning Activity: The students will review and analyze the conservation laws as they are applied to solving problems.
   a. **Learning Outcomes:** Students will demonstrate application of conservation of momentum and energy and be able to apply them to the situation stated by the problem.
   b. **Assessment:** test problem
3. Learning Activity: Students as part of a team will analyze the free fall motion of an object in a lab experiment.
   a. Learning Outcomes: Students will analyze their experimental data to determine the local gravitational constant and then determine if mechanical energy is conserved using video analysis
   b. Assessment: lab report.

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
Text Book:
REQUIRED
Choose Only 1 of 2

OPTION 1: Physics for Sci & Eng Full Looseleaf w/ModMastPhys
   Edition: 4th
   ISBN: 9780134454016
   Author: Knight
   Publisher: Pearson
   Copyright Year: 2017
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.

Summary of Graded Work

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Number</th>
<th>Percentage</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams</td>
<td>4</td>
<td>60%</td>
<td>Exams</td>
</tr>
<tr>
<td>Labs</td>
<td>10</td>
<td>25%</td>
<td>Labs</td>
</tr>
<tr>
<td>HW</td>
<td>14</td>
<td>15%</td>
<td>HW</td>
</tr>
</tbody>
</table>

**TOTAL: 100%**

Final Grade

<table>
<thead>
<tr>
<th>Percentages</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100%</td>
<td>A</td>
</tr>
<tr>
<td>80-89%</td>
<td>B</td>
</tr>
<tr>
<td>70-79%</td>
<td>C</td>
</tr>
<tr>
<td>60-69%</td>
<td>D</td>
</tr>
<tr>
<td>0-59%</td>
<td>F</td>
</tr>
</tbody>
</table>

Description of Graded Work
There will be **five exams** in this course, but the average will be done with the best 4 scores. The problems in the tests will be similar with the HW, reviews, the worksheet will post on ecampus for each Chapter. A formula sheet provided on ecampus and scratch paper can be used for each test along with a pencil and a calculator. The **tests are 2h each and they will be proctored using the Respondus LockDown browser.** A Chromebook, some tablet, smartphone or Linux computer may not be suitable for some activities in this course. Please
ensure you have access to a desktop or laptop device a Windows or OS X operating system with a camera for taking the exams. Details about the set up and a practice test are available on ecampus. Plan your testing time carefully, you can take the tests just once and there is no makeup test for a missed test. The lab will be done in teams. A passing grade for the labs (average of 60 or higher) is required to pass the course. The grade is determined by the accuracy and quality of the lab work and your participation in the team. During the lab will have problem solving sessions with assignments that will count toward the lab grade.

**Labs**: Labs will be Combinations of Simulations and hand on lab expriments. You need to complete the lab files and upload at ecampus. A **passing grade (average of 60 or above) is required for the lab average in order to pass the course.** The grade is determined by the accuracy and quality of the lab work reflected by the lab report. Each lab report should follow the guidelines posted on ecampus. Late lab reports will be accepted, but with 20 points off penalty.

**Homework**: Problems, questions, videos will be assigned for each chapter and submitted through ModifiedMasteringPhysics. You can access to modified mastering Physics through ecampus. There is no credit for late HW.

**Late Work Policy**
Late Lab = 20% Deduction
There is no make up for tests.
There is no make up for hws.

**Science Center**
The Science Center provides student services in the following subjects (majors and non-majors): Biology, Botany, Microbiology, Anatomy and Physiology, Chemistry, Geology, Physics, Nutrition and Ecology. **Online tutoring** is available during summer semesters. Updated link is provided on ecampus and also you can find it at: [https://www.dcccd.edu/services/academic-support/tutoring/pages/default.aspx](https://www.dcccd.edu/services/academic-support/tutoring/pages/default.aspx)

**Institutional 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.

[North Lake Institutional Policies](http://www.northlakecollege.edu/syllabipolicies)
## Course Schedule

### Listing of Assignments by Week

<table>
<thead>
<tr>
<th>Week</th>
<th>Chapters, HW</th>
<th>Tests</th>
<th>Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Aug24-Aug30</td>
<td>Ch 1,2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Aug31-Sep6</td>
<td>Ch 3</td>
<td></td>
<td>Lab 1</td>
</tr>
<tr>
<td>3 Sep6-Sep13</td>
<td>Ch 4</td>
<td></td>
<td>Lab 2</td>
</tr>
<tr>
<td>4 Sep14-Sep20</td>
<td>Ch 5</td>
<td>Test 1 [Ch 1,2,3] Monday Sep 14 at 11:59pm</td>
<td>Lab 1, 2 Due Sep 14 at 11:59pm</td>
</tr>
<tr>
<td>5 Sep21-Sep27</td>
<td>Ch 6 &amp; 7</td>
<td></td>
<td>Lab 3</td>
</tr>
<tr>
<td>6 Sep28-Oct4</td>
<td>Ch 8</td>
<td></td>
<td>Lab 4</td>
</tr>
<tr>
<td>7 Oct5-Oct11</td>
<td>Ch 9</td>
<td>Test 2 [Ch 4,5,6,7] Monday Oct 5 at 11:59pm</td>
<td>Lab 3, 4 Due Oct 5 at 11:59pm</td>
</tr>
<tr>
<td>8 Oct12-Oct18</td>
<td>Ch 10</td>
<td></td>
<td>Lab 5</td>
</tr>
<tr>
<td>9 Oct19-Oct25</td>
<td>Ch 11</td>
<td></td>
<td>Lab 6</td>
</tr>
<tr>
<td>10 Oct26-Nov1</td>
<td>Ch 12</td>
<td></td>
<td>Lab 7</td>
</tr>
<tr>
<td>11 Nov2-Nov8</td>
<td>Ch 13</td>
<td>Test 3 [Ch 8,9,10,11] Monday Nov 2 at 11:59pm</td>
<td>Lab 5, 6, 7 Due Nov 2 at 11:59pm</td>
</tr>
<tr>
<td>12 Nov9-Nov15</td>
<td>Ch 14</td>
<td></td>
<td>Lab 8</td>
</tr>
<tr>
<td>13 Nov16-Nov22</td>
<td>Ch 15</td>
<td></td>
<td>Lab 9</td>
</tr>
<tr>
<td>14 Nov23-Nov29</td>
<td>Ch 18</td>
<td></td>
<td>Lab 10</td>
</tr>
<tr>
<td>15 Nov30-Dec6</td>
<td>Ch 19</td>
<td>Test 4 [Ch 12,13,14,15] Monday Nov 30 at 11:59pm</td>
<td>Lab 8, 9, 10 Due Nov 30 at 11:59pm**</td>
</tr>
<tr>
<td>16 Dec7-Dec10</td>
<td>Final*</td>
<td>Monday Dec 7</td>
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The exact deadlines for HW, Labs and Tests are on Mastering Physics and ecampus.

*Final is comprehensive and optional
** I will not accept any Lab after Nov 30 at 11:59pm