1. **Course Information**
   - **Course Number/Section**: 2425-85501
   - **Course Title**: University Physics I
   - **Term**: Summer I 2019
   - **Lecture Days and Times**: MTWR 5:40 PM - 7:40 PM Room WH131
   - **Lab Days and Times**: MTWR 7:50 PM - 9:50 PM Room SH229

2. **Instructor Contact Information**
   - **Instructor**: Dawit Werdofa
   - **E-mail**: dawitwerdofa@dcccd.edu

3. **Course Description**
   This is a Calculus based Course.
   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. 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.)

4. **Course Prerequisites**
   MATH 2413 and College level ready in reading.

5. **Student Learning Objectives**
   Upon completing this Course, Students will be able: To understand a method and appropriate technology to the natural sciences; to recognize scientific and quantitative methods and the difference between them these approaches and other methods of inquiry; to communicate findings, analysis, and interpretation both orally and writing; to recognize the influences and contribution of science to modern culture.

6. **Learning Outcomes, students will:**
   a. Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration.
   b. Solve problems involving forces and work.
   c. Apply Newton’s laws to physical problems.
   d. Identify the different types of energy.
   e. Solve problems using principles of conservation of energy.
   f. Define the principles of impulse, momentum, and collisions.
   g. Use principles of impulse and momentum to solve problems.
   h. Determine the location of the center of mass and center of rotation for rigid bodies in motion.
i. Discuss rotational kinematics and dynamics and the relationship between linear and rotational motion.

j. Solve problems involving rotational and linear motion.

k. Define equilibrium, including the different types of equilibrium.

l. Discuss simple harmonic motion and its application to real-world problems.

m. Solve problems involving the First and Second Laws of Thermodynamics.

7. Required Text Books and Materials
   OpenStax University Physics, Volumes 1 and 2. This can be accessed at [https://openstax.org/](https://openstax.org/).
   Lab manual on eCampus (free, but you are responsible to print and bring appropriate Pages)

8. Tentative Schedule

<table>
<thead>
<tr>
<th>Course outline</th>
<th>The relevant chapters will be covered in order. Test dates will be determined according to class progress.</th>
</tr>
</thead>
</table>
| Lecture Calendar | 1) Ch 1  
|                 | 2) Ch 2  
|                 | 3) Ch 3  
|                 | 4) Ch 4  
|                 | 5) Ch 5  
|                 | 6) Ch 6  
|                 | 7) Ch 7  
|                 | 8) Ch 8  
|                 | 9) Midterm Exam  
|                 | 10) Ch 9  
|                 | 11) Ch 10  
|                 | 12) Ch 11  
|                 | 13) Ch 12  
|                 | 14) Ch 13  
|                 | 15) Ch 14  
|                 | 16) Ch 15  
|                 | 17) Ch 16  
|                 | 22) Final Exam |

*The material and dates presented in this syllabus can be changed at instructor's discretion.*

9. Assessment
   Final grades are determined from a combination of the items below.
   Attendance  5%
   Quizzes and Home works  10%
   Lab reports  25%
   Midterm Exam  30%
10. **Grading explanation**

A (90-100%), B (80-89%), C (70-79%), D (60-69%) and F (<59%)

11. **Attendance, Quizzes and Exams**

Students are expected to attend all lecture and Lab sessions. Missed quizzes, Exams and Labs are not made up except religious Holidays.

Class begins and ends 06/06/2019 to 07/03/2019

12. **Resources for student success**

In addition to lectures and labs, the following resources are available for the student success during this course:

- **Textbook:** the lectures will follow closely the order, material, and notation used in the textbook.
- **Physics Tutors:** The student Learning center will make physics tutors available at science corner.
  
  Be sure to check their hours.
- **Home work:** they will help you to better understand the material seen in class and prepare you for the exams.

12. **Lab and Lab Reports:**

(1) Lab manual on eCampus is free, but you are responsible to print and bring appropriate pages. 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, and questions. (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.

13. **Academic Progress:**

You are encouraged to discuss academic goals and degree completion with their instructors. Specific advising is available throughout the semester. Check [www.richlandcollege.edu/admissions/process.php](http://www.richlandcollege.edu/admissions/process.php) for more details.

14. **Food and Beverage:**

It is also the college policy that food, water and drinks are prohibited in all technology classrooms, including all lab rooms. Institution Policies and Procedures: For Institution Policies, please refer to [www.richlandcollege.edu/syllabusinfo/syllabiInformation.pdf](http://www.richlandcollege.edu/syllabusinfo/syllabiInformation.pdf)

15. **Lab schedules:**

**RLC, SH229 / Summer I 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>06/06</td>
<td></td>
<td>Lab time: Introduction to lab/ Lecture</td>
</tr>
<tr>
<td>06/07</td>
<td>1</td>
<td>Lab 1: Measurements</td>
</tr>
<tr>
<td>06/10</td>
<td>3</td>
<td>Lab 2: Force Table: Equilibrium and Vectors</td>
</tr>
<tr>
<td>06/11</td>
<td>2</td>
<td>Lab 3: Linear Motion: Measuring g Value</td>
</tr>
<tr>
<td>06/12</td>
<td>4</td>
<td>Lab 4: Projectile Motion</td>
</tr>
<tr>
<td>06/13</td>
<td>5</td>
<td>Lab 5: Dynamics of a Rolling Cart</td>
</tr>
<tr>
<td>06/14</td>
<td></td>
<td>Lab time: Lecture/test</td>
</tr>
<tr>
<td>06/17</td>
<td>6</td>
<td>Lab 6: Centripetal Acceleration</td>
</tr>
<tr>
<td>06/18</td>
<td>7</td>
<td>Lab 7: Kinetic Energy and Potential Energy</td>
</tr>
<tr>
<td>06/19</td>
<td>8</td>
<td>Lab 8: Impulse and Momentum</td>
</tr>
<tr>
<td>06/20</td>
<td>9</td>
<td>Lab 9: Dynamic Carts/Collisions &amp; Momentum</td>
</tr>
<tr>
<td>06/21</td>
<td></td>
<td>Lab time: Lecture/test</td>
</tr>
<tr>
<td>06/24</td>
<td>10</td>
<td>Lab 10: Ballistic Pendulum</td>
</tr>
<tr>
<td>06/25</td>
<td>11</td>
<td>Lab 11: Rotational Inertia of a wheel</td>
</tr>
<tr>
<td>06/26</td>
<td>12</td>
<td>Lab 12: Simple Harmonic Motion</td>
</tr>
<tr>
<td>06/27</td>
<td>13</td>
<td>Lab 13: Latent Heat and Specific Heat</td>
</tr>
<tr>
<td>06/28</td>
<td></td>
<td>Lab time: Lecture/test</td>
</tr>
<tr>
<td>07/01</td>
<td>14</td>
<td>Lab 14: Mechanical Equivalent of Heat</td>
</tr>
<tr>
<td>07/02</td>
<td></td>
<td>Lab time: Lecture/test</td>
</tr>
<tr>
<td>07/03</td>
<td></td>
<td>No Lab</td>
</tr>
</tbody>
</table>

*Note: The guidelines and days in this syllabus are subject to change, deletion, or amendment at the discretion of the instructor.*