

## PHY203: ELEMENTARY PHYSICS I (Fall 2024)

**Instructor:** Miquel Dorca, 211 East Hall, [miquel@uri.edu](mailto:miquel@uri.edu)

**Office Hours:** MWF 12:30pm-1:00pm    **Lecture Times:** 1pm-1:50pm (section 1),  
(East Hall Auditorium)

### Course Description

Calculus-based introduction to Newtonian mechanics. Kinematics and dynamics of particles and systems of particles, conservation laws, rotational motion, gravitation, and oscillatory motion. (Lec. 3 ) Pre: credit or concurrent enrollment in MTH 141 and concurrent enrollment in PHY 273. Intended for science and engineering majors.

**Text:** University Physics (Open Stax), 1<sup>st</sup> Edition, Volume 1

University Physics from Open Stax is a free, open access textbook that can be found at <https://openstax.org/subjects/science>.

### Course Goals

1. To develop a conceptual and quantitative understanding of kinematics.
2. To develop a conceptual and quantitative understanding of forces.
3. To develop a conceptual and quantitative understanding of work, energy, and energy conservation.
4. To develop a conceptual and quantitative understanding of linear momentum and linear momentum conservation.
5. To develop a conceptual and quantitative understanding of rotational kinematics, rotational dynamics, and angular momentum conservation.
6. To develop a conceptual and quantitative understanding of oscillations and simple harmonic motion.

### General Education Areas

This course satisfies URI's general education areas: "Scientific, Technology, Engineering, and Mathematical Disciplines" (Full); and "Mathematical, Statistical, or Computational Strategies" (Partial).

### Learning Outcomes

1. To demonstrate an understanding of the basic concepts of classical mechanics.
2. To apply a conceptual understanding of classical mechanics to physics problems.
3. To develop problem-solving strategies and techniques appropriate to classical mechanics.
4. To be able to carry out quantitative solutions of classical mechanics problems.
5. To be able to carry out, analyze, and present the results of classical mechanics laboratory experiments.

### Brightspace:

The class will use Brightspace for class announcements and all lectures will be posted there. If the course needs to go remote (due to a weather cancellation, for instance) the lectures will be given asynchronously on Brightspace.

This course will be taught in person (besides any possible weather related cancellations). However, if there are no further notices, the course will be given asynchronously on Brightspace on the following **three dates:**

**November 25<sup>th</sup>, 27<sup>th</sup>,  
December 2<sup>nd</sup>**

**Examinations:** There will be three unit exams and a cumulative final exam. All exams are closed book and no other resources are allowed. Calculators will be permitted. You will be allowed to bring a sheet of paper containing relevant formulas for each unit exam and 3 sheets for the final. A unit exam will be given at the end of each of the first three course units. The dates and times are listed below.

**Course Units:** The course is divided into three units as follows:

<b>unit #1</b>	<b>Chaps. 1,3,4</b>	<b>exam on Fri.</b>	<b>09/27</b>
<b>unit #2</b>	<b>Chaps. 5-8</b>	<b>exam on Fri.</b>	<b>10/25</b>
<b>unit #3</b>	<b>Chaps. 9-11,15</b>	<b>exam on Wed.,</b>	<b>12/11</b>
<b>Final Exam</b>	<b>Chaps. 1-11,15</b>	<b>tba</b>	

**Final Exam:** The final exam will consist of 3 parts each corresponding to the 3 unit exams above. If the score on a part of the final exam is higher than the score on the corresponding unit exam, the score on that section of the final exam will replace the unit exam score when your semester grade is calculated. **However, the scores of the final are not replaced if they are lower than the scores of the unit exams.**

**\*\*If the course has to go remote during the semester, the exam schedule and grading scheme may be modified.\*\***

**Homework Assignments:** A set of homework problems will be due on or before (usually Wednesdays or Fridays) of almost every week (*by 10 p.m.*) and will be administered through a web-based system called WebAssign (see below).

**Course Grade:**

The grade for PHY203 will be based on a maximum of **1200 points**:

<b>unit exams</b>	<b>400 points</b>
<b>final exam</b>	<b>400 points</b>
<b>homework</b>	<b>150 points</b>
<b>recitation</b>	<b>250 points</b>

**Grading Scheme:**

A(93-100); A-(90-93); B+(87-90); B(83-87); B-(80-83); C+(77-80); C(73-77); C-(70-73); D+(67-70); D(60-67); F(<60).

**WebAssign:**

Homework and recitations will be administered through a web-based service named WebAssign.

WebAssign can be accessed and purchased at <http://webassign.net/student.html> The Class Key for WebAssign for this course is: **uri 1373 1043**

A recent check showed that it was cheaper to purchase Webassign/Openstax for 2 semesters, since it will be used for PHY204 as well.

Here's a specific link to openstax/webassign:

<https://webassign.net/features/textbooks/osuniphys1/details.html>.

Here's a link about pricing: <https://www.cengage.com/c/webassign-for-openstax-university-physics-1e-ling/9781337799942/?filterBy=Higher-Education#compare-buying-options>.

- Students will enroll with this class key, creating their own user IDs and password. When they go to the login page, they simply click the box saying "ENTER CLASS KEY".
- You will have **5 chances** to submit your homework solutions before the due date.
- After the due date, a **4 day extension with a 10 point penalty** can be selected in WebAssign (available once only per assignment-and must be selected **4 days after the assignment is due**).
- In WebAssign each student gets a different set of numbers in the problems, so the answers will be different.
- Try logging on well before the first assignment due date and become familiar with the WebAssign system. **There is a 2-week (free) grace period** for you to get started.

#### Recitation:

- All students must also register for a recitation section of PHY273. **Separate enrollment is required.**
- The recitations will be held in Room 112.
- Your recitation grade will be counted toward your PHY203 grade up to a maximum of 250 points. **There is no separate letter grade for the recitation of PH273.**
- You must correctly solve 3 problems in each recitation to get full credit for the section. **Solving more than 3 problems will count for missed problems in previous recitation meetings.**

**Anti-Bias Syllabus Statement:** We respect the rights and dignity of each individual and group. We reject prejudice and intolerance, and we work to understand differences. We believe that equity and inclusion are critical components for campus community members to thrive. If you are a target or a witness of a bias incident, you are encouraged to submit a report to the URI Bias Response Team at [www.uri.edu/brt](http://www.uri.edu/brt). There you will also find people and resources to help.

**Disability Services for Students Statement:** Your access in this course is important. Please send me your Disability Services for Students (DSS) accommodation letter early in the semester so that we have adequate time to discuss and arrange your approved academic accommodations. If you have not yet established services through DSS, please contact them to engage in a confidential conversation about the process for requesting reasonable accommodations in the classroom. DSS can be reached by calling: 401-874-2098, visiting: [web.uri.edu/disability](http://web.uri.edu/disability), or emailing: [dss@etal.uri.edu](mailto:dss@etal.uri.edu). We are available to meet with students enrolled in Kingston as well as Providence courses.

**Academic Enhancement Center (for undergraduate courses):** Located in Roosevelt Hall, the AEC offers free face-to-face and web-based services to undergraduate students seeking academic support.

Peer tutoring is available for STEM- related courses by appointment online and in-person. The Writing Center offers peer tutoring focused on supporting undergraduate writers at any stage of a writing assignment. The UCS160 course and academic skills consultations offer students strategies and activities aimed at improving their studying and test-taking skills. Complete details about each of these programs, up-to-date schedules, contact information and self-service study resources are all available on the AEC website, [uri.edu/aec](http://uri.edu/aec).

**COVID-19 Statement:** The University is committed to delivering its educational mission while protecting the health and safety of our community. While the university has worked to create a healthy learning environment for all, it is up to all of us to ensure our campus stays that way.

As members of the URI community, students are required to comply with standards of conduct and take precautions to keep themselves and others safe. Visit [web.uri.edu/coronavirus/](http://web.uri.edu/coronavirus/) for the latest information about the URI COVID-19 response.

## **PHY273: LABORATORY AND RECITATION FOR ELEMENTARY PHYSICS I**

- PHY273 is closely connected to PHY203. It consists of two components: Laboratory and Recitation. **Separate enrollment in each is required.**
- Your recitation grade will be absorbed into your PHY203 grade, but you will be getting a separate letter grade for the lab section of PHY273 (1 credit).

### **PHY273 Laboratory**

- A statement of Laboratory Policies and the Lab Schedule for the semester is provided below.
- A lab manual must be purchased either in advance or at the first lab meeting. Please bring an acceptable lab notebook to your first lab meeting. The following is the most common, durable and least expensive of its kind we have recommended before:

**National Brand Computation Notebook, Model number 43-648, 75 sheets with no carbon paper.**

## **CONTINUATION OF ELEMENTARY PHYSICS**

- Elementary Physics will continue for two more semesters:
- PHY204: Electricity and magnetism.
- PHY205: Thermodynamics, waves, acoustics, optics.

## Exam and Homework Schedule

- Homework must be submitted to WebAssign by 10 p.m. of the date due.
- With the problems on WebAssign, some of the numbers and therefore the final answers will in general be different for each student.
- 5 chances are allowed per assignment.
- After the due date, a 4 day extension **with a 10 point penalty** can be selected in WebAssign (available once only per assignment).

Wed., Sept. 11	HW #1 due	Reading: Chapter 1
Wed., Sept. 18	HW #2 due	Reading: Sections 3.1-3.5
Wed., Sept. 25	HW #3 due	Reading: Sections 2.1-2.3, 4.1-4.3

### **Fri., Sept. 27      Exam #1      (Chaps. 1,3,4)**

Fri., Oct. 4	HW #4 due	Reading: Chap. 5
Fri., Oct. 11	HW #5 due	Reading: Sections 4.4, 6.1-6.3
Fri., Oct. 18	HW #6 due	Reading: 1st part of Sec. 2.4, Chap. 7
Fri., Oct. 25	HW #7 due	Reading: Chap. 8

### **Fri., Oct. 25      Exam #2      (Chaps. 5-8)**

Wed., Oct. 30	No Homework due	Reading: Sections 9.1-9.6
Wed., Nov. 6	HW #8 due	
Wed., Nov. 13	No Homework due	Reading: Sections 10.1-10.6
Wed., Nov. 20	HW #9 due	Reading: 2 <sup>nd</sup> part of Sec. 2.4, Secs. 11-1-11.3
Wed., Nov. 27	HW #10 due	Reading: Sections 13.1-13.5
Wed., Dec. 4	HW #11 due	Reading: Sections 15.1,15.2,15.4
Wed., Dec. 11	HW #12 due	Reading: Sections 15.1,15.2,15.4

### **Wed., Dec. 11      Exam #3      (Chaps. 9-11,15)**

### **Final Exam TBA Chaps. 1-11,15**

## PHY273: LABORATORY POLICIES

### Registration

Each student registered for PHY203 must also register for **two sections of PHY273**. Register for one of 000x sections for laboratory, and one of R0x sections for recitation.

### Make-up Labs

You must complete every one of the seven experiments. Otherwise, you will receive zero points for the experiments missed. If you have a legitimate reason to miss a laboratory session, you may ask **in advance** permission from the TA to participate in another laboratory section. There will be **only one** make-up lab available at the end of the semester.

## Tentative Laboratory Schedule

You will be conducting seven experiments. See specific dates below:

Experiment	Week
Intro lab	9/9-13
1.Motion in 1D (free fall)	9/16-20
1.Motion in one 1D (analysis)	9/23-27
2.Motion in 2D (projectiles)	9/30-10/4
2.Motion in 2D (analysis)	10/7-11
3.Newton's laws	10/14-18
4.Conservation of Energy	10/21-25
5. Collisions (expt.)	10/28-11/1
5.Collisions (anal.) 2 weeks	11/4-15
6. Ballistic Pendulum	11/18-22
<b>No labs</b>	11/25-29
7.Rotational dynamics	12/2-12/6
Make-up Lab (Pendulum)	12/12 (Reading Day)

The letter grade for PHY273 lab will be calculated as below. There will be no additional scaling of grades.

A (93 or higher)      A- (90-93)      B+ (87-90)      B (83-87)      B- (80-83)  
C+ (77-80)      C (73-77)      C- (70-73)      D+ (67-70)      D (60-67)  
F (60 or lower)      NW (No submission of work)