

**Physics 10A**  
**Summer Session I 2020**  
**Mon, Tue, Wed, Thurs. 7pm-9pm, online**

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Office Hours: by appointment only  
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**Required Text:** *College Physics*, Openstax College, ISBN 9781938168000  
<https://openstax.org/details/books/college-physics> (free online)

### **Course Description**

The goal of this course is to provide students with a basic understanding of the fundamentals of Newtonian Mechanics. Using Algebra based analytical techniques students will begin with the question of how objects move by studying Kinematics in one and two dimensions. Next, students will ask the question of why objects move by studying Newton's laws of motion. Through careful manipulation of Newton's second law students will explore the concepts of Work, Energy, and Energy conservation as well as the principles of momentum and collisions. Finally, students will apply the principles they have learned to statics, rotational dynamics, and Fluid Mechanics.

Students will learn how to apply Newtonian mechanics to solve problems. This provides a basis for understanding all other topics in physics because most theories draw on some of the fundamental concepts such as velocity, acceleration, force, momentum, and energy that are introduced here. Students will also learn how physics, as a discipline, asks questions about the natural world.

### **Course Format**

*Lectures:* Each class period will consist of a lecture supplemented with class discussions, practice problems, and demonstrations. It is important for the student to read the chapter under discussion prior to the lecture in order for meaningful class discussions and the ability to answer student questions. Please come to class with questions when you have them. Example problems will be worked out during class and some problems will be assigned to the class to discuss and solve either individually or as a group. Lectures will be recorded and posted. This allows for students to re-watch the lectures and for absent students to get caught up. Students are not required to have their webcams on during lecture should they decide not to, however it is encouraged to help build community.

*Exams:* Exams will be administered during the first hour of the lecture period on the scheduled exam day. Students are required to keep their webcams and audio on during this time. The exam is to be emailed to the instructor immediately upon

completion. The final exam will be given on the final day of class. Students will have the full two (2) hours to complete the exam. The final is to be submitted immediately after the last class. There will be no makeup exams for students who miss the exam. In the case of illness, family emergency, etc. arrangements must be made with the instructor prior to the exam. If this is not possible, arrangements must be made before the graded exams are returned.

*Homework:* There will be six (6) homework assignments and each will cover two chapters. They will be assigned the day of the lecture covering the first chapter and are due the day the next homework is assigned. Homework assignments will consist of a variety of problems covering the chapters for which they are assigned.

*Labs/Activities:* There will be six (6) lab activities. The lab activities are entirely online, and consist of python demonstrations. Instructions will be provided for each lab activity and the appropriate link to the demonstration. No coding knowledge is required of the student and the only software is needed is a web browser and a spreadsheet program (such as excel, google sheets, etc.).

*Quizzes:* Twelve (12) short quizzes, ranging from 10 – 20 minutes, will be given at the beginning of the lecture period upon starting a new chapter. The quizzes will consist of multiple-choice questions covering the readings. To be successful, students must read the chapter prior to the lecture. The focus of the quizzes is to gauge the student's understanding of the concepts being discussed. Makeup quizzes will not be given, and the lowest two quiz grades will be dropped.

## **Grading Policy**

Grades will be based on 10% Quizzes, 15% Homework Assignments, 15% Lab Activities, 20 % Exam 1, 20% Exam 2, and 20% Final Exam

The grade breakdown is as follows:

<b>A</b>	92.5% - 100%
<b>A-</b>	90% - 92.49%
<b>B+</b>	87.5% - 89.99%
<b>B</b>	82.5% - 87.49%
<b>B-</b>	80% - 82.49%
<b>C+</b>	77.5% - 79.99%
<b>C</b>	72.5% - 77.49%
<b>C-</b>	70% - 72.49%
<b>D</b>	60% - 69.99%
<b>F</b>	Below 60%

## Course Schedule

Date	Lecture/Chapter	Quiz/Exam	Assigned	Due
M June 01	Chapter 1	Quiz 1	HWK1 (Ch. 1,2)	
Tu June 02	Chapter 2	Quiz 2		
W June 03	Chapter 2		Lab 1	
Th June 04	Chapter 3	Quiz 3	HWK 2 (Ch. 3,4)	HWK 1
M June 08	Chapter 3		Lab 2	Lab 1
Tu June 09	Chapter 4	<b>Exam 1 (Ch. 1,2,3)</b>		
W June 10	Chapter 4	Quiz 4	Lab 3	Lab 2
Th June 11	Chapter 5	Quiz 5	HWK 3 (Ch. 5,6)	HWK 2
M June 15	Chapter 6	Quiz 6	Lab 4	Lab 3
Tu June 16	Chapter 6			
W June 17	Chapter 7	Quiz 7	HWK 4 (Ch. 7,8)	
Th June 18	Chapter 7		Lab 5	Lab 4
M June 22	Chapter 8	<b>Exam 2 (Ch. 4,5,6,7)</b>		Lab 5
Tu June 23	Chapter 8	Quiz 8	Lab 6	
W June 24	Chapter 9	Quiz 9	HWK 5 (Ch. 9,10)	
Th June 25	Chapter 10	Quiz 10		
M June 29	Chapter 11	Quiz 11	HWK 6 (Ch. 11,12)	Lab 6
Tu June 30	Chapter 12	Quiz 12		
W July 1				HWK 6
Th July 2	<b>Final Exam (Ch. 8,9,10,11,12)</b>			