

Physics 2A Syllabus

Winter 2018

Lecture: Tue/Thurs 5:30-7:20pm Room: FOR3

Lab: Tue 7:30-10:20pm or Thurs 7:30-10:20pm Room: S17

See lab syllabus for information regarding the lab section of this course.

Final exam: March 27, 2018 6:15 - 8:15pm

Instructor: Megan Ulbricht ulbrichtmegan@fhda.edu

Office Hour: Thurs 4:15-5:15pm Room: S13

Course Description: This course serves as an introduction to the basic laws and theories of classical mechanics and utilizes primarily algebra based mathematical methods with limited calculus. The topics covered in this course include kinematics in one and two dimensions, vectors as they relate to the physical world, Newton's Laws of motion, work, conservation of energy and momentum, rotational kinematics and dynamics, equilibrium of rigid bodies, oscillations, waves, and sound.

Requisite: Math 1A (may be taken concurrently)

Text: Fundamentals of Physics, Volume I, 9th Edition by Halliday, Resnick, and Walker

Course Grade Distribution:

Lab 20%

Homework 20%

Midterm Exam I 15%

Midterm Exam II 15%

Final Exam 30%

Letter Grade Distribution:

90% – 100% A

80% – 89.9% B

70% – 79.9% C

60% – 69.9% D

< 60% F

Homework: There will be one homework assignment per week which will be done online via WebAssign.

Exams There will be two midterm exams and one cumulative final. All exams are closed book and closed note, however a calculator (any kind, with the exception of a cellphone calculator) and a 3" x 5" notecard will be allowed.

Tentative Course Outline:

The weekly coverage might change as it depends on the progress of the class.

Week Beginning 1/8/18

- Chapter 1: Measurement
- Chapter 2: Motion in a line
- Chapter 3: Vectors

Week Beginning 1/15/18

- Chapter 4: Motion in two and three dimensions

Week Beginning 1/22/18

- Chapter 5: Force and motion - I
- Chapter 6: Force and motion - II

Week Beginning 1/29/18

- Chapter 6: Force and motion - II continued
- Midterm exam I

Week Beginning 2/5/18

- Chapter 7: Kinetic energy and work
- Chapter 8: Potential energy and conservation of energy

Week Beginning 2/12/18

- Chapter 8: Potential energy and conservation of energy continued
- Chapter 9: Center of mass and linear momentum

Week Beginning 2/19/18

- Chapter 10: Rotation
- Chapter 11: Rolling, torque, and angular momentum

Week Beginning 2/26/18

- Chapter 11: Rolling, torque, and angular momentum continued
- Midterm Exam II

Week Beginning 3/5/18

- Chapter 12: Equilibrium and elasticity
- Chapter 13: Gravitation

Week Beginning 3/12/18

- Chapter 15: Oscillations
- Chapter 16: Waves - I

Week Beginning 3/19/18

- Chapter 16: Waves - I continued
- Chapter 17: Waves - II

Week Beginning 3/26/18

- Finals week

Student Learning Outcome(s):

*Critically examine new, previously un-encountered problems, analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of mechanics

*In order to test lab skills students are expected to gain confidence in taking precise and accurate scientific measurements, with their uncertainties, and then with calculations from them, analyze their meaning as relative, in an experimental context, to the verification and support of physics theories.