Physics 011 – Elementary Physics – Fall 2019

Instructor

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Office hours: MW 2:30 pm – 3:30 pm, or by appointment.

Class and Exam Schedule

Class times: MWF 1:10 – 2:00 pm, Innovation E330
T 1:15 – 2:30 pm, Innovation E330

Midterm exams:

1. Tuesday Sept. 24th, 1:15 – 2:30 pm, Innovation E330
2. Tuesday Oct. 15th, 1:15 – 2:30 pm, Innovation E330
3. Tuesday Nov. 5th, 1:15 – 2:30 pm, Innovation E330

Final exam:

4. Thursday Dec. 12th 10:30 – 1:15 pm, Innovation E330

Prerequisites

High school algebra and trigonometry.

Required Course Materials

Textbook

College Physics: A Strategic Approach, 4th edition, Pearson. Authors: Knight, Jones, and Field.

Access cards are available for purchase from UVM Bookstore as online eText with Mastering Physics, or loose-leaf bundle + online eText with Mastering Physics. Alternatively, you can purchase the online textbook directly from the publisher when registering for Mastering Physics (see below). Please be aware that whatever option you choose to purchase needs to include **Mastering Physics with Pearson eText**.

Mastering Physics with Learning Catalytics

Homework assignments, quizzes, and in class activities will be offered through Pearson's Mastering Physics and Learning Catalytics online systems. You will need to visit www.masteringphysics.com and register if you don't already have an account. The Mastering Physics course ID is VANEGASPHYS11F19 . If you have not purchased the access card from the UVM bookstore, you will have the option to Buy **Mastering Physics with Pearson eText** using a credit card or PayPal.

Laptop computer, tablet, or smartphone.

In class activities through Mastering Physics and/or Learning Catalytics require the use of an electronic device with a compatible web browser to deliver assignments and submit answers. Please let the instructor know if you need assistance regularly bringing your own device to class.

Class Format and Grading

In contrast to traditional lectures, this course follows a flipped classroom model in which students spend most of their class time working through hands-on and group activities facilitated by the instructor and teaching assistants. Some of these activities include conceptual tutorials, analytical and numerical problem solving, and hands-on experiments. In this format, students are expected to prepare for class by completing assigned readings and pre-class activities, including watching videos, short assignments, and/or quizzes. Selected homework problems to be completed after class will be assigned to consolidate the students' knowledge, while balancing the additional time needed to complete the pre-class activities.

The grade for the class will be computed based on the following:

Pre-class activities:	10 %
In-class activities:	30 %
Homework assignments:	15 %
Midterm exams:	30 % (3 x 10 % each)
Final Exam (cumulative):	15 %

Pre-class activities

Student preparation is an essential component of the flipped classroom model as the class material will not be covered in the same way as in a traditional lecture format. Pre-class activities, quizzes, and textbook readings will be assigned through Mastering Physics. Pre-class activities may include watching videos, reading questions, short problems, and tutorials. These activities are expected to take no more than 30 minutes, but it is essential that they are completed *before* class! To encourage timely completion of these activities, full credit will only be given if completed before the beginning of class, and up to 50% will be given if completed after class but before the end of the day. Students will not be able to make-up missed pre-class activities.

In-class activities

Students will work individually and in groups during class on selected activities including numerical/analytical problems, conceptual tutorials, context-rich problems, and hands-on activities with manipulables such as carts and masses. Student groups will be assigned by the instructor and will consist of no more than 3 students. Groups will be re-assigned periodically throughout the semester. Many of these activities will be delivered electronically through Learning Catalytics (part of Mastering Physics). These activities will solicit individual and/or group responses.

For group responses, every group member will receive the same grade. Students need to regularly attend and participate in class activities as they constitute 30 % of the overall class grade. Due to the interactive nature of these activities, students will not be able to make-up activities if they miss class. Students will be allowed to miss 3 class sessions without impacting their grade in order to accommodate unforeseen circumstances (sickness, etc.). If students anticipate missing a large number of class periods, they need to contact the instructor as soon as possible to determine the best course of action.

Homework assignments

Selected homework problems will be assigned to solidify students' knowledge and reinforce the skills learned in class. These problems will be assigned through Mastering Physics and are expected to be completed by specified dates. Late assignments will incur a 25 % decrease in the maximum credit for each day late, but will not lose more than 75 % of the total credit no matter how late they are to encourage students to complete all exercises.

Exams

Students will be expected to take exams at the scheduled times. Students will have 75 minutes to take midterm exams. A grade of zero will be recorded for any missed exam unless circumstances beyond the student's control prevent participation at the scheduled time. If you anticipate a problem, please contact the instructor as soon as possible. Documented evidence of such circumstances will be required in order to schedule a makeup for any exam. All exams will be closed-book with no notes or other materials to be brought into the exam; a student should bring only pen or pencil (and eraser) and a calculator (no smartphones allowed during exams). A formula sheet will be provided for each of the midterm and final exams. The final exam will be cumulative. Questions on the exams will be similar to homework and in-class assignments, and will include numerical/analytical problems as well as conceptual questions.

Course Topics

1. Representing Motion
2. Motion in One Dimension
3. Vectors and Motion in Two Dimensions
4. Forces and Newton's Laws of Motion
5. Applying Newton's Laws
6. Circular Motion, Orbits, and Gravity
7. Rotational Motion
8. Equilibrium And Elasticity
9. Momentum
10. Energy and Work
11. Using Energy
12. Thermal Properties of Matter
13. Fluids

14. Oscillations
15. Traveling Waves and Sound
16. Superposition and Standing Waves

Student Learning Accommodations

In keeping with University policy, any student with a documented disability interested in utilizing accommodations should contact Student Accessibility Services (SAS). SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter. Students need to meet with their faculty to discuss the accommodations they plan to use in each course.

https://www.uvm.edu/academicsuccess/student_accessibility_services

Contact SAS: A170 Living/Learning Center
802-656-7753
access@uvm.edu

Student Responsibilities and Rights – Academic Integrity

Students are strongly encouraged to work together on problems during in-class activities and outside of class. However, each student must submit their own independent work unless specifically asked to submit a group answer. Submitting somebody else's work as your own will be considered academic dishonesty and will be reported to the Center for Student Conduct.

The following policy addresses plagiarism, fabrication, collusion, and cheating:
http://www.uvm.edu/policies/student/acadintegrity.pdf

Grading Appeals:
http://www.uvm.edu/policies/student/gradeappeals.pdf