Phys 243-E01: College Physics 1 (3 credits)

Fall 2022

Instructor: Dr. Gabriele Belle
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Office: KJH 303
Office hours: Tuesdays from 1:30 am to 2:45 pm and by appointment.
Class meeting: KJH 249
Time: 12:00 - 13:15 pm

Course Description

Physics is the fundamental science. Its principles govern all-natural phenomena as well as technologies that enable modern civilization. This course will introduce students to the concepts of Newtonian Mechanics, Fluids, Harmonic Oscillations, Waves, Sound and Thermodynamics. This course meets GMU's core requirements.

Required Textbooks

Giambattista, Physics, 5th Edition. Chapters 1→15 will be covered.

Course Learning Outcomes

Phys 243 is an algebra-based introductory physics course that is part of Mason's core.

The goals and learning outcomes are as follows:

1. Understand how scientific inquiry is based on investigation of evidence from the natural world, and that scientific knowledge and understanding
    a. evolves based on evidence
    b. differs from personal and cultural beliefs
2. Recognize the scope and limits of science
3. Recognize and articulate the relationship between the natural sciences and society and the application of science to societal changes (e.g. health, conservation, sustainability, energy, natural disasters etc.)
4. Evaluate scientific information (e.g. distinguish primary and secondary sources, assess credibility and validity of information)
5. Participate in scientific inquiry and communicate the elements of the process, including:
    a. Making careful and systematic observations
    b. Developing and testing a hypothesis
    c. Analyzing evidence
    d. Interpreting results

Technology Requirements

Software: This course uses Blackboard as the learning management system. You will need a browser and operating system that are listed compatible or certified with the Blackboard version available on the myMason Portal. See supported browsers and operating systems. Log in to myMason to access your registered courses.

Course-specific Hardware/Software

Scientific Calculator: You are required to have a scientific calculator. (Be sure you know how to use it – especially for trig functions.) You may also use a graphic calculator. You may not use a calculator that contains physics formulae or notes or has wireless capability.

Description of Assignments

Assignments consist of reading quizzes which are open book, homework which must be completed in **Connect**, two midterm exams, and a final exam. There are no extra credit projects.

Homework

All homework assignments need to be completed in Connect and submitted before or on the due date. Late assignments will be penalized with a 2% reduction of the grade assigned by Connect. You need to register before the first lecture.

Exams

The tests and exams in this course will be nominally 40% conceptual questions and 60% free-form problems, though the percentages could vary significantly from test-to-test. Questions will tend to focus on understanding of the concepts and principles of physics under study; whereas the free-form problems will tend to be quantitative and similar to the problems at the end of each chapter. Make-up or re-take exams could differ from the original exam.

Reading Quizzes

At the end of each lecture topic you will need to complete a short reading quiz. You have 60 minutes to complete the quiz. It is open book and open notes. Late quizzes will not be accepted. All quizzes must be submitted before or on the due date. Quizzes are made available at the beginning of the week and will become unavailable after the due date.

Participation

Participation will be evaluated with various in-class assignments, such as pop-up quizzes, worksheets, etc. If you miss an assignment because you leave the room or you decided not to participate, you won't be able to make up lost participation points.

Grade Calculation - There will be two tests and a final exam. The final exam is cumulative. Components in your final grade are as follows:

Exams (2):	40% (20% each)
Homework (Connect)	15%
Quizzes	10%
Class Participation	5%
Final Exam	30%

Grading Scale:

Percentage	Letter Grade
97-100	A+
93-96.9	A
90-92.9	A-
87-89.9	B+
83-86.9	B
80-82.9	B-
77-79.9	C+
73-76.9	C
70-72.9	C-
60-69.9	D
< 60	F

Course Policies

Computer Use: Laptops are not allowed during the lecture. You must use paper and pen or pencil for notetaking. Laptops must be closed when the lecture begins. You may use an iPad or digital writing pad if this is your preferred way of notetaking.

Late Assignments: All assignments must be turned in before or on the due date.

Instructor-Student Communication: I will respond to your emails within 12-24 hours. If I will be away from email for more than one day, I will post an announcement in the Blackboard course folder.

Eating and Drinking during the Lecture: Eating is not allowed during my lecture as it is also distracting to other students.

Exams: There are no bathroom breaks during the exams. If you go to the bathroom, you must turn in the exam and you are done with the exam.

Office Hours: My office hours are in person only unless you are sick, then you can make an appointment via zoom. Office hours are a good time to introduce yourself, to tell me about any difficulties you encounter with homework problems or quizzes and discuss topics from the lecture material. Please, don't hesitate to stop by.

University Policies and Resources

a. Academic Honesty: You are expected to be familiar with and abide by the University's Honor Code. The Code can be found here. It is your responsibility to see me if you have questions about these policies. George Mason University has an honor code that states the following:

   To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the University Community have set forth this: Student Members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.

b. Students must follow the university policy for "Responsible Use of Computing" which you can access through the course website.
c. Student services: The University provides a range of services to help you succeed academically and you should make use of these if you think they could benefit you.
d. Students are responsible for the content of university communications sent to their George Mason University email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.
e. The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance. Counseling Center: Student Union I, Room 3129, 703-993-2380.
f. Students must follow the university policy stating that all sound emitting devices shall be turned off during class unless otherwise authorized by the instructor.
g. The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing. University Writing Center: Robinson Hall B Room 213, 703-993-1200. The writing center includes assistance for students for whom English is a second language.
h. Diversity: George Mason University promotes a living and learning environment for outstanding growth and productivity among its students, faculty and staff. Through its curriculum, programs, policies, procedures, services and resources, Mason strives to maintain a quality environment for work, study and personal growth.

Course Schedule

Lecture			
Date	**Topic**	**Date**	**Topic**
T 08/23	Ch. 1: Introduction	R 08/25	Ch. 2: 1-D Kinematics
T 08/30	Ch. 3: 2-D Kinematics	R 09/01	Ch. 3: 2-D Kinematics
T 09/06	Ch. 4: Force, Newton's Laws	R 09/08	Ch. 4: Force, Newton's Laws
T 09/13	Ch. 5: Circular motion	R 09/15	Ch. 5: Circular motion
T 09/20	**Review**	R 09/22	**Exam 1: Ch. 1, 2, 3, 4, 5**
T 09/27	Ch. 6: Work and Energy	R 09/29	Ch. 6: Work and Energy
T 10/04	Ch. 7: Linear Momentum	R 10/06	Ch. 7: Linear Momentum
T 10/11	*Columbus Day Recess (no classes)*	R 10/13	Ch. 8: Rotational motion
T 10/18	Ch. 9: Fluids	R 10/20	Ch. 9: Fluids
T 10/25	Ch. 10: Elasticity and Oscillations	R 10/27	Ch. 10: Elasticity and Oscillations
T 11/01	**Review**	R 11/03	**Exam 2: Ch.: 6, 7, 8, 9, 10**
T 11/08	Ch.11: Waves	R 11/10	Ch. 12: Sound
T 11/15	Ch. 13: Gas Laws	R 11/17	Ch. 13: Gas Laws
T 11/22	Ch. 14: Heat	R 11/24	*Thanksgiving Recess*
T 11/29	Ch. 15: Thermodynamics	R 12/01	Wrap-up and Final Exam Review
	Final Exam	**TBA**	**TBA**