

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

Fall 2020



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Office hours: Tuesdays from 1:30 am to 3 pm and by appointment. Office hours will be held in my virtual office either on Zoom or WebEx. A link will be provided in an announcement at the beginning of each week.

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. The course will be taught synchronously in Blackboard Collaborate Ultra. Sessions will be recorded.

Blackboard Login Instructions

Access to [MyMason](#) and GMU email are required to participate successfully in this course. Please make sure to update your computer and prepare yourself to begin using the online format on the first day of class. Check [the IT Support Center](#) website. Make sure you run a system check a few days before class. Become familiar with the attributes of Blackboard and online learning.

Required Textbooks

Giancoli, Physics with Applications, 7th 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

Hardware: You will need access to a Windows or Macintosh computer with at least 2 GB of RAM and access to a fast and reliable broadband internet connection (e.g., cable, DSL). A larger screen is recommended for better visibility of course material. You will need speakers or headphones to hear recorded content and a headset with a microphone is recommended for the best experience. For the amount of Hard Disk Space required taking a distance education course, consider and allow for:

1. the storage amount needed to install any additional software and
2. space to store work that you will do for the course.

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. Online courses typically use [Acrobat Reader](#), [Flash](#), [Java](#), and [Windows Media Player](#), [QuickTime](#) and/or [Real Media Player](#). Your computer should be capable of running current versions of those applications. Also, make sure your computer is protected from viruses by downloading the latest version of Symantec Endpoint Protection/Anti-Virus software for free [here](#).

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.

Webcam: You are required to have a webcam which is either integrated in your computer or attached to your computer. You will need it to be able to take all exams.

Respondus Lockdown Browser: You must install [Respondus Lockdown Browser](#) on your computer before you start an exam.

Google Chrome: You need to download and install google chrome on your computer. Blackboard collaborate ultra will be used for all class sessions. It only functions well in google chrome.

Assignments Description

Assignments consist of quizzes which are open book, discussion posts which account for participation, homework which must be completed in Modified Mastering Physics, two midterm exams and a final exam.

Homework

All homework assignments need to be completed in Modified Mastering Physics. You need to register before the first lecture. The course ID is as follows: **belle50172**

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. The free form problems could have any format including multiple-choice, essay questions, fill in the blank etc. All exams must be taken online in Respondus Lockdown Browser. You will be given a practice exam to try out the technology.

There are no extra credit projects.

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 (Modified Mastering Physics)	15%
Quizzes	10%
Class Participation (Discussions)	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

Late Assignments: All assignments must be turned in within 48 hours of 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. Before sending an email, please check the following (available on your Blackboard course menu) unless the email is of a personal nature:

1. Syllabus
2. Ask Professor (forum on the discussion board)
3. On-demand Blackboard videos on how to use Blackboard features, and Technical Requirements.

Feel free to respond to other students in the Ask Professor forum if you know the answer.

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 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 with disabilities who seek accommodations in a course must be registered with the [George Mason University Office of Disability Services \(ODS\)](#) and inform their instructor, in writing, at the beginning of the semester. All academic accommodations must be arranged through that office. Please note that accommodations **MUST BE MADE BEFORE** assignments or exams are due. I cannot adjust your grade after the fact.
- g. Students must follow the university policy stating that all sound emitting devices shall be turned off during class unless otherwise authorized by the instructor.
- h. [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.
- i. 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 08/25	Ch. 1: Measurements	R 08/27	Ch. 2: 1-D Kinematics
T 09/01	Ch. 3: 2-D Kinematics	R 09/03	Ch. 3: 2-D Kinematics
T 09/8	Ch. 4: Force, Newton's Laws	R 09/10	Ch. 4: Force, Newton's Laws
T 09/15	Ch. 5: Circular motion	R 09/17	Ch. 5: Circular motion
T 09/22	Ch. 6 (I): Work, Energy	R 09/24	Ch. 6 (II): Conservation of energy
T 09/29	Ch. 7: Momentum, Collisions	R 10/01	Ch. 7: Center of mass, Collisions cont.
T 10/06	Review	R 10/08	Exam 1: Ch. 1, 2, 3, 4, 5
T 10/13	Ch. 8: Rotational motion	R 10/15	Ch. 8: Rotational motion
T 10/20	Ch. 9: Statics	R 10/22	Ch. 10: Fluid Statics
T 10/27	Ch. 10: Fluid Dynamics	R 10/29	Review
T 11/03	<i>Election Day (New Holiday)</i>	R 11/05	Exam 2: Ch.: 6, 7, 8, 9, 10
T 11/10	Ch.11: Oscillations, Waves	R 11/12	Ch. 12: Sound
T 11/17	Ch. 13: Gas Laws	R 11/19	Ch. 14: Heat Transfer
T 11/24	Ch. 15: Thermodynamics	R 11/26	<i>Thanksgiving Recess</i>
T 12/01	Practice Problems	R 12/03	Wrap-up and Final Exam Review
	Final Exam	R 12/15	10:30 am – 1:10 pm