

Phys 245-E01: College Physics 2 (3 credits)

Spring 2022



[Course Description](#) | [Required Textbooks](#) | [Course Learning Outcomes](#) | [Technology Requirements](#) | [Assignments Description](#) | [Course Policies](#) | [Grading Scale](#) | [University Policies and Resources](#) | [Course Schedule](#) |

Instructor: Dr. Gabriele Belle

Email: gbelle@gmu.edu

Phone: (703)993-5135

Office hours: Tuesday and Thursday from 1:30 pm to 2:30 pm; KJH 303.

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 electricity, magnetism, optics, structure of atoms and finally to nuclear physics. This course meets GMU's core requirements.

Required Textbooks

Giambattista, Physics, 5th Edition

Course Learning Outcomes

Phys 245 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.

Software: This course uses Blackboard as the learning management system and Connect for homework. 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](#). Also, make sure your computer is protected from viruses by updating your virus software. .

Course-specific Hardware/Software

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

Webcam: You will need a webcam if you need to meet online

Assignments Description

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.

Exams

The tests and exams in this course will be nominally 40% concept based multiple choice questions and 60% free-form problems, though the percentages could vary significantly from test-to-test. 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. Make-up or re-take exams will differ from the original exam.

Reading Quizzes

At the end of each lesson you will find 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, then you will lose participation points.

Grade Calculation - There will be two tests during this session and a final exam. The final exam is cumulative.

Components in your final grade are as follows:

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

Course Policies

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

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

Instructor-Student Communication: I will respond to your emails within 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 in the lecture hall: The lecture hall is not a dining area. Eating is not allowed during my lecture as it is also distracting to other students. You may remove your mask briefly, if you need to drink.

Classroom Courtesy: Students who leave the lecture hall during the lecture disrupt other students. Please, be courteous to others and go to the bathroom before the beginning of the lecture. Leaving the classroom during lecture will affect your participation grade.

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: Office hours will be in person. I will not hold online office hours unless a student is sick and cannot come to campus. In this case, the student may make an appointment for consulting with me via zoom or blackboard collaborate. During any online meeting, the student's camera must be turned on. Students must wear an appropriate facemask when entering my office. The facemask must cover nose and mouth at all times. If there are several students who need assistance, I will meet with each student for an appropriate amount of time. At any time during office hours, only one student is allowed to be in the room.

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

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. **Sharing of instructor created material:** Sharing of instructor-created materials, including materials relevant to assignments or exams, to public online "study" sites is considered a violation of Mason's Honor Code. For more information, see the Office of Academic Integrity's [summary of information about online study sites](#).
- c. Students must follow the university policy for [Responsible Use of Computing](#)
- d. **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. I also invite you to speak to me.
- e. 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.
- f. **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 364, 703-993-2380.
- 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 Room A114, 703-993-1200.
- 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.
- i. **Safe Return to Campus Statement:** This is a face-to-face course. All students are required to follow the university's public health and safety precautions and procedures outlines in the university Safe Return to Campus webpage (<https://www2.gmu.edu/safe-return-campus>). All students must also complete the Mason COVID Health Check. Only students who receive a "green" notification are permitted to attend courses with a face-to-face component. If you suspect that you are sick or have been directed to self-isolate, please quarantine or get testing. Your instructor is allowed to ask you to show you that you have received a "Green" email and are thereby permitted to be in class.
Students are required to follow Mason's current policy about facemask-wearing. Currently all members of the Mason Community are required to wear a facemask in all indoor settings, including classrooms. An appropriate facemask "<https://www2.gmu.edu/safe-return-campus/personal-and-public-health/face-coverings>" must cover your nose and mouth at all times in our classroom. If this policy changes, you will be informed; however, students who prefer to wear masks will always be welcome in the classroom.
- j. **Campus Closure or emergency Class Cancellation/Adjustment Policy:** If the campus closes, or if a class meeting needs to be canceled or adjusted due to weather or other concern, students should check Blackboard for updates. Your instructor will send out an announcement how to continue learning and for any changes to events or assignments.

Course Schedule

LECTURE			
DATE	MATERIAL COVERED	DATE	MATERIAL COVERED
T 01/25	Ch. 16: Electrostatics	R 01/27	Ch. 16: Electric Fields
T 02/01	Ch. 17: Electric Potential	R 02/03	Ch. 17: Electric Potential
T 02/08	Ch. 18: Current	R 02/10	Ch. 18: DC Circuits
T 02/15	Ch. 18: DC Circuits	R 02/17	Ch. 19: Magnetism
T 02/22	Ch. 19: Magnetism	R 02/24	Ch. 20: Induction
T 03/01	Review	R 03/03	Exam 1: Chapters 16, 17, 18, 19, 20
T 03/08	Ch. 22: Electromagnetic Waves	R 03/10	Ch. 22: Electromagnetic Waves
T 03/22	Ch. 25: Interference and Diffraction	R 03/24	Ch. 25: Interference and Diffraction
T 03/29	Ch. 23: Reflection and Refraction	R 03/31	Ch. 23: Reflection and Refraction
T 04/05	Ch. 24: Optical Instruments	R 04/07	Review
T 04/12	Exam 2: Chapters 22, 23, 24, 25	R 04/14	Ch. 27: Models of the Atom
T 04/19	Ch. 27: Models of the Atom	R 04/21	Ch. 27: Models of the Atom
T 04/26	Ch. 28: Quantum Physics	R 04/28	Ch. 29: Nuclear Physics
T 05/03	Ch. 29: Nuclear Physics	R 05/05	Ch. 29: Nuclear Physics
	Final Exam	TBA	