

WELCOME TO

Physics 243-001: College physics

Syllabus, Fall 2020 (online only)



Instructor: Dr. Robert Oerter

Intended audience: This is the first course in a two-semester, non-calculus physics course intended for students that major in biology and other sciences. It is **not** suitable for math, physics, or engineering majors, and is generally not taken by liberal arts students to satisfy the natural science requirement.

Overview: We will cover the following topics: motion, force, energy, fluids, and thermodynamics. But this course is about more than just physics content; it is about scientific thinking, including developing models, mathematical sense-making, coordinating multiple representations, and scientific communication.

Prerequisite: A college-level math course and a working knowledge of algebra and trigonometry. You should be very comfortable with the math review assignment and recitation discussion in the first week. No previous physics experience is required.

Course (Online only): **Lecture:** MWF 8:30 – 9:20 AM: Lectures will be in Blackboard Collaborate
 Recitation: **You must register for a recitation section in addition to the lecture and you need to make sure that it is a recitation section for lecture section 001.**
 Lab: the lab is a separate course (PHYS 244). You are not required to take the lab to enroll in this course. You may or may not need to take the lab, depending on the requirements of your major.

Instructor's contact info:

Office:	Planetary Hall 201C (I will only be in my office on rare occasions)
E-mail	roerter@gmu.edu
Course website:	Blackboard
Office hours:	See Blackboard

Textbook and supplies:

- **Physics – Principles with Applications, 7th edition, by Giancoli.**

The textbook is available from the GMU bookstore or other sources. The physical book is available either as a large hardcover book containing chapters 1-33, or as a softcover version containing just chapters 1-15. The former option might be a good choice if you intend to continue in the physics sequence in future semesters. There is also a loose-leaf version. In any case be sure to check that your book comes with a **Modified** Mastering Physics access code. If you buy the book used, you may have to buy the access code separately.

Please make sure that you get the access code for **Modified** Mastering Physics. The access codes are generally not refundable, so be careful.

It is possible to buy **Modified** Mastering Physics access, or **Modified** Mastering Physics access **and** the e-book directly from the publisher. To do this, go into our Blackboard course, click on “Mastering Physics” in the left-hand navigation panel, and click on the “Welcome to Mastering Physics” link. From there, follow the directions.

- **A Modified Mastering Physics access code for the 7th edition of Giancoli.** This is the online homework system we will use. (Modified Mastering Physics enables us to use MasteringPhysics through Blackboard). You’ll need this access code to access the Modified Mastering Physics from our class’ Blackboard site.
- You’ll also need a **scientific calculator**. Have it available during class, recitation, and exams. You will be working problems in class and in recitation. You should be proficient in using your calculator. Make sure you know how to use it (including when to use degrees vs. radians, how to enter scientific notation, when you need parentheses, etc.).

Withdrawal: If you need to withdraw from this course you must do it within the University established time frame.

General course policies: In order to facilitate the optimum learning environment for your fellow students, the following behavior is expected:

- ✚ Class will start on time. Have your computer up and running before the class time, get logged in to Blackboard Collaborate, and be prepared to start working.
- ✚ This class requires active participation by you. You are expected to think, and write, and share, and ask questions, and in general be engaged during the class.
- ✚ ***Never hesitate to ask questions.*** Questions may be typed in the “Chat” while I am talking (preferred). You can also unmute and ask a question aloud. If I don’t answer your question right away, be patient – I will get to it as soon as I can! Don’t worry about it being a “dumb” question – there are no dumb questions. Don’t worry about asking me to repeat something – we all need repetition in order to process new information. Questions help me judge the level of understanding of the class, and whether I need to elaborate on a topic or move on to a new one.

Class components:

Pre-lecture assignments: There will be no make-up pre-lecture assignments

In order to make the most of the time we spend together in lecture, you will have an assignment ahead of time so that the lecture is not your first exposure to the material. Before each lecture, there will be some sections of the textbook to read, and there will be a short tutorial assignment on MasteringPhysics, due before lecture. (You’ll get multiple tries to answer each question, so keep trying until you get it right.)

Lectures

Students are expected to attend the online lectures and actively participate. That is the best way to learn! Lectures will be recorded and will be available on Blackboard for anyone who needs to miss a class. I will also post a PowerPoint version of the lecture (which will not be exactly the same as the lecture but will be pretty close).

The lectures will follow the subjects as shown in the course schedule posted on Blackboard. Major changes to the schedule will be announced in class and posted on Blackboard. Physics is a DIY course: you must learn to **do it yourself** in order to succeed in the class. **You must do the thinking and the learning: I can only assist**

and provide guidance and clarity. Part of your task as a participant in this course is to help me identify the most difficult material and to help interpret that material for you and your classmates.

You are responsible for all the material covered in lecture and in the assigned sections of the textbook as well as in any additional resources I may assign. Important class announcements will be posted on Blackboard and emailed to the class.

Homework **There will be no make-up homework**

All your homework and pre-lecture assignments will be done using the (Modified) Mastering Physics system. Access the system using the Mastering Physics link in Blackboard, or from the weekly assignment pages on Blackboard.

Homework is crucial to reinforce the material you study and to practice. Making mistakes is OK – making mistakes is how we learn, and homework is a “learning” component of the course. That is one reason the Mastering Physics system is so useful – it allows you to make mistakes, then try again. (See below on how this works in detail.)

Physics is a DIY subject: you need to learn how to **do it yourself**. When you start working on the homework problems, you will likely find that you need some help. That’s perfectly OK – we all did at first (even your instructors!) You can find help in many ways: by looking at solved problems in the textbook or the students study guide, by working the tutorial problems (see below) and following the hints, by asking in recitation, or by asking your professor during office hours. What you should **NOT** do is look up answers online. If you do that you will get the illusion that you understand the problem – you will not be learning how to **do it yourself**. On the exams, you will (obviously) need to **do it yourself**, and homework is the main way you will learn the thought processes you will need. Solving physics problems is a **skill**, and you can only learn skills by practicing them – not by watching other people do it!

Pre-lecture assignments are short, multiple-choice questions that should be pretty easy once you have read the assigned chapter. They are worth one point each.

Homework problems may be multiple-choice or numerical. Some of them are "tutorial" problems that help you learn problem-solving techniques by giving hints that help you work through the problem. There is **no penalty for opening a hint**, however, **you lose partial credit for answering questions in the hint incorrectly**, or for asking for the answer to a hint. The hints are there to help you - use them if you need them! Homework problems are also one point each. If there are multiple parts, each part earns partial credit.

For numerical problems, you have **six attempts** to get the answer right. (The same goes for numerical questions in a hint.) There is **no grade penalty for making mistakes in your first five attempts**. If you get it wrong on the sixth attempt, or if you ask for the answer, you lose all credit. For **multiple choice questions** (or parts), you **lose partial credit for each wrong answer**. If a problem has more than one part, partial credit is assigned according to the number of parts.

You can still complete the assignment after the due date, but you **lose 10% credit for each day it is late**.

If you score less than 90% on the homework assignment, you will be offered an **extra credit assignment** that is worth up to 2 points of extra credit. These are "adaptive assignments" in which the problems are chosen based on what mistakes you made, to help you concentrate on the things you have not yet mastered. If you score over 90% on the original assignment, you don't need to do these additional problems! The adaptive assignment is **due two days** after the original assignment's due date, with the usual 10% reduction per day that it is late. As

the problems are different for each student, I will not be posting solutions to these problems. You can always ask about a particular problem in recitation or during office hours.

Recitation **There will be no make-up recitations**

Attendance in recitation is required. Recitations will feature group activities that address some of the concepts that students have particular difficulty with. These activities will not be handed in or graded, but you will get a participation grade. Check the web for your recitation schedule. **Students must attend recitation sections for which they are registered.**

Exams **There will be no make-up exams**

There will be three midterm exams during the semester and a comprehensive final exam. Your lowest exam grade of the three “in-class” exams will be **dropped**. The tests will be taken during the normal class time. They will be delivered via Mastering Physics. **It is your responsibility to make sure you have access to a computer and internet during those times.**

You must have a **scientific calculator** for exams. All exams will be open book and open notes. Exam problems will be similar to homework problems – if you work your homework carefully on paper it will be a great help during exams!

Please note: There are no makeup exams.

- If you miss an in-class exam **for any reason**, that will be your dropped exam. If you miss a second exam, you will get a zero.
- If you have technical problems (internet connection, website connectivity) during an exam, you must **email me as soon as possible** and explain the problem. Many connection issues can be fixed by simply refreshing your browser, or by closing it down and logging in again via Blackboard. You will not lose any completed work if you do this.
- Exam dates will only be changed under extreme circumstances. Check the university and class web sites.

THERE WILL BE NO SO CALLED “EXTRA CREDIT ASSIGNMENT”. The grade you earn is entirely based on what you do during the semester – homework, recitation, and exams.

Getting help:

In addition to the instructor and your recitation instructor, we have a physics tutor available to you for help:

- **Physics tutor:** Planetary Hall room 2A. See <http://mason.gmu.edu/~sfisher2> for hours.

Grades:

In this course, you will get exactly the grade you deserve by mathematically weighted average. It is **YOUR** responsibility to make sure you study hard enough to get the grade you want.

Type of assignment	Percent
Midterm exams (best 2 of 3) @ 20% each	40%
Comprehensive final exam	30%
Homework	20%
Recitation grade	10%

Your course letter grade will be assigned according to a scale to be determined. An example is given below. Note that no “minus” grades will be given.

Letter Grade	Course average (sample)
A+	98% and above
A	90% to 97.99%
B+	88% to 89.99%
B	80% to 87.99%
C+	78% to 79.99%
C	70% to 77.99%
D	60% to 69.99%
F	Below 60%

This is a sample only. I reserve the right to change the grade cutoffs, depending on how the class does overall. This is the first time for me teaching a class in the online-only format, and I expect I will need to adjust the grade curve somewhat. Any adjustments will lower the grade cutoffs – not raise them. Note that there is no “rounding up” – they are hard cutoffs.

Honor code:

You are expected to adhere to the George Mason University student honor code:

"George Mason University shares in the tradition of an honor system that has existed in Virginia since 1842. The Honor Code is an integral part of university life. On the application for admission, students sign a statement agreeing to conform to and uphold the Honor Code. Therefore, students are responsible for understanding the provisions of the code. In the spirit of the code, a student's word is a declaration of good faith acceptable as truth in all academic matters. Therefore, cheating and attempted cheating, plagiarism, lying, and stealing of academic work and related materials constitute Honor Code violations. To maintain an academic community according to these standards, students and faculty must report all alleged violations of the Honor Code to the Honor Committee. Any student who has knowledge of, but does not report, an Honor Code violation may be accused of lying under the Honor Code."

We expect you to hold to this standard by carefully citing sources used in your work and by doing your own work on tests and individual assignments. In an environment where group work is highly valued it can be difficult to sort out what policies apply.

- During all tests you must work alone – no talking to other students or anyone else during exams.
- You may not use “homework help” sites like Chegg.com for homework or for exams.
- Notebooks and textbook are allowed during exams.
- You **are** allowed to discuss homework with other students.

If you have questions about the meaning or if you are in doubt about what the above policies mean look for more info at <http://oai.gmu.edu/>. If you are caught cheating, you will be brought before the Academic Honor Council which may result in a failing grade in this course, a permanent mark on your transcript, suspension, or expulsion.

Computer support: Computer and/or Web support is not my responsibility. For help with Blackboard, contact the university support at <https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/>. For help with Mastering Physics, contact their support team at

https://help.pearsoncmg.com/mastering/student/ccng/TopicsStudent/gettingstartedwithmastering_student.htm.

Be sure to tell them you are using **Modified** Mastering Physics.

Student resources: For complete information and links to student support resources on campus, visit <http://ctfe.gmu.edu/teaching/student-support-resources-on-campus/>

A few of the resources available are listed below.

- **Counseling and Psychological Services** offers psychological services, a variety of learning services, multicultural services, and educational programs that support students' educational goals.
- **The English Language Institute** holds workshops for students whose first language is not English.
- **Mathematics Tutoring Center** offers tutoring on a walk-in basis for all George Mason students enrolled in math courses up to MATH 290
- **Office of Alcohol, Drug, and Health Education Services** provide health-related information, education and training, and resources for the Mason community.
- **Office of Disability Services** implements and coordinates reasonable accommodations and disability-related services that afford students with special needs equal access to university programs and activities.
- **Office of Diversity Programs and Services** serves students, cultural organizations, and the Mason community by promoting an environment that fosters and values human understanding and diversity. The office seeks to provide services and programs that will instill university-wide appreciation for diverse perspectives and ensure equal levels of inclusion, participation, and retention of underrepresented student groups in their quest for a quality education.
- **Sexual Assault Services** provides direct services for survivors of sexual assault and sexual assault education and information to the university community. All services are available to survivors, and to their families, significant others, and friends at no cost.
- **Student Health Services** provides high quality health care, counseling, education and prevention services in support of student learning and retention.

Academic Advising Center – 703-993-2470
Office of Disability Services – 703-993-2474
Math Tutoring Center – 703-993-1460

Campus Counseling Center – 703-993-2380
Writing Center – 703-993-1200

Students with disabilities: Please contact The Office of Disability Services (SUB I, Room 222, Phone 703-993-2474) if you have a learning or physical disability that will require accommodation in this class. You must obtain the proper paperwork as soon as possible and contact me during the first week of classes so that I can accommodate your needs throughout the course.