

WELCOME TO

Physics 243-002: College physics

Syllabus, Fall 2022



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, geometry 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:

Lecture: TR 9:00 – 10:15 AM, IN 103

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 002.

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.

Computer access: You will need access to a computer that can run **MODIFIED Mastering Physics**, our online homework system. Reliable computer access is a course requirement, and “my Internet was down” is NOT a valid excuse for turning in homework late.

Instructor’s contact info:

Office:	Planetary Hall 201C
E-mail	roerter@gmu.edu
Course website:	Blackboard
Office hours:	See Blackboard

If, for an unexpected reason, I am not able to be there during any of the regularly scheduled office hours I will post an announcement on Blackboard and/or leave a note on my office doors. If you need to see me and are not able to come during regularly scheduled office hours, please make an appointment.

Before you email me, please check if your question is answered in this syllabus! I have over 200 students, and I cannot personally answer every question about things you should already know the answer to. If you email me a question that is answered in the syllabus, I will simply reply “See syllabus.” Personal issues are best handled in person, so, if possible, stop by during my office hours.

Please allow at least 36 hours for responses to emails. I am your professor, not your 24 hour tutor. I do not regularly check email on the weekend.

Textbook and supplies:

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

The electronic version of the textbook comes free along with the **Modified** Mastering Physics homework response system (required – see below). You can order a loose-leaf hard copy when you sign up for Mastering Physics. The hard-copy textbook is available from the GMU bookstore or other sources.

if you order an access code from a third party, please make sure that you get the access code for Modified Mastering Physics. The access codes are generally not refundable, so be careful. I do not recommend this option.

- **Modified Mastering Physics:** This is the online homework system we will use. You can purchase access directly from our course Blackboard Page – click on “Mastering Physics” in the sidebar, then on the “Pearson” link. For help registering for Mastering Physics, contact the Pearson support team (see link under “Mastering Physics” on our Blackboard site.) Be sure to tell them you are using **Modified** Mastering Physics. I do not recommend purchasing an access code online through third party vendors – those codes may or may not work with our system.
- 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. If you have not used it before the first exam, you will likely make unnecessary mistakes!

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. Come on time and be prepared to start working.
- ✚ You are expected to take notes during class. Note-taking is an important part of the learning process. I will post my PowerPoint lectures, too, but that is no substitute for good note-taking.
- ✚ This class requires active participation by you. You are expected to think, and write, and share, and ask questions, and in general be engaged while you are here.
- ✚ Be respectful of yourself and others in the class. Don’t talk during class about things that aren’t class related; when working in groups, keep voices to a low level so all can communicate; don’t denigrate others’ work or ideas. Give everyone in your group a chance to speak and contribute.
- ✚ **Never hesitate to ask questions.** Don’t worry about it being a “dumb” question – if you have a question or think something I said is unclear, I’m sure at least half the class is wondering the same thing. 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 lectures and actively participate. That is the best way to learn! I will also post a PowerPoint version of the lecture (which may 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. In order to understand physics, you need to engage with it. Passive listening will not give you much understanding. **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. Click on the Pearson link, and follow the prompts.

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**. There will be excused homework or make-up assignments.

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. You can always ask about a particular problem in recitation or during office hours. (There are no extra credit assignments to follow up pre-lecture assignments.)

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. Exams will be **closed book and closed notes**.

You must have a **scientific calculator** for exams. Exam problems will be similar to homework problems – if you go back over your homework, it will be a great way to prepare for the exam!

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.
- Exam dates will only be changed under extreme circumstances. Check the university and class web sites.

THERE WILL BE NO "EXTRA CREDIT ASSIGNMENTS" other than the ones included with the homework assignments. 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 and Pre-lecture	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. 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.
- You **are** allowed to discuss homework with other students, however, you should never just share a complete solution to a problem. **Explain** the solution to them – that way they learn how to solve it. As a bonus, you will gain a better understanding of physics by explaining it!

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 support@gmu.edu. For help with Mastering Physics, contact their support team at the link on the Blackboard site under “Mastering Physics.” 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.