

Physics 260 University Physics II, Jun 21, 2021 - Jul 24, 2021

General Information

Class time: ONLINE – Asynchronous, with recorded lectures.

Instructor: Dr. Branislav Djordjevic
Office Hours in Blackboard Collaborate: MWF, 2-4 PM, to discuss any questions about the material
E-mail bdjordje@gmu.edu - subject title: Physics 260

Text: *University Physics, 14th edition, Young and Freedman* + access to MODIFIED Mastering Physics. The 13th edition is equally good for studying.

Homework is done in MODIFIED Mastering Physics **Integrated with Blackboard.** (details below)

Website: Blackboard: [202140.41747 PHYS-260-C01 \(Summer 2021\)](#)

Tutor: Dr. S. Fisher - Tutor Hours: check with Dr. Fisher at sfisher2@gmu.edu.

Recitation instructors: (recitations carry 5% toward your final course grade)

PHYS-260-3C1 – Dr. Elena Murgu Ziu
PHYS-260-3C2 – Dr. Florin Moldoveanu
PHYS-260-3C3 – Dr. Florin Moldoveanu
PHYS-260-3C4 – Dr. Florin Moldoveanu

Prerequisites of the Course:

Physics 160 and Math 114 are prerequisite of this course.

Math 213 is a co-requisite of this course.

Course overview - Why Is Understanding Electricity & Magnetism Important

Physics 260 is an introduction to electromagnetic fields and forces. Electromagnetic forces quite literally dominate our everyday experience. Because of the strength of electromagnetic forces, any small imbalance in net electric charge gives rise to enormous forces that act to try to erase that imbalance. Thus in our everyday experience, matter is by and large electrically neutral, and our direct experience with electromagnetic phenomena is disguised by many subtleties associated with that neutrality. This is very unlike our direct experience with gravitational forces, which is straightforward and unambiguous.

Understanding electromagnetic fields is essential to our understanding the world around us. The most fundamental processes in nature, from the forces that determine the structure of atoms and molecules to the phenomena of light to nerve impulses in living systems, depend on electric and magnetic fields.

It is fundamental to current and future technologies. Motors, power generation and transmission, electronics, sensors, and communication – both wired and wireless – involve the manipulation of electric or magnetic fields. There are few advances in technology that can be made without the use of electronic circuits or electric and magnetic fields.

It is the simplest example of unification in science. A large and diverse body of observational facts can be explained in terms of a few simple concepts. The phenomena of electricity and magnetism, which appear to be completely different, are shown to be two manifestations of the same physics. The theory requires few if any approximations. Results can be predicted with great accuracy.

It represents the most quantitative mode of inquiry of all the sciences. Of the various ways to approach science, physics in general, and E&M in particular, starts with the smallest set of fundamental assumptions. Quantitative rigor in solving important problems is rewarded by unprecedented agreement with measured results. Chemistry and biology demonstrate different, complementary approaches to dealing with natural phenomena.

Course Goals

After passing the course you should be able to:

1. Describe, in words, the ways in which various concepts in electromagnetism come into play in particular situations.
2. Represent these electromagnetic phenomena and fields mathematically in those situations.
3. Apply electromagnetic concepts when solving problems and examining physical phenomena.
4. Combine concepts when analyzing a situation.
5. Begin developing expert-like problem solving skills and be able to:
 - a. satisfactorily solve standard textbook problems
 - b. solve problems in algebraic terms, showing all steps: analysis, setup, execution, and discussion.
 - c. solve more challenging problems, multi-step problems and multi-concept problems.

Homework:

You have two options to purchase access to Mastering, directly from Pearson: **a) Mastering with e-Book: \$119.99, or b) Mastering without e-Book: \$69.99. However, you will register for Mastering and later access your homework FROM WITHIN BLACKBOARD!** Your Mastering homework is integrated with your Blackboard course. Never log directly into Mastering website! **First log in your Blackboard course, and then click on “Your Mastering Homework”** link in the content. I will post detailed instruction about how to register. All Mastering assignments should be completed by their due dates. **NO EXTENSIONS WILL BE GIVEN! YOU NEED TO STAY ON TOP OF THE SCHEDULE** throughout this short course. Due dates are given in Mastering.

Graded Assignments:

Midterm Exam	30 %
Final Exam	40 %
Mastering - Homework	25 %
Recitation	5%
Total	100

Grading Scale:	Percentage	Grade
	97	A+
	90	A
	87	B+
	80	B
	77	C+
	70	C
	60	D
	<60	F

Tentative Schedule:

Week#	Chapters	All Homework All due by July 24, 11:59 PM
1 – June 21	Chapter 21 Electric force and fields	Chapter 21
	Chapter 22 Gauss's Law	Chapter 22
	Chapter 23 Electrostatic potential	Chapter 23
2 – June 28	Chapter 24 Dielectrics, Capacitance	Chapter 24
	Chapter 25 Current, resistance	Chapter 25
	Chapter 25 Current, resistance Chapter 26 DC circuits	Chapter 26
3 – July 5	Chapter 27 Magnetic fields and forces	Chapter 27
	Chapter 28 Sources of Magnetic fields	
July 9, Friday	MID-TERM EXAM (Chapters 21-26)	
4 – July 12	Chapter 28 Sources of Magnetic fields (Cont.) Chapter 29 Electromagnetic Induction	Chapter 28
	Chapter 29 Electromagnetic Induction (Cont.)	Chapter 29
	Chapter 30 Inductance	Chapter 30
5 – July 19	Chapter 31 AC circuits	Chapter 31
	Chapter 32 E&M waves	
July 23, Friday	FINAL EXAM (comprehensive), Ch.21-31	

Lecture Format: Lectures are recorded and given **ONLINE** in asynchronous mode.

Exams:

- There is one **midterm exam and the final**. They will be open from **10AM – 10 PM, EST**. **There are NO make-up exams! There is NO extra-credit in this course.**
- Students must install **Respondus Lockdown Browser**, to use for taking exams. **Respondus Monitor will NOT be required**. The instructions about how to do this are given here: <https://its.gmu.edu/knowledge-base/how-to-install-and-use-the-respondus-lockdown-browser/>
- You **MUST have a working computer** to work in this course. Phone cannot be used – phone will not let you do the exams.
- The exams will be **timed**, you will have **one attempt**, but you will have larger time frame to start your exam at the convenient time for you, on the exam date you see in the schedule.

Honor Code:

Copying homework, use of online homework solutions or the instructor solution manual, giving or receiving assistance on exams, posting exam questions online and asking for solutions, viewing answers on exam questions during the exam, participating in any kind of discussion groups during the exam, and any other improper conduct will be considered a violation of the Honor Code. Students who cheat in any way will be reported to the GMU Honor Committee, without exception!

Class Etiquette:

Our communication must be courteous, polite, respectful, and precise. Always sign your emails with your full Name. When asking about specific topic, or problem – be it from the homework, or from the book, be specific, instead of letting your instructor search to find the problem you are referring to.

University Resources

Learning Services <https://learningservices.gmu.edu/>

Student Support and Advocacy Center <https://ssac.gmu.edu/>

Counseling and Psychological Services <https://caps.gmu.edu/>

Important Dates

Look for **Session C: 5 week** here:

<https://registrar.gmu.edu/calendars/summer-2021/>

Students with accommodations must contact me via email and send me the faculty contact sheet.