

University of Maryland
Department of Physics
Physics 270 – SPRING 2019
“General Physics: Electrodynamics, Light, Relativity and Modern Physics”

Lecture Date and Time: M, W, F 1:00 – 1:50 PM
Lecture Room: 1412 Physics Building

Instructor: Dr. Hailu Gebremariam
Office: 3109 Physics Building

email: hailu@umd.edu
Phone: x5-9983

Office Hours: Tu 2:00 – 3:00 PM or by appointment

Discussion schedule:

Section	Date and Time	Room	TA
0101	W 2:00 – 2:50 PM	MTH 0106	Ekhterachian, Majid (ekhterachian.majid@gmail.com)
0102	M 3:00 – 3:50 PM	MTH 0303	Grant, Jacob (jacobgrant@gmail.com)
0103	W 11:00 – 11:50 AM	PHY 0405	Brzeminski, Dawid (dbrzemin@umd.edu)
0104	Th 8:00 – 8:50 AM	PHY 0405	Ekhterachian, Majid (ekhterachian.majid@gmail.com)
0106	M 11:00 – 11:50 AM	PHY 1204	Brzeminski, Dawid (dbrzemin@umd.edu)

Textbook: *University Physics, by Young and Freedman (Pearson), 14th edition.*

- If you buy a new textbook, you must get it with an access number to a Materingphysics.com.
- If you buy a used copy, you will need to also purchase an access number which you can do on-line or at the bookstore.

MasteringPhysics.com will be used to assign and collect all Homeworks.

Course Description:

Third semester of a three-semester calculus-based general physics course. Electrodynamics, Maxwell's equations and electromagnetic waves, geometrical optics, interference, diffraction, special theory of relativity, and modern physics. It is recommended to take PHYS270 and PHYS271 in the same semester but the grades for PHYS 270 and PHYS 271 are given separately.

Midterm Exams: March 01, April 12, May 03

Final Exam: Saturday May 18, 6:30 PM – 8:30 PM

Important Notes:

1. Lectures:

Students are required to attend lectures, where announcements will be given, exams will be announced and administered, and the course material will be presented.

Not all material will be directly covered in lectures. Students are responsible for reading and understanding all material in assigned chapters, whether or not this material is explicitly treated in the lectures.

This Physics course is extremely fast paced and demanding. You will be learning new concepts every lecture and missing even one lecture can make you fall behind simply because the concepts build on the ones covered in earlier sessions. Hence, attendance to lectures and discussions are mandatory.

2. Discussions:

You must attend your discussion section and you must go to the section you have been assigned. Your TA will cover material (homework and exams) that may not be covered elsewhere. Please come prepared so you can ask questions, i.e. read the assigned chapter and work on the homework problems. Remember, the TA is there to explain things and give help when you are stuck, not to dole out answers.

In addition, there will be quizzes during most of the discussion sessions. Quizzes will be closed book, but all formulae will be provided for you. The quiz problems will be largely straightforward and are intended to check your competency in topics from recent homework assignments. **I will drop your lowest quiz score before computing your average.**

3. Homework Assignments:

Homework will be done through Mastering physics. ***You must submit your answers for the homework problems over the internet using the Mastering physics web site.***

Registering and Gaining Access to Mastering Physics:

- In order to turn in your homework, you will need to register at the Mastering Physics website <http://www.masteringphysics.com/>.
- To register, you need two things - an **access number** and the **course ID**. When you buy (new or used copy of) your textbook you will need to **purchase a Mastering Physics access key number**. The easy way to do this is to simply buy it on line from the above MP website.

Your course ID is: **MPGEBREPHYS270SEC01XX**

There are several advantages to electronic homework submission:

- (1) You will know right away if your answer is right or wrong
- (2) If you give a wrong answer, you can go back and try again to see if you can get the correct solution. You will be allowed 5 attempts for each question, so don't waste them.
- (3) You are graded only on your final answers and get your score when you are done.
- (4) The site also has a tutorial capability that you may find helpful.

Note that the software may randomize the numbers each time you make a new attempt on a problem, so be careful and remember that other students working on exactly the same problems are likely to have different numbers. The best way to do physics problems is first to work out carefully a general analytical solution to the problem and then plug in the numbers at the end. This is especially true if the numbers are being randomized each time so everyone has different numbers.

Why You Need to do the Homework: One of the main ways you can understand Physics is by doing the homework. Do not wait until the night before it's due to start working on your homework. The homework can be expected to be difficult and it counts a lot towards your final grade in enabling you to succeed on your exams. A sure way to get an F in this course is to not do the homework or not give yourself enough time to work on it. Late homework will incur a penalty. For every day you are late you will incur 10% penalty.

It is your responsibility to check MasteringPhysics frequently to make sure you do not miss any due date.

4. Exams

There will be three mid-term exams and a 2 Hr. Final exam. You must take the Final exam in order to pass the course.

All exams are closed book and closed note exams. For each exam, you may have one "cheat sheet" that contains physical constants and formulas. You may also have a calculator.

NO Exam will be dropped.

5. Grading:

The final grade will be based on the components with the following weights:

Mid-term exams: 3 x 15 %	= 45 %
Comprehensive Final Exam	= 30 %
Homework	= 15 %
Participation, and Quizzes	= 10 %

At the end of the semester all the exam, quiz and homework grades will be added with the above weighting and a final letter grade will be assigned depending on the distribution of total scores. A histogram of total scores for the entire class will be plotted. Assuming that the distribution is reasonably bell-shaped, letter grades will be assigned so that students with scores in the top 20% will receive an A, the next lower 40% will receive a B, the next lower 25% will receive a C, and the remaining 15% will be split between D and F.

I will be guided by the University of Maryland grading policy, quoted below:

- A+, A, A- denotes excellent mastery of the subject and outstanding scholarship. (90-100)
- B+, B, B- denotes good mastery of the subject and good scholarship. (80-90)
- C+, C, C- denotes acceptable mastery of the subject and the usual achievement expected. (70-79)
- D+, D, D- denotes borderline understanding of the subject. It denotes marginal performance, and it does not represent satisfactory progress toward a degree. (60-70)
- F denotes failure to understand the subject and unsatisfactory performance. (< 60)

6. Excuses

Missing an exam is not allowed without a valid documented excuse as defined by the University (medical problem, religious holiday, or serious family crisis). In all cases, a makeup exam must be completed in a reasonable amount of time or you will receive a score of zero for the exam. The makeup test or assignment, and the due date, must be arranged by consulting with the Professor as soon as possible after it becomes apparent that an exam date will be missed. Turning in late homework is not encouraged as it will result in a reduction of 10% of the points for every day late. If you are going to miss an assignment because of a religious holiday, it is your responsibility to inform the instructor in advance so that suitable arrangements can be made.

7. Students with Disabilities:

Students with disabilities should meet with the instructor at the beginning of the semester so that appropriate arrangements can be made to accommodate the student's needs.

8. Academic Integrity:

All students will be expected to comply with the University of Maryland's academic integrity policies, including the [code of academic integrity](#) and the [honor pledge](#). Failure to comply will result in a failing grade and will be reported to the Honor Council.

9. University closure:

In the event of a University Closure the department will do its best to accommodate students by scheduling make-up sessions or revision of the lab schedule.

Phys 270 Schedule for SPRING 2019 (subject to change)

	Dates	Topics	Chapter
Week 1	01/28, 30, 02/01	Magnetic Field and Magnetic Force	27
Week 2	02/04, 06, 08	Sources of Magnetic Field	28
Week 3	02/11		
	02/13, 15	Electromagnetic Induction	29
Week 4	02/18, 20	Inductance	30
	02/22		
Week 5	02/25, 27		
Week 5	03/01	Exam 1	
Week 6	03/04, 06, 08	Alternating Current	31
Week 7	03/11, 13, 15	Electromagnetic Waves	32
Week 8	03/18 - 22	SPRING BREAK - NO CLASS	
Week 9	03/25, 27, 29	The Nature and propagation of light	33
Week 10	04/01, 03, 05	Geometrical Optics	34
Week 11	04/08, 10	Interference	35
Week 11	04/12	Exam 2	
Week 12	04/15, 17, 19	Diffraction	36
Week 13	04/22, 24, 26	Relativity	37
Week 14	04/29, 05/01	Photons: Light Waves behaving like Particles	38
Week 14	05/03	Exam 3	
Week 15	05/06, 08	Particles Behaving as Waves	39
	05/10	Quantum Mechanics	40
Week 16	05/13 (Last Class)		
Saturday, May 18, 2019 6:30 - 8:30 PM Final Exam			