

PHY2049 GENERAL PHYSICS II WITH CALCULUS

Summer 2018

Instructor:	Douglas H. Laurence	Time:	MW 4:30PM – 6:40PM
Email:	dlaurenc@broward.edu	Room:	TBA

Course Website: [PHY2049 Course Website](#)

Office/Office Hours: My office is **Room 7/135**. My (official) office hours are:

- M : 12P - 1:30P and 3:00P - 4:30P
- W : 12P - 1:30P and 3:00P - 4:30P
- T : 12P - 1:30P and 3:00P - 4:30P
- R : 12P - 1:30P and 3:00P - 4:30P

If I'm in my office, feel free to ask me questions, whether or not it's during the "official" office hours.

Required Materials: All you are **required** to buy is the **Textbook:** Physics for Engineers and Scientists, 3rd ed., Hans C. Ohanian (either Volume 2 and 3, or the full textbook). You also need a **scientific calculator**; graphing/programmable calculators **are not allowed** during exams.

While I **strongly** recommend buying Volume 3 (if you haven't already bought the entire textbook), as you will see below, this only covers the last section of the course. If you choose not to buy Volume 3, I can **try** to provide **brief** notes on the material we cover. **This isn't a guarantee. By not buying the textbook, understand that you're taking the risk I might not have time to write the notes. Understand, also, that these notes would be brief, and wouldn't be as inclusive as the textbook.**

Additional Materials:

There are plenty of great reviews online of physics and mathematics. For math, I think that [Paul's Online Math Notes](#) can't be beaten, so I would definitely start there. For physics, MIT's Physics I course from 1999, taught by Walter Lewin, is highly regarded. YouTube still has the old lecture videos, which can be found [here](#).

Objectives: During the semester, we will cover the following topics (with the corresponding textbook volume given in parentheses):

- Mathematics Review
- Electrostatics (Vol. 2)
- Electrodynamics/Circuits (Vol. 2)
- Magnetism (Vol. 2)
- Geometric Optics (Vol. 2)
- Introduction to Modern Physics (Vol. 3)

The last segment, Introduction to Modern Physics, depends on time. Ideally, we would be able to cover Relativity (Ch. 36); Quanta of Light (Ch. 37); Spectral Lines, Bohr Theory, and Quantum Mechanics (Ch. 38); Quantum Numbers and the Exclusion Principle (the first 2 sections of Ch. 39); and Nuclei (Ch. 40). However, as you can probably guess, this is a lot of material, so we will aim for the first 3 chapters of the Introduction to Modern Physics and cover any extra material, time allowing.

Prerequisites/Co-requisites: MAC2312, Calculus I, is a **prerequisite**, and PHY2049L, General Physics I with Calculus Lab, is a **co-requisite**.

Tentative Course Outline: This syllabus is **subject to change with prior notification** from the professor. The Course Website (see the top of the syllabus) has the **most recent course information**, so check it frequently!

Week of	Monday	Wednesday	Week of	Monday	Wednesday
May 14	Math Review/ Electric Force	Electric Field/ & Gauss' Law	July 2	Optics	July 4
May 21	Gauss' Law/ Electric Energy	Capacitors & Dielectrics	July 9	Review for Exam 2	Exam 2/ Relativity
May 28	Memorial Day	Currents/ DC Circuits	July 16	Relativity	Quanta of Light
June 4	DC Circuits	Review for Exam 1	July 23	Quanta of Light	Review for Exam 3
June 11	Exam 1/ Magnetic Force	Magnetic Force/ Magnetic Fields	July 30	Exam 3/ Quant. Mechanics	Quantum Mechanics
June 18	Magnetic Fields	Electromagnetic Induction	August 6	Review for & Final Exam	Final Exam
June 25	Mid-Semester Break	E&M Waves/ Optics			

* **Blue days are days off, red days are exam dates.**

Currently, the Final Exam is **scheduled for TBA**.

Exam Structure: For each exam, except the final exam (which is determined by the College), you will have the **first 1 hour, 15 minutes of class for the exam**, which will be taken in our regular classroom. There will then be a 5 minute break, and the **last 50 minutes of class will be dedicated to a new lecture**. Unfortunately, due to the shortness of the summer semester, and the length of each individual class, I have to pack in as much material per class as I can. The exams are going to be a combination of multiple choice questions, which will either be conceptual in nature or of the so-called "plug-and-chug" variety (we'll discuss these types of problems a lot in class), and free response problems, which will be multi-step, involved computations that take much longer to solve than the quick multiple choice problems.

Each exam will have **10 multiple choice problems** worth 2.5 points each, for a total of 25 points. Each multiple choice problem will have **four options**, (a) through (d). There are many ways you can eliminate options if you aren't sure about the answer, and we will cover some of them throughout the class. Additionally, there are **3 free response problems** worth 25 points each, for a total of 75 points. Thus each exam will be scored out of 100 points. **There will actually be FOUR free response problems per exam, of which you only have to answer THREE, so you get to choose one problem to "drop". You may NOT turn a solution in for the fourth problem for extra credit.** If you turn in an exam with free response problems 1, 3, 4 solved, I will grade those, but if you turn in an exam with all 4 solved, I will grade 1 through 3, **regardless of whether or not those were your four best answers.**

The exam content will break down in the following way:

- **Exam 1:** Chapters 22 – 28
- **Exam 2:** Chapters 29 – 31 and 33 – 34
- **Exam 3:** Chapters 36 – 37
- **Final Exam:** Chapters 23 – 31, 33 – 34, and 36 – 37

Grading Rubric: My grades are assigned on a **sliding scale**, meaning that your lowest exam hurts you the least and your best exam helps you the most, though the final exam is worth the same number of points no matter what. The scale is:

Homework	15 points
Lowest-graded Exam	10 points
Mid-graded Exam	20 points
Highest-graded Exam	25 points
Final Exam	30 points
Total	100 points

You can use the following formula to compute your grade in the class (the grading scale follows this section):

$$\text{Points Earned} = (\%HW * 15) + (\%LG * 10) + (\%MG * 20) + (\%HG * 25) + (\%FE * 30)$$

where *HW* is your homework grade, *LG* is your lowest-graded exam, *MG* is your mid-graded exam, *HG* is your highest-graded exam, and *FE* is your final exam; the % signs indicate to write your scores out in percentages (as decimals), instead of total number of points. As an exam, say you scored a 94% on the homework, a 75% on exam 1, a 92% on exam 2, an 85% on exam 3, and an 83% on the final exam; your final grade (as in the total number of points earned) is:

$$\text{Points Earned} = (0.94 * 15) + (0.75 * 10) + (0.85 * 20) + (0.92 * 25) + (0.83 * 30) = 86.5$$

Grading Scale: The following table tells you how many points are required to earn a particular letter grade. Notice how I display the points: I always round to **first decimal point**, which means that if you score a 64.94, that equals 64.9, which is a D; if you score a 64.96, that's a 65.0, which is a C.

A	85.0 – 100.0
B	75.0 – 84.9
C	65.0 – 74.9
D	55.0 – 64.9
F	< 54.9

Exam Dates: I gave the exam dates above, but here they are in a way that's quick to reference:

Exam 1	June 11, 2018
Exam 2	July 11, 2018
Exam 3	July 30, 2018
Final Exam	August 8, 2018

Course Policies:

- **Attendance:** Attendance isn't taken, but you should absolutely attend every lecture. Physics is a very difficult subject, and the lectures are going to help you learn it; not attending a lecture means forfeiting the main help you have in learning the subject.
- **Classroom Conduct:** As long as your behavior isn't disruptive or disrespectful to your classmates, I generally don't care how you spend your time during lecture. I'm fine with arriving late or leaving early (coming to a portion of the lecture is better than missing it entirely), as long as you don't disrupt class when you do so; you are free to bring your laptop to class or use your phone, but I would recommend only doing so in the pursuit of understanding the material we're covering. Essentially, you're an adult and I will allow you to make your own decisions, as long as they don't affect anyone else in class, but I strongly encourage you to participate in the class and take full advantage of the professor.
- **Religious Holidays:** If there is a scheduling conflict for a major religious holiday, it is **your responsibility to coordinate with me in advance** to get an extension or re-schedule an exam. A religious holiday **is not an acceptable excuse** to miss an assignment **without talking to me first**.
- **Excused Absences:** As defined by the Broward College Student Handbook, 2017-2018 ed., found at [this link](#), an excused absence is an "[absence] from academic activities because of observances of major religious holy days in his/her own faith, the student's serious illness, death in the immediate family*, or attendance to statutory governmental responsibilities**." The immediate family is defined as "mother, father, spouse/domestic partner, child, brother, sister, grandparents or grandchildren." A statutory governmental responsibility is defined as "such matters as jury duty, subpoena for court appearance, or unplanned military obligation." As discussed in the previous section, religious holidays need to be discussed prior to their occurrence in order to receive an excused absence. The same applies to **any foreseen absence**, such as a doctor's appoint, a *planned* military obligation, a *scheduled* court appearance for a civil matter (or a matter such as a parking ticket), etc. You are responsible for learning all material covered in your absence, even if it's excused, meaning that material cannot be removed from an upcoming exam if you have an excused absence; you still need to learn what you missed.
- **Academic Dishonesty:** Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. The Academic Dishonesty policies of the Student Handbook apply to this course; see above policy on Excused Absences to find the link to the current edition of the handbook.
- **Code of Conduct:** The College has a strict Student Code of Conduct to make the College a safe learning environment for everyone. The Student Code of Conduct of the Student Handbook apply to this course; see above policy on Excused Absences to find the link to the current edition of the handbook.