PHY2048 General Physics I with Calculus

Spring 2018

Instructor:	Douglas H. Laurence	**Time:**	MW 12:00PM – 1:50PM
Email:	**TBA**	**Room:**	7/277

Course Website: PHY2048 Course Website

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

- M : 11A - 12P
- T : 1130A - 1230P and 330P - 430P
- W : 11A - 12P and 4P - 5P
- R : 2P - 4P

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 1 or the full textbook). You also need a **scientific calculator**; graphing/programmable calculators **are not allowed** during exams.

Additional Materials:
Currently, I am in the process of **writing a PHY2048/PHY2049 textbook**. Unfortunately, it won't be available for this class to use as its primary book, but I will be posted new chapters to my website as the semester goes along, so it will be usable as a reference for this class. The most current version of the textbook can be found on my website. Additionally, there is a table of contents on the site that shows the status of the textbook, so you can simply go to the page and check if the book has been updated since you last downloaded a copy; if it has, download the PDF again, don't if it hasn't.

In addition, 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:

- Mathematics review
- Kinematics
- Newton's Laws
- Energy Conservation
- Momentum Conservation
- Rotational Motion and Gravity
- Applications: Simple harmonic motion, waves, and fluids
- Thermodynamics

Prerequisites/Co-requisites: MAC2311, Calculus I, is a **prerequisite**, and PHY2048L, General Physics I with Calculus Lab, is a **co-requisite**.

Tentative Course Outline: You need to **read Chapter 1** on your own. 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
January 8	Math Review	Math Review & 1d Motion	March 12	Dynamics of a Rigid Body	Review for Exam 2
January 15	**MLK Day**	1d Motion & 2d Motion	March 19	**Exam 2 (Ch 7, 8, 10 − 13)**	Gravitation & Oscillations
January 22	2d Motion	Newton's Laws	March 26	Oscillations & Waves	Waves & Sound
January 29	Applications of Newton's Laws	Review for Exam 1	April 2	Fluids	Review for Exam 3
February 5	**Exam 1 (Ch 2 − 6)**	Work & Energy	April 9	**Exam 3 (Ch 9, 15 − 18)**	Ideal Gas
February 12	Conservation of Energy	Conservation & Syst. Particles	April 16	Ideal Gas & Heat	Heat & Thermodynamics
February 19	Syst. Particles & Collisions	Collisions & Rotation	April 23	Thermodynamics	Review for Final Exam
February 26	Rotation of a Rigid Body	Dynamics of a Rigid Body	April 30	**No Class During Finals Week**	**Final Exam**
March 5	**Spring Break**	**Spring Break**			

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

Currently, the Final Exam is **scheduled from 12:00PM − 2:20PM**.

Exam Structure: For each exam, except the final exam (which is determined by the College), you will have the full class time of 1 hour and 50 minutes, and the exams will be taken in our regular classroom. 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 points each, for a total of 20 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 **4 free response problems** worth 20 points each, for a total of 80 points. Thus each exam will be scored out of 100 points. **There will actually be FIVE free response problems per exam, of which you only have to answer FOUR, so you get to choose one problem to "drop". You may NOT turn a solution in for the fifth problem for extra credit.** If you turn in an exam

with free response problems 1, 3, 4 and 5 solved, I will grade those, but if you turn in an exam with all 5 solved, I will grade 1 through 4, **regardless of whether or not those were your four best answers**.

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 .... February 5, 2018
Exam #2 .... March 19, 2018
Exam #3 .... April 9, 2018
Final Exam .... May 2, 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.