General Physics II, Phys-UA 12 Spring 2020

Lecture: Tuesday, Thursday, 9:30 – 10:45 A.M.
Location: Skirball Center for the Performing Arts, 566 LaGuardia Place
Instructor: Prof. Andre Adler
Office: Physics Department, 726 Broadway, Room 832

> If you need to speak with Prof. Adler but your schedule conflicts with his office hours, feel free to stop by his office anytime or send an email message requesting an appointment. Office hourswill be posted to the Calendar Tool in NYU Classes. You can also email to request an appointment.

Course Description

This course is an introduction to electricity, magnetism, light and optics. The course has lecture, laboratory, homework, and in-class participation components. Topics include electric forces and fields, circuits, magnetic forces and fields, electromagnetic induction, light waves, refraction, lensesand image formation. Topics utilized from General Physics I (Phys-UA 11) used include position, velocity, acceleration, force, Newton's laws of motion, gravitation, work, energy, torque and waves.The course uses high school algebra, geometry and trigonometry, vectors, and some calculus. A calculus-based textbook is used for the course. Calculus will be present in lecture and homework, but more sparingly on exams. Problem-solving in the course involves both quantitative and conceptual reasoning.

The algebra, vectors, geometry, and trig are absolutely essential. If some time has elapsed since your last math course, or you feel a lack of confidence in this area, you are strongly urged to studymath intensively before we get too deeply into the physics course.

Required Materials

Textbook: *Fundamentals of Physics*, 11th edition, Halliday, Resnick and Walker, John Wiley & Sons.
The NYU Bookstore sells two items (either will do, but no need to purchase both)

- WileyPLUS with the loose leaf text: 9781119459170
- WileyPLUS Standalone: 9781119306955

In-class work: *Learning Catalytics*; go to learningcatalytics.com to purchase access.Laboratory Experiment Descriptions can be found by going to http://physics.nyu.edu/~physlab/Lab_Main/ and clicking on General Physics II.

Laboratory Experiment Descriptions can be found by going to
https://physics.nyu.edu/~physlab/GenPhysII_PhysIII/genphys2.html

Exam Schedule, Assessment Weightings and Letter Grade

There will be three examinations during the semester and one cumulative final examination. All examinations are in multiple-choice format. Both quantitative and conceptual questions will appearon the examinations, as this reflects the content of the course. A formula sheet will be

provided with the exam. You will need to bring a calculator to all exams. *Exam answer sheets must be filled out using a black pen or a number 2 pencil.* Sharing calculators with other students during examinations is not allowed. You may not use a cell-phone, or any other communication device,during the exams.

Exams will be based on the homework, readings, and lectures. The best way to prepare for the exams is to review the WileyPlus assignments, Learning Catalytics class sessions, assigned readingsand textbook problem sets.

Assessment	**Percentage**	**# Dropped**
Reading assignments (WileyPlus)	8%	1 Lowest
Learning Catalytics	4%	6 Lowest
Homework assignments – (WileyPlus)	8%	1 Lowest
Lab	20%	1 Lowest
Exam 1: February 14, 2:00 – 3:50 pm	10%	No Exams Dropped
Exam 2: March 13, 2:00 – 3:50 pm	10%	No Exams Dropped
Exam 3: May 1, 2:00 – 3:50 pm	10%	No Exams Dropped
Final Exam (Cumulative)	30%	

No alternative examination dates (i.e. no make-up dates) will be offered.

Exam Replacement Policy The grade on the final exam will replace the lowest of the three scores earned on earlier exams, provided that your final exam score is higher (on a percentage basis). This policy only applies to exams taken, not missed exams.

Your total numerical score, calculated from the components listed above, correspond to the following letter grades:

If your total percent score is at least:	90	86	82	72	67	62	50	47	42	40	> 40
then you will receive a grade no lower than:	A	A-	B+	B	B-	C+	C	C-	D+	D	F

Note the following policies:

- There are no curves in this course. The scale is fixed.
- Lab grades will not be altered to fit a common average or standard deviation.
- Scores will be rounded at the end of the semester.

Laboratory Sessions

Laboratory sessions meet weekly in rooms 222 or 224 of Meyer Hall, located at 4 Washington Place. The list of experiments is on the last page. The laboratory grade will be based on an averageover all labs, but the lowest lab grade will be dropped before the average is calculated.

Lab experiment descriptions must be read before attending each experiment. It is important to bringa calculator and your laboratory experiment description to the laboratory sessions. Your laboratory instructor will provide more information regarding the policy for handing in lab reports.

Make Up Laboratory Week

The week of March 23 is provided to give students with an excused absence (illness supported by documentation from health provider or religious observance) from one of the first 5 experiments, to make it up. Hence, no students will be excused from any of the first 5 experiments performed for the course.

Rather, students who missed one of the first 5 experiments of the course, and have medical documentation to explain their absence or missed due to a religious observance, are required to make-up the experiment the week of March 23.

Students who miss any experiment without a doctor's note or any reason deemed unacceptable, will receive a zero and not be permitted to make up the lab, due to space constraints.

Space for making up a lab is limited: each of the first 5 experiments will have the necessary equipment set up on two laboratory tables. For this reason, we cannot open up make-up laboratory week to all students who missed one of these experiments.

If you did not miss one of the first 5 labs, then you do not have to attend lab during make-up laboratory week.

WileyPlus Assignments

Before attempting any assignments, it is strongly recommended that you do the "An Introduction to Physics Questions" in WileyPlus. This assignment tutors you in the type of questions and inputs you will have to master in order to answer homework questions. Topics discussed include:

1. Palette Controls
2. Using the Templates
3. Keyboard Commands
4. Alphabets
5. Symbolic Notation
6. Mathematical Symbol Notation Palette
7. Exponential/Scientific Notation
8. Free-body Diagrams

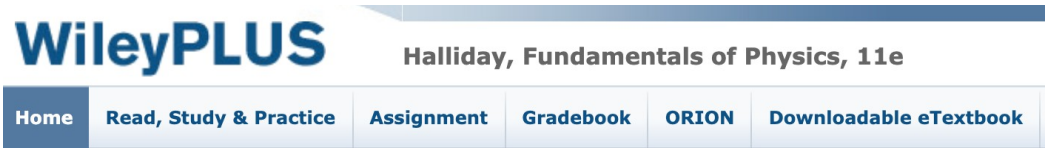
Each chapter has two assessments: a reading assignment and a homework assignment.

Reading assignments are assessed on the basis of your performance answering questions that are embedded in the text. As you read in section, text and examples presented, you will find questionsfor you to answer based on what you read. You get 3 attempts to answer each question in the reading. It is best to do the reading assignment for a given chapter, before the chapter is covered inlecture. You are responsible for material in the reading assignments, which may not be every section within a chapter.

Homework assignments assess your skill in doing extended, quantitative physics problems. Most problems have links to hints and sample problems to assist you. You can also consult the StudentsSolutions Manual, within WileyPlus, for further assistance and to check your work. You get 6 attempts to answer each homework question.

WileyPlus Resources

In our class WileyPlus course site, you will see this menu near the top of your screen:



1. Read, Study and Practice – going to this area of the WileyPlus site reveals access to the completeonline version of the textbook and a variety of resources you can use. These include:
   - Orion (you can also select Orion in the main menu, shown above)
   - Simulations
   - Video Sample Problems
   - Animated Illustrations
   - Math Help Videos
   - Video Mini Lectures
   - Additional Sample Problems
   - Video Illustrations
   - Students Solutions Manual
   - MCAT Assignments.

2. Orion Adaptive Practice – an assessment of your proficiency at mastering course material; there is an Orion set of questions for each chapter. Beyond the homework and reading questions, Orion questions are a good source of material you can access to practice for course examinations.

Policies

A. Learning Catalytics Policies

1. The lowest 6 Learning Catalytics scores are dropped.
2. Policy 1 is in lieu of requests to be excused due to illness, wi-fi issues, travel issues, or any other reason that prevents you from participating.
3. Questions are scored both on participation (75%), and on correctness (25%).
4. Questions are chosen under the assumption you have read the assigned sections before attending class.

B. WileyPlus Policies

1. Grading Policy - see on WileyPlus for details.

C. Laboratory Policies

1. To get a grade, a lab report must be submitted. It's not enough to just do the experiment.
2. A lab report cannot be submitted for an experiment if you were absent from the lab session;in other words, you cannot take someone else's data and submit a lab report for an experiment you never did.
3. Any lab missed without a doctor's note or prior arrangement with the instructor counts as a zero.

4. You may not attend a laboratory section you are not registered for.
5. If you miss more than two lab experiments or fail to hand in more than two reports, your grade for the course will be an F or an I (assuming you are passing the other components of the course and that you provide medical documentation to explain your absence). To make up the lab requirement, you will have to complete the entire set of labs, not just the ones youmissed. This can be done the next time the course is offered, space permitting.

D. Missed Midterm Exam Policy

1. If you are excused from one of the midterm exams, due to a documented medical or other reason, the other two exams and the final exam will count for more, and a letter grade assigned at the end of the semester. An incomplete will not be assigned. There are no make-up exams.
2. If you are ill and cannot appear, you must produce verifiable documentation from a physician, with physician's letterhead, that explaining that you were too ill to attend the examination. This note should be given to the professor **in person, not via email.**
3. Students who are absent from a test without documentation will receive a grade of zero on that test.
4. The exam replacement policy still applies for students who miss an exam and provide appropriate medical documentation.
5. Missing more than one of the midterm exams and have medical documentation then the contributions to your grade from the missed exams is added to the final exam, making it worth 50%. An incomplete will not be assigned.

E. Missed Final Exam Policy

1. If you miss the final exam due to illness and you provide acceptable documentation, your grade will be an incomplete (I).
2. You are then required to take the final examination the next time the course is given, on the date and at the time assigned for that semester.
3. If you miss an exam due to medical reasons, give your medical documentation to the professor in person. **Please do not send it to the professor via email. It will not get you excused from the exam.**

Optional Help

1. *Free physics review sessions by upper-level undergraduate physics majors* in the Physics Department, 726 Broadway. The sessions run Monday through Friday, at many different times during the day. Sessions begin the second week of class and a schedule will be posted to NYU Classes the first week of classes. The physics majors will be able to help you with the course concepts, readings and problems. This is a great place to go for help. You can go to as many sessions as you wish. Ideally, you should go on a weekly basis and prepare questions in advance.

2. Free peer tutoring, Study Slams, group reviews, workshops, and more!!
   University Learning Center
   www.nyu.edu/ulc
   ULC@Academic Resource Center, 18 Washington Place, Lower Level
   ULC@UHall, 110 East 14th Street, top of stairs by UHall Commons ***Achieve Excellence!***

Schedule of Class Topics

Date	Lecture Topic	Ch.	Weekly Laboratory
T Jan 28	Waves – II	17	No labs first week of class
R Jan 30	Waves – II	17	
T Feb 4	Coulomb's Law	21	1. Sonometer
R Feb 6	Coulomb's Law	21	
T Feb 11	Electric Fields	22	2. Electrostatics
R Feb 13	Electric Fields	22	
T Feb 18	Electric Potential	24	No labs the week of Feb. 17
R Feb 20	Electric Potential	24	
T Feb 25	Capacitance	25	3. E Field Mapping
R Feb 27	Capacitance	25	
T Mar 3	Current and Resistance	26	4. Oscilloscope and EKG Sensor
R Mar 5	Current and Resistance	26	
T Mar 10	Circuits	27	5. Voltage, Current, and Resistance I
R Mar 12	Circuits	27	
	Spring Break - No classes nor labs the week of Mar. 18		
T Mar 24	Magnetic Fields	28	Make-Up Lab Week
R Mar 26	Magnetic Fields	28	
T Mar 31	Magnetic Fields due to Currents	29	6. Voltage, Current, and Resistance II
R Apr 2	Magnetic Fields due to Currents	29	
T Apr 7	Induction and Inductance	30	7. Current Balance
R Apr 9	Induction and Inductance	30	
T Apr 14	Electromagnetic Oscillations and Alternating Current	31	8. Charge to mass ratio of Electron
R Apr 16	Electromagnetic Oscillations and Alternating Current	31	
T Apr 21	Electromagnetic Waves	33	9. Electromagnetic Induction
R Apr 23	Electromagnetic Waves	33	
T Apr 28	Images	34	10. Snell's Law
R Apr 30	Images	34	
T May 5	Interference	35	11. The Human Eye
R May 7	Interference	35	

WileyPlus Reading and Homework Assignments

All WileyPlus assignments have deadlines on a Sunday night at midnight.

Deadline (Sundays at midnight)	Reading	Homework
Jan 26	Chapter 17	
Feb 2	Chapter 21	Chapter 17
Feb 9	Chapter 23	Chapter 21
Feb 16	Chapter 24	Chapter 23
Feb 23	Chapter 25	Chapter 24
Mar 1	Chapter 26	Chapter 25
Mar 8	Chapter 27	Chapter 26
Mar 15		
Mar 22	Chapter 28	Chapter 27
Mar 29	Chapter 29	Chapter 28
Apr 5	Chapter 30	Chapter 29
Apr 12	Chapter 32	Chapter 30
Apr 19	Chapter 33	Chapter 32
Apr 26	Chapter 34	Chapter 33
May 3	Chapter 35	Chapter 34
May 10		Chapter 35