PHY 212: General Physics II – Electricity and Magnetism
Fall 2024 Course Syllabus

Overview

In Physics 212, you will learn about electricity, magnetism, and the unification of the two: **electromagnetism.** Radio communication was a direct consequence of improved scientific understanding of these subjects, and hence our present-day hyper-connected society owes much of its existence to the work of the pioneers who uncovered the laws of electromagnetism. **The objectives of this course are:** (1) To develop a basic understanding of the laws of electromagnetism; (2) to develop the ability to apply these new concepts, both qualitatively and quantitatively, to familiar and unfamiliar physical situations.

Course details

Instructors/ Professors	**Eric Coughlin** **Email**: ecoughli@syr.edu, **Office:** 263-4 Physics Bldg. **Office Hours:** Tuesdays, 11:00AM - 1:00 PM **Rafael Silva Coutinho** **Email:** rsilvaco@syr.edu, **Office:** 323 Physics Bldg. **Office Hours:** Tuesdays, 1:00 PM - 3:00 PM
TA's	**Mohammed Amal Mahmoud** **maabdelf@syr.edu** **Hon Kin Chu** **hchu05@syr.edu** **Gourang Gehlot** **ggehlot@syr.edu** **Julia Lauren Jones** **jjone112@syr.edu** **Claire O'Connor** **coconn20@syr.edu**
Concerns	For questions on homework problems, please contact the TA appropriate to your recitation section. For other matters, please contact Eric or Rafael.
Lecture times	Tue. & Thur., 9:30-10:50 AM, Stolkin Auditorium (Physics Bldg 1st floor)
Credits	3
Prerequisites	PHY 211 or PHY 215 (General Physics I) PHY 221 (General Physics I Laboratory) MAT 285 or MAT 295 (Calculus I)
Co-requisites	PHY 222 (General Physics II Laboratory) MAT 286 or MAT 296 (Calculus II)
Recitation	Your recitation section will meet for 55 minutes twice per week.
Enrollment issues	If you are having trouble adding/dropping the course, or switching sections, please speak with Kristine Weisblatt via email: phyacademics@syr.edu
Blackboard	Your grades will be posted on Blackboard: http://blackboard.syr.edu/ . Your recitation and ``two-week'' homework assignments (see below) will also be through Blackboard.

Physics clinic	A physics clinic is operated in room 112 of the Physics Bldg. You can drop by to get help with physics problems. The schedule is here: https://artsandsciences.syracuse.edu/physics/undergraduate-overview/clinics-for-undergraduates/
Lab	There is a lab for this course, PHY 222, but the lab and the course are *completely disconnected*. Lab questions must be directed to the lab instructor.

Textbook

There is one book for this class, the **Openstax free textbook** - "University Physics Volume 2": https://openstax.org/details/books/university-physics-volume-2. You can download a pdf (but make sure it is the most up-to-date version!) or use your internet browser.

Homework and recitation

Homework will be completed online. We will use Blackboard: http://blackboard.syr.edu/. There are two different homework ``types,'' which are described below.

Recitation problem sets and recitation attendance

For each meeting of your recitation section there will be a corresponding Kudu assignment that includes problems for you to solve. You should look at these problems before recitation and try to solve as many of them as you can, **but you do not need to submit any of your answers before recitation.** At recitation you will have a chance to review your understanding of the problems with other students in small groups. In a given week, you will have two sets of problems, one for the Wednesday and one for the Friday recitation. After working on these problems individually and together, you should **submit your final answers online by the end of the weekend (due by Sunday at 11:59pm).** You should work these problems out on paper or in a separate app on your laptop or tablet, and wait to submit your answers until you are satisfied with your understanding.

Attending recitation and learning with your peers is essential for keeping up in this course; to reward this, **you will earn credit for attending recitation** and for working with your classmates in your small groups. Finally, you are given credit for your score when you submit the problems through Blackboard.

Two-week problem sets

You will be assigned additional homework problems on Blackboard in the form of ``two-week'' problem sets, which are designed to give you more practice with the course material and to prepare for the quizzams (see below). Your recitation the day before each quizzam will be used to review the material leading up to that quizzam and to work on these problems with your classmates. The problems will be **officially due through Blackboard the day before each quizzam at 7pm**; in this way you (as the student) are able to work with your peers on the problems prior to submitting your answers, while simultaneously enabling you to see the correct answers and verify your understanding of the material. Note that the problems will be available before you have learned all the necessary material, so you will not be able to do them all immediately. We will cover the material in lecture before the problems are due.

Quizzams

There will be 5 assessments throughout the semester that are a hybrid between a short quiz and a more traditional, longer exam, i.e., a ``quizzam.'' **These will be held in Stolkin during scheduled class times.** If you cannot make it to a scheduled quizzam, please let Prof. Coughlin or Prof. Silva Coutinho know ASAP.

Because this is a large-enrollment course (typically > 200 students), the quizzam format will be multiple choice; this will enable us to return your scores to you in a timely manner. However, we would like to give you partial credit, because in physics the problem solving strategy is at least as important as the answer. Therefore, below each question we will provide you space to show your work, and even if you select the wrong answer you may receive partial credit.

You may bring a single, one-sided sheet of notes/equations to use for each quizzam. ***You cannot use any external assistance***. This includes online "answer mills," such as Chegg, Slader, etc. Using services like these is a serious Level 2 violation of S.U.'s academic integrity policy (see below), and will result in a failing grade for the semester, probation, or potentially more serious repercussions for a repeat offense. Uploading of any course materials (homework or exam questions) to services like these is an egregious Level 3 violation of S.U.'s academic integrity policy, and is additionally a violation of United States copyright laws. Additional information about academic integrity can be found later in this document.

Your lowest quizzam score will be dropped! This means that, if by the end of the semester you are happy with your grade calculated from your first four quizzams (or you ace quizzams 1-4), you do not have to take quizzam 5.

There is no final exam. Your four (highest-scoring of five) quizzam grades are the only ``test'' scores that you will have in this course.

Assignment/Review Sheets

To help you keep up to speed with the material covered in class and various due dates, we will compose weekly ``Assignment Sheets'' that contain the material we are covering in class in the coming week, the due dates for assignments, and the date for the next quizzam. These sheets will also contain ``study questions,'' which are meant to serve as a reminder of important topics covered in class that you may want to go over for your quizzams. These will be posted to Blackboard on the first day of the appropriate week.

Calendar

Under ***Topic***, the number in parenthesis is the chapter in the text. The exact timing of lecture topics may change slightly during the semester.

Week	***Date***	***Topic + Chapter reading***	***Notes***
1	8/27 8/29	Electric charges & forces (5)	**Welcome!**
2	9/3 9/5	Electric fields (5)	
3	9/10 9/12	Electric fields (5)	**Quizzam 1:** Thursday 9/12
4	9/17 9/19	Gauss' law (6)	
5	9/24 9/26	Gauss' law & Electric potential (6,7)	
6	10/1 10/3	Electric potential (7)	**Quizzam 2:** Thursday 10/3
7	10/8 10/10	Capacitance (8)	
8	10/15 10/17	Capacitance, Current & resistance (8,9)	**No class:** Tuesday 10/15
9	10/22 10/24	Current & resistance (9)	**Quizzam 3:** Thursday 10/24
10	10/29 10/31	DC Circuits (10)	
11	11/5 11/7	Circuits, Magnetic forces & fields (10,11)	
12	11/12 11/14	Magnetic forces & fields (11)	**Quizzam 4:** Thursday 11/14
13	11/19 11/21	Sources of magnetic fields (12)	
14	11/28 11/30	THANKSGIVING BREAK	**No class:** Tuesday 11/26, Thursday 11/28
15	12/3 12/5	Electromagnetic induction (13)	
16	12/10	**Quizzam 5**	**Quizzam 5:** Tuesday 12/10

Grading

The distribution of points used in determining your final grade is:

- Quizzams 50%
- "Two-week" homeworks 20%
- Recitation homeworks 20%
- Recitation attendance and participation 10%

Your grade in this course is not curved. Thus, it is possible for every student in the class to get an ``A." Your course grade will be based on the following scale:

		A	90-100	A-	85-89
B+	80-84	B	75-79	B-	70-74
C+	65-69	C	60-64	C-	55-59
D	40-54				
F	0-39				

Calculating Your Grade

The ``raw'' grade that you will see on Blackboard will be out of points. The way to calculate your weighted grade is to sum all your points in a given category, divide by the total number of points you could have gotten in that category, and multiply that number by the weight reported above. Do this for all four categories (quizzams, two-week homeworks, recitation homeworks, and recitation attendance) and add them up; the resulting number will be your weighted grade in the class. For example, if you received 24/25, 20/25, 20/25, 17/25, 25/25 on quizzams 1 – 5, your weighted and final quizzam grade would be – after accounting for the fact that your lowest quizzam score is dropped – (24+20+20+25)/(25+25+25+25)*0.5 = 44.5%. Repeating this step for your other categories and add them up to determine your weighted grade.

Laboratory

PHY 222 is the laboratory component of PHY 212, but it is taught independently of PHY 212. **We cannot help with logistical issues regarding the laboratory course.** Please consult the instructor for the lab or your lab TA.

Course Fee Information

To support the laboratory and related class meet experiments in the co-requisite course, PHY 222, you have been charged a course fee of $50. This fee helps pay for (i) laboratory manuals and other handouts, (ii) supplies, apparatus, and maintenance for laboratory equipment, (iii) supplies and small pieces of apparatus for class meets, and (iv) undergraduate students (coaches) assisting you in the labs/recitations.

Public Health

What to do if you're not feeling well: One of the most important things you can do is to **stay home if you are sick.**

What to do if you're seriously sick: If you have an illness or injury that interferes with your ability to do work in our class, *talk to us!* The Center for Disability Resources also helps students with short-term injuries and illnesses – concussions, broken bones, etc. If you are sick or hurt, we will work with you and with CDR to do whatever we can to accommodate your condition.

If you are sick and miss things, we will be flexible with deadlines to allow you to catch up. If you miss a large amount of class (two weeks or more), you may be eligible to take an "incomplete grade" in the course. If you think you might need to use this option, it is important to talk to us as early as possible so we can discuss arrangements. In general, only students who have completed a meaningful amount of classwork with a passing grade are eligible to take an incomplete.

Academic Integrity and Artificial Intelligence (AI)

As a pre-eminent and inclusive student-focused research institution, Syracuse University considers academic integrity at the forefront of learning, serving as a core value and guiding pillar of education. Syracuse University's Academic Integrity Policy provides students with the necessary guidelines to complete academic work with integrity throughout their studies. Students are required to uphold both course-specific and university-wide academic integrity expectations such as crediting your sources, doing your own work, communicating honestly, and supporting academic integrity. The full Syracuse University Academic Integrity Policy can be found by visiting class.syr/edu, selecting, "Academic Integrity," and "Expectations and Policy."

Upholding Academic Integrity includes the protection of faculty's intellectual property. Students should not upload, distribute, or share instructors' course materials, including presentations, assignments, exams, or other evaluative materials without permission. Using websites that charge fees or require uploading of course material (e.g., Chegg, Course Hero) to obtain exam solutions or assignments completed by others, which are then presented as your own violates academic integrity expectations in this course and may be classified as a Level 3 violation. All academic integrity expectations that apply to in-person assignments, quizzes, and exams also apply online.

Students found in violation of the policy are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered. Students may not drop or withdraw from courses in which they face a suspected violation. Any established violation in this course may result in course failure regardless of violation level.

All generative-AI tools are prohibited in this course because their use inhibits achievement of the course learning objectives. This policy applies to all stages of project and writing processes including researching, brainstorming, outlining, organizing, and polishing. Do not use Generative-AI tools to create any content (i.e., images and video, audio, text, code, etc.). If you have any questions about a feature and whether it is considered Generative-AI, ask your instructor.

Disability-related accommodations

If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), http://disabilityservices.syr.edu, located in Room 309 of 804 University Avenue, or call (315) 443-4498, TDD: (315) 443-1371 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented "Disabilities Accommodation Authorization Letters", as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

Religious observances policy

SU religious observances notification and policy, found at http://hendricks.syr.edu/spiritual-life/index.html, recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any exam, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes for regular session classes and by the submission deadline for flexibly formatted classes.

For fall and spring semesters, an online notification process is available for students in MySlice / StudentServices / Enrollment / MyReligiousObservances / Add a Notification. Instructors may access a list of their students who have submitted a notification in My Slice Faculty Center.

Equal opportunity, inclusion and resolution services

The Code of Ethical Conduct is a statement of principles guiding the activities of all faculty, staff, and students. It provides, in part, that we: Respect the rights and dignity of all persons and recognize that discrimination or harassment in any form undermines the fundamental principles of the University; and Support a respectful environment through our own actions, encourage respectful behavior in others, and speak out against hatred and bias. Additional information can be found at www.syr.edu/hcd/equal-opportunity.html. If you have any concerns about these matters, write to the Office of Equal Opportunity, Inclusion and Resolution Services at titleix@syr.edu.