

COURSE SYLLABUS

PHY 102 – Major Concepts of Physics II

Mondays and Wednesdays, 2:15 – 3:35 pm. Stolkin Auditorium, Physics Bldg.

Instructor: Professor Alison Patteson
Office: LSC 356
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Office Hours: TBD

Course Website: <https://blackboard.syracuse.edu>
Course Administrator: Kristine Weisblat, Physics Building 201, phyacademics@syr.edu

Course TAs:
TBD

Course Description

PHY 102 is a continuation of PHY 101. The instructors of this course assume that most of the students have already had an exposure to introductory and conceptual physics via PHY 101 (or equivalent) in a prior semester. In PHY 102 students will learn about the following topics of physics (textbook chapters are from “College Physics: Explore and Apply” by Etkina et al):

- a. Electric Charge, Force, and Energy (Chapter 17)
- b. The Electric Field (Chapter 18)
- c. DC Circuits (Chapter 19)
- d. Magnetism (Chapter 20)
- e. Electromagnetic Induction (Chapter 21)
- f. Reflection and Refraction (Chapter 22)
- g. Mirrors and Lenses (Chapter 23)
- h. Wave Optics (Chapter 24)
- i. Electromagnetic Waves (Chapter 25)
- j. Quantum Optics (Chapter 27)
- k. Atomic Physics (Chapter 28)
- l. Nuclear Physics (Chapter 29)

Please be aware that many of the textbook chapters listed above will not be covered in their entirety. Relevant reading material that is fair game for homework and exam content will be clearly indicated on the first page of all class meet presentations.

Learning Objectives

After taking this course, the students will be able to:

- A. Understand that a wide variety of phenomena can be explained by postulating just a few principles
- B. Understand that only a few laws of nature can have a broad range of applications
- C. Gain the skills to solve quantitative problems

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D. Acquire many of the skills necessary for critical thinking, accompanied by a deeper understanding of the spirit of scientific reasoning.

Prerequisite / Co-requisite

PREREQ: PHY101 or PHY211 or AP PHYSICS B EXAM SCORE MIN 3 or AP PHYSICS C (MECH) EXAM SCORE MIN 3

Credits: 4 Credits

Required Textbook

The required textbook is *College Physics: Explore and Apply, Second Edition* by Etkina, Planinsic, and Van Heuvelen, with a person on a bicycle on the cover. Most homework will be from the end-of-chapter questions, so having access to a copy (hardcopy or e-book) is recommended. Class sessions will actively explore the book's content. We've worked with Professor Etkina, a leader in physics education, to prepare for using this textbook in PHY101 and PHY102.

Class Meets

Mondays and Wednesdays, 2:15 – 3:35 pm. Class meets will be held in Stolkin Auditorium, Physics Bldg. It is important that you attend and actively participate in these class meets. **Ask questions if you have them. Don't be shy to raise your hand!** In these meetings we will introduce new ideas, concepts, formalisms, work through typical homework/conceptual examples, and perform many experiments. All of these items are fair game to be asked about on exam questions.

Class Meet Etiquette: Stolkin can be a terrible learning environment for ~200 students if there is rampant talking and other noise. Please show up on time and stay for the duration of the class meet. If you must enter/exit early, please try not to let the auditorium doors slam, which they are prone to do. As a courtesy to the instructors and your classmates, **please refrain from chatting with your neighbors during class.** If you must use an electronic device during the class meet, do so with all sound disabled, and in a manner that doesn't distract those around you. Please be respectful to your TAs. Thank you in advance for your cooperation.

Everyone in this class is an equally valued member of both the university and our community. We expect all students to treat their classmates and instructors (including professors, TAs, and coaches) as respected partners in our shared goal: to understand the natural world—both living and nonliving—through the perspective of physics and use that knowledge to better society. Discrimination or mistreatment of anyone based on their gender or gender expression, sexual orientation, religion, national origin, race or ethnicity, or any disability will not be tolerated. If you experience or witness such behavior, please report it to us, and we will take prompt action. If you're uncomfortable speaking directly to an instructor, you can submit an anonymous report through the Physics Department feedback form:
https://syracuseuniversity.qualtrics.com/jfe/form/SV_9pORpTKnq6pLeyF

Participation: 10% of your course grade is based on Class Meet participation. This grade is based on your completion of questions asked during the Class Meet time on non-exam days

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and your lab attendance. Please bring a wifi-enabled device (e.g. phone) to each Class Meet. If you forget to bring an electronic device during the Class Meet on a given day, you can alert the Instructor at the end of the Class Meet so they can allow you to enter your answers later that day. **To accommodate absences (of any variety), you are allowed 4 absences without any impact to your participation score.**

Homework

There will be 12 homework assignments during the course (including the HW#0 which is a review of PHY101). HW will be posted on the course Blackboard website as assignments so you will be able to upload your solutions there. Your homework is to be handwritten (or typed if you have good reason to do so), then scan it or take a photo and upload to Blackboard. It is recommended to upload the homework as a single file (you can convert photos to a single pdf file). **Work must be clearly shown, in detail, to get full credit. Simply writing an answer (e.g. 9.8 m/s^2) without showing any work will not get you many points, even if it's the correct answer.** Attending class meets will help you complete the homework since we will be taking you through practice problems in the class meet. **Homework is due on Mondays at 9 pm.** Your HW will be graded by you're the TA assigned to your lab session. WRITE YOUR NAME on your homework and write legibly enough so the TA can grade your work or else risk losing points if the work is indecipherable.

In general, **late homework will not be accepted** since I will post solutions. You will receive a grade of Zero for such assignments. Contact the Instructor, in advance, if you think you may be encountering such a circumstance and have a valid/documented reason for wanting to turn in an assignment late. The bar for such requests is high, and excuses such as "I have exams/labs/etc.. in other courses this week", "Dog ate my homework", "I didn't know the homework was due..." won't cut it.

Please do not wait until the last minute to start the homework. See the instructors, your TA, discuss it with your colleagues or visit the Physics Clinic well before the homework is due if you are having problems. **Your lowest homework score will be dropped** (please use this wisely, eg. for instances when you are sick and cannot do homework that week).

Labs.

Labs will be held in Room 110, Physics Bldg. Each of you must be registered for a lab section that meets once a week and attend that section each week. There will be 10 labs, so most weeks will have a lab session in addition to the two class meets.

The first lab will start on Wednesday, after the last Class Meet and the last lab will take place on Monday before the first Lab Meet of the week. **You are expected to stay for the entire lab session. Explore, play, talk to each other and to TAs!**

The labs will have two parts. **The first part of lab session** will be last about 1.5 hr, where you have the opportunity to conduct observation or testing experiments. Labs include a group of 3 students – **you should rotate** between a student who is taking notes, student who is doing experiment and a student who is doing predictions/calculations. This will help eliminate gender and race bias in the roles you think you should assume in the lab. **Lab writeups are posted as assignments at Blackboard, so you should fill out lab writeups and upload them to Blackboard at the end of the lab period.** Like homework,

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late labs will generally not be accepted, and your lowest lab grade will be dropped. Please, use this benefit for potential absences (sickness, family emergencies, snow days...). To assess how well you are learning by doing, self-assessment rubrics will be listed explicitly in the lab assignment. These rubrics will be the basis upon which your lab write-ups are assessed by your TA.

The next section will be a **group work session (20 min)** where you will have an opportunity to solve a new set of sample problems together with your peers. You can also use this time to discuss any concepts that are unclear with your coaches and TA s. Group work will also be posted as an assignment, so you can upload your solutions to Blackboard. **Please upload group work by the end of your lab session.**

*Due to the limited number of seats in the room 110 and enrollment being at/near capacity in many sections, you are expected to show up to your designated section each week and not some other random section. Consult with the course Instructor/TA in advance if you absolutely have to attend another section in a given week. This will be allowed TWICE during the semester. Here is the list of lab sections and important information:

	Day/Time	Students	TA	Coaches
1	M005-LAB We 3:45PM-5:45PM			
2	M004-Lab We 6:45PM-8:45PM			
3	M006-Lab Th 11:00AM-1:00PM			
4	M007-Lab Th 5:00 PM-7:00PM			
5	M008-Lab Fr 8:25AM-10:25AM			
6	M002-Lab Fr 10:35 AM-12:25PM			
7	M003-Lab Fr 12:45PM-2:45PM			
8	M009-Lab Mo 10:35AM-12:35PM			

Exams.

Equations (will be on Blackboard) & you can have 2 pages “cheat sheet” pages for exams.

In-class exams. The scheduled dates for these exams are: Exam 1 is on **Feb 25**, Exam 2 is on **April 22**. These dates will not change unless there is a weather-related cancellation, in which case the exam will happen during the next available course meeting. All topics covered in this course, including class meet material, labs, and homework is subject to be covered on the

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in-class exams. Make-up exams will be offered during the final period (see below for more information). The make-up exams will necessarily have different problems of a similar difficulty level to the primary exams.

As for exam protocol, you will be asked to sit one seat apart and you may be seated randomly. I.D.'s may be checked, so please bring your SU I.D. card. You are allowed to use a calculator and two sheets (8.5"x11.0" in size) of your own notes during each in-class exam. During exams you are not allowed to communicate with anyone in the classroom except for the course instructors and exam proctors. Cell phones and laptops must remain silent and stored away at all times during exams.

All questions concerning the grading/regrading of exams should be brought to the attention of your TA immediately upon return of a graded exam, which will happen during your weekly laboratory meeting. Once you have taken your exam home, regrade requests will no longer be considered, and you will need to discuss any exceptions with Prof. Patteson.

Ingredients for Course Success

Set aside time to study. Please set aside anywhere from 4-6 hours a week outside of class meets and labs for studying. Most class meets will build on previous material, so it is important not to fall behind.

Attend the class meets. As stated previously, we need you at class meets!

Not only attend, but actively participate in class meets and lab. Ask questions!

Do the homework, group work and the labs. Class meets will help set the stage, but only by doing the experiments yourself, reasoning about your findings, testing your own ideas, answering questions, and doing the problems effectively does deep understanding arrive! Use recitation part of the lab to discuss materials. Get help early and often.

Course Fee Information

To support the laboratory and related class meet experiments in the co-requisite course, PHY 102, you have been charged a course fee. This fee helps pay for (i) laboratory manuals and other handouts, (ii) supplies, small pieces of apparatus, and maintenance for laboratory equipment, (iii) supplies and small pieces of apparatus for class meets, and (iv) undergraduate students assisting you in the labs.

Grading.

Activity	Percentage
In-Class Exams 1 and 2	50% (25% each for Exams #1 and #2)
Final Exam	optional
Homework	20%
Labs	25%
Lab group work	5% extra credit
Class meet participation	5%

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Your final course grade will be determined from your total score at the end of the semester and the progress that you made throughout the semester. The grade limits will not be stricter than* the following:

- A = **93** – 100+%
- A- = **88** – 92%
- B+ = **83** – 87%
- B = **78** – 82%
- B - = **73** – 77%
- C+ = **68** – 72%
- C = **63** – 67%
- C- = **55** – 62%
- D = 47 - 54 %

You will be able to access your grades throughout the semester on Blackboard.

Physics Clinic

The SU Physics clinic, located at Physics Building 112, is a place to ask your pressing physics questions to graduate students in the Physics Department. The Physics Clinic schedule is located at: http://physics.syr.edu/undergraduate/physics_clinic.html. Each PHY102 TA will be at the Physics Clinic two hours a week. You can visit your TA there at that time, as well as visiting with other TAs teaching different courses but who can definitely help you (note the difference between “help you” and “give you the answers”, which is not the role of the Clinic) with PHY 102 at all operating hours. It is a great resource. Please use it.

Email Policy.

Please start you email to me with the subject header “PHY102:” followed by a relevant phase related to the question. If you do not include “PHY102:” in you title, I may miss your email.

Public Health

If you are not feeling well– particularly if your symptoms involve nausea, cough, fever, or others common in COVID-19, one of the most important things you can do is to stay home. We often have a culture of trying to push through when we are not feeling well, saying things like “Yeah, I am sick, but I will be okay – I can still go to class”. While this sort of perseverance in general is a good thing, coming to class when you are sick puts other people’s health at risk. So, if you have any symptoms at all, stay home, and inform us as to why you are staying at home.

University Attendance Policy

Attendance in classes is expected in all courses at Syracuse University. It is a federal requirement that faculty promptly notify the university of students who do not attend or cease to attend any class. Faculty will use Early-Semester Progress Reports and Mid-Semester Progress Reports in Orange SUccess to alert the Registrar and Financial Aid

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Office on non-attendance. For more information visit:

Faculty: Information for Faculty: [Non-attendance or Stopped Attending](#)

Students: Information for Students: [Non-attendance or Stopped Attending](#)