SUNY Geneseo, Department of Physics and Astronomy

PHYS 115-02: General Physics II

Syllabus, Spring 2022



Prof. James McLean Office: ISC 228G (old Greene) Office Phone: 245-5897

Website: http://www.geneseo.edu/~mclean/ E-mail: mclean@geneseo.edu Course Websites: http://www.geneseo.edu/~mclean/General2/ and in Canvas

Learning Outcomes

Students who complete this course will be able to:

- 1. (Nat. Sci. Gen. Ed.) Demonstrate knowledge of the following aspects of the scientific method: scientific observation, hypothesis development, data gathering and analysis, evidence evaluation.
- 2. (*Nat. Sci. Gen. Ed.*) Demonstrate understanding of and ability to apply scientific data, method, and models germane to [physics], ...
- 3. (This course) ... specifically, models and concepts applicable to waves, electrical and magnetic interactions, basic electrical circuits, and optics.
- 4. (*This course*) Show mastery of a range of problem-solving techniques applicable to the subjects.

Times and Places

Lectures:	Newton 204, Tue and Thu, 10:00–11:15AM		
Final:	Newton 204, Tue May 17, 12:00–2:30PM		
Labs:	separate companion course PHYS116, required for Gen. Ed. credit		
Office hours:	Mon 3:00–4:30PM, Wed 1:00–3:00PM, Thu 2:00–3:30PM		
I am also available at other times; see the schedule on my web site. Just			

stop by my office, or if you want to ensure that I'll be there, contact me by phone or email.

Required Materials

- Textbook: Cutnell & Johnson Physics, by Young & Stadler. Course information will be relative to 11th edition, but any edition since 5th is fine.
- Calculator: A calculator that handles logarithms ("LOG" key). This need not be very expensive. You don't need a graphing calculator for this course. Calculator apps on smartphones will not be allowed during testing.

Required Coursework (with fraction of final course grade)

- 10% Quizzes: Each class immediately after homework is due. Open notebook; closed printed or electronic materials. Lowest quiz grade is dropped.
- Exams: 3 midterm exams, each 15% of the final grade, during class periods. 45%
- Final Exam: includes new material, like a 4th midterm, and a review of earlier topics. 22%
- Homework: Due at 8:30AM Thursdays, except exam weeks. 23%
- +3%"Frequent Flyer" bonus points, earned by working on homework throughout the week, rather than just before it is due. Details available in Canvas.
- Exam scores may be scaled up during grading of each exam. There will be no overall "curve" for the course grades. See my web site for details on grading policy, including why extra credit requires extreme justification.

Course Structure

Before each class period, readings and short (20–30 minutes) lecture videos will be posted via Canvas. You are expected to prepare by completing the reading and watching the videos prior to class. Note that these are *preparation* for class; they do not substitute for class attendance.

In-person class periods will be used for demonstrations, answering student questions, quick-response polling to check understanding, example problems (solved by the instructor), and practice problems (solved collaboratively).

Homework is via the web-based CAPA system (see below), due every Thursday, 8:30AM, of non-exam weeks. Generally, homework sets will be posted by the Sunday 11 days before the due date. The following two classes cover that material; at least one question from the homework will be addressed specifically in each class. The set will open for answer entry Friday 8:30AM. Questions about homework problems are welcome

Sunday HW posted Tuesday material covered Thursday material covered HW opens Friday Tuesday questions HW due; quiz Thursday

during any class meeting, including the immediately preceding Tuesday.

- Each homework due date, class will start with a short quiz based on that homework. During quizzes, you may refer to any hand-written resource (such as your own work on that homework set), but not printed or electronic materials.
- Bonus "Frequent Flyer" rewards can be earned by working on homework early in the week, as revealed by entering answers in CAPA. Even incorrect answers can earn Frequent Flyer miles. The further in advance of the due date, the more Frequent Flyer miles are earned. Details available in Canvas.
- Three midterm exams will occur during a class period time. Exams are also through the CAPA system, and closely resemble completing a homework set in limited time.
 - A laptop is required. Adequate battery life is recommended, as power sockets are limited.
 - No resources are allowed during exams. The exam must be set to full-screen, and communication apps disabled. No other software may be open on your computer. Violation of this rule will result in an immediate zero score for that exam and a report to the Dean of Students.
 - Exams cover material through the homework set due the previous week.
 - The instructor will be in the room, available to answer clarifying questions.
 - Written work for one or two questions may be submitted at the end of an exam, to be considered for partial credit.
- The final exam will closely resemble the midterm exams, except that it will include questions both on new material (like a 4th midterm) and on review material from the entire course.
- The course schedule and homework sets & problems will be very similar to the other section of PHYS 115. You are encouraged to study and collaborate with those students.

Web Based Evaluation

- Homework and Exams will be administered through CAPA, the "Computer Assisted Personalized Approach" system. This is at no cost! Most answers will be entered via a web browser. Instructions for use are provided separately.
 - Access directly at http://capa.geneseo.edu/; linked from Canvas and elsewhere. Students registered for the course are in the system; contact the instructor if there is any problem.
 - If there is a system-wide problem, due dates will be extended appropriately. Individual computer difficulty will not be accepted as an excuse for non-completion of assignments.

In-class polling will be used through the Top Hat system. This is free for Geneseo students!

- Access with a smartphone app, or via the web. You should either already be "enrolled" in your Top Hat account (if you have used the system before), or you should receive an email with instructions on how to join.
- Top Hat participation will *not* form a part of the course grading.

Procedures

- **Communication:** Canvas Announcements will be used for important messages; you can configure Canvas to send you emails when these are posted. All messages will also be repeated in class. Email to the instructor is fine, but may not receive a response for a day, sometimes two. For urgent communications, call my office phone; leave a voicemail if there is no answer.
- **Missing class:** Attendance is not tracked explicitly. If you miss a lecture, it is *your* responsibility to take action to keep up with the course. Obtaining good notes from a classmate should be your first goal. Pre-class videos and PowerPoint slides shown in class will be available via Canvas, but these are not a substitute for the practice obtained during class.
- **Exam Conflicts:** For college-sanctioned conflicts with an exam, contact me **well before** the exam. If you miss a test due to an emergency, contact me **as soon as possible** and **with**
- documentation. Absences that don't fall into the above categories may result in a zero score!Written work: If you need to return materials to me outside of class, the best option is to bring it to my office. If I'm not in, place in the tray on the door or slide it under my door for greater privacy. Work that reaches me (in my hands) after the due date may still receive partial credit (the earlier the better).

Copyright

Materials provided for this course are intended for the sole use of registered students. Sharing of course materials outside that audience without express permission of the instructor, including uploading to websites open to the general public (with or without a subscription or membership) is strictly prohibited.

Help Available

- Remember that one important function of homework is for <u>you</u> to monitor <u>your</u> progress. If you are having problems with the homework, it should serve as a warning to take immediate remedial action. If you find yourself getting into difficulties, *do something about it—fast!* The arithmetic of averages shows that you can't afford to delay if you start to get into grade trouble.
- When seeking help from any source (including the instructor), it is extremely important to provide whatever work you have already done on the question. There are many different ways to have difficulty with a physics question. Seeing your work so far is *critical* for your help source to determine the difficulties that you, personally, are encountering. Note that online question solutions *completely fail* to provide you with this level of insight.

There are many resources available to you if you need help.

- *Instructor office hours* are regularly scheduled, and I am happy to meet with you at other times as well.
- If you have difficulties accessing any online materials (including needs for *alternative formats*), please let me know as soon as possible.
- *CIT* provides a range of technology support resources. In Canvas, the Help menu on the left side of the screen will direct you to several CIT supports.
- *Supplemental Instruction (SI): Peer Assisted Study Sessions* will be provided by Ian Faerman. These voluntary, anonymous (to the instructor) sessions can help with both course content and general study skills. Session timing will be coordinated during the first week of the semester.
- The *Physics Learning Center* is staffed by physics majors and available at no charge. It may be in a remote mode. Check the schedule at <u>https://www.geneseo.edu/~pogo/PLC/Tutors.htm</u>.
- If you need help with math, you might find the *Math Learning Center* helpful. The web page is <u>https://www.geneseo.edu/math/mlc</u>.
- A *list of potential tutors* is often assembled by the Physics Department secretary, to assist you in contacting them for individual help. The fee is determined by the individual tutor.

- <u>KOALA (Knights' Online Academic Learning Assistance)</u>, run by the Office of the Dean for Academic Planning and Advising, is particularly for help with online learning strategies. They will assist you with identifying resources and strategies for success.
- A broad range of *Student Success Resources* are provided by the college is available at <u>https://wiki.geneseo.edu/x/2QBoC</u>. This includes such non-academic topics as bias-related incidents and mental health well-being.
- SUNY Geneseo is dedicated to providing an equitable and inclusive educational experience for all students. The Office of Accessibility will coordinate reasonable accommodations for persons with physical, emotional, or cognitive disabilities to ensure equal access to academic programs, activities, and services at Geneseo. Students with letters of accommodation should submit a letter to each faculty member and discuss their needs at the beginning of each semester. Please contact the Office of Accessibility Services for questions related to access and accommodations (Erwin 22, 585-245-5112, access@geneseo.edu, https://www.geneseo.edu/accessibility-office).

Week of	Tuesday class	HW due &	Thursday class
Tues	(blanks continue previous chapter)	Quiz on Thu	
Jan. 25			Intro, Ch. 16 Waves & Sound
Feb. 1		1: Intro	
8	Ch. 17 Superposition & Interference	2: Ch 16	
15	Ch. 18 Electric Forces & Fields	3: Ch 17	
22	Exam 1, (Ch. 16 & 17)		
Mar. 1	Ch. 19 Electric Potential	4: Ch 18	
8	Ch. 20 Electric Circuits	5: Ch 19	
15	SPRING BREAK		
22	Ch. 21 Magnetic Forces & Fields	6: Ch 20	
29	Exam 2 (Ch. 18, 19, 20)		
Apr. 5	Ch. 22 Electromagnetic Induction	7: Ch 21&22	Ch. 24 Electromagnetic Waves
12		8: Ch 22&24	Ch. 25 Reflection of Light
19	Ch. 26 Refraction of Light & Lenses	9: Ch 24&25	GREAT DAY
26	(HW 9 quiz)		Exam 3 (Ch. 21, 22, 24)
May 3		10: Ch 26	Ch. 27 Interference of Light
10		11: Ch 26&27	Review
17	Tue, May 17, 12:00–2:30PM: Final Exam (review and Ch. 25, 26, 27)		

Expected Calendar