

PHYS 1010 Syllabus

Physical Science

CRN 25658

University of Georgia, Fall 2022

Instructor Information:

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Course Description

Welcome to Physics 1010. This course is designed for non-science majors. Physics is one of the fundamental sciences that can help us understand our modern, technological world. You may not leave this class to go on to a career in physics, but we can expand and build upon the interest you already have in signing up for this course. My goal is to help you to build a foundation to be able to discuss and ask appropriate questions for important physical topics in your life: green energy, nuclear warfare, 5G cell service, etc. It does not matter the career you choose or whether you become a future leader sworn into office, you will still have the power to vote and will need to make informed judgments on issues such as these and more. Plus, you may be interested in just holding your own in a conversation about black holes or quantum entanglement!

PHYS1010 will provide you with an understanding of the physical science by discussing a broad range of topics, from simple kinematic motion to nuclear reactions. Physics does not equal mathematics (although mathematics is a useful tool for physicists), and there are no prerequisites for this course. We will inevitably use some basic algebra and geometry to solve some problems. This course fulfills the UGA General Education Core Curriculum Physical Science requirement. Students cannot receive credit for both PHYS1010 and PHYS1111 (or 1211 or 1311).

If you are a physics, astronomy, or engineering major, or if you are considering those possibilities, then this course may not be for you. Please talk to undergraduate coordinators, Dr. Cooley (physics) or Dr. Caillault (astronomy) about other options.

Basic Class Information

- MWF 8:00-9:50 AM (Period 1): Room 0202 in the Physics Building
- Final Exam: There will be no final exam in this course. There will be a final project due at the time of our scheduled final exam.
- Office Hours: TBA Location: In-person (Room 223-B) or via Zoom

Course Materials

There is *no required textbook* as you will receive all the important information during class lecture. I will also provide any supplementary material. We will also have some in-class demonstrations which will likely be followed by short writing assignments or group activities designed to have you work collaboratively with your classmates. There are two devices that will be required for class: a Turning Point Response device (app on your smartphone or tablet, or internet access on a laptop to turningtechnologies.com) and a simple calculator. In addition, there are recommended materials which may be useful to better understand classroom lectures or to help with homework assignments.

Required:

- A Turning Technologies ResponseCard NXT (app available on smart devices). Bring it to every class; we will be using clickers throughout the semester for engagement activities. A Turning Technologies subscription is required through the application and instructions for setting up an account can be found at <https://ctl.uga.edu/learning-technologies/student-response-systems/turning-point-for-students/>. You can use the free TurningPoint app called “ResponseWare” (available for tablets, smartphones, or laptops via an internet connection), but you will still need an active license and to be properly registered with the eLC.
- A *simple scientific calculator* for exams and homework, which must be *non-programmable, non-graphing, and non-symbolic*. Calculator graphing, algebra-solving, or programming functions will NOT be permitted on the exams. Cellphones will not be allowed during exams. (A good rule of thumb is, if the calculator isn’t allowed on the SAT, it’s also not allowed for exams, nor will it really be necessary since the exam is limited to simple algebra if any.)
- Homework assignments will be performed online and are necessary to develop understanding throughout the course. These assignments will use and be distributed on UGA’s eLC.
- Please check your UGA email daily. The UGA email system will be used (infrequently) for announcements. **For email correspondence, include your class and time in the subject line.**
- The eLearning Commons (<http://www.elc.uga.edu/>) will serve as a repository for lectures, in-class activities, study guides, discussion forums, homeworks, etc.
- If you cannot come to my regular office hours or need additional help, please set up an appointment (by email, or in-person) to see me outside of class.

Recommended:

- Physics for Future Presidents: The Science Behind the Headlines, by Richard A. Muller. There are many different versions, but the paperback edition published in 2008 is satisfactory.
- Tutoring: Tutors are available either through the Academic Resource Center at Milledge Hall and Miller Learning Center or through the Department of Physics and Astronomy (<http://www.physast.uga.edu/tutors/>) or you can visit the Division of Academic Enhancement (<http://www.dae.uga.edu/tutoring>).

Attendance and In-person Classroom Policy:

I do NOT take attendance daily. **There will be NO parallel zoom sessions. However, right after each session I will post class slides on eLC.** During class, we will work through example problems and discuss the solutions. It is imperative that you bring a calculator to class each day and participate as these activities are designed to solidify your knowledge of the concepts or bring up any questions you may have about the material. In addition, we will have several activities during class that will require the use of the “clickers”. This will require the Turning Point app Response Ware as explained in the Materials section of the syllabus. To get a 100% for your participation grade, you will simply need to get half of the total number of clicker points possible during the entire semester. Any less than 50% correct will be scaled according using the rule that 50% of all the points => 100% clicker participation (so 43% of the total points will be a clicker participation grade of 83%). It is in your best interest to attend class regularly and respond to the clicker questions. If you have read this far, enter “Hayabusa2 Capsule” in the Additional Comments question of the introductory physics survey on the eLC for one bonus percentage point applied to your overall participation grade for the course. Don’t discuss this with your classmates. Let’s see if they read the syllabus thoroughly too.

Grading Policy

Your overall grade will be weighted as follows:

60%	Three exams (take the best 3 out of 4 grades)
20%	Homework grade
10%	Participation/Clicker Points Grade
10%	End-of-the-year project

Letter grades will be assigned following:

A	90.0 –100.0
A-	87.5 –89.99
B+	85.0 –87.49
B	80.0 –84.99
B-	78.5 –79.99
C+	75.0 –78.49
C	70.0 –74.99
C-	67.5 –69.99
D	60.0 –67.49
F	less than 60.0

Overall numerical grades will not be rounded (i.e. 89.99 is still a A-).

Regrade requests:

Any requests for a re-grade of an assignment or an exam are under my discretion and must be made no later than one week after the item is returned. For a re-grade, I will look at the entire assignment/exam, not just one problem, and it may raise or lower your score. Arithmetic errors in adding up points will be handled separately. Regrade requests should be accompanied by all your work.

Extra Credit

Any opportunities for extra credit will be announced in class. I do not offer additional activities and I ignore requests to boost or replace portions of your grade. If you maintain the course pace and complete your assignments on time, you will do well in this course.

Withdrawal and Incomplete:

The Undergraduate Bulletin and the Registrar's Office website describe the University policies regarding withdrawals and incomplete (<http://reg.uga.edu/policies/withdrawals>). If you don't complete the initial required administrative tasks of the course (e.g. the questionnaire you may be withdrawn from the class). However, if you are demonstrably not attending class and completing work ("excessive absence") this is not justification for me to submit a withdrawal. A grade of Incomplete is not appropriate for a student who has missed a large portion of the course assessments, for whatever reason.

The Withdrawal Deadline is Monday, October 24, 2022.

Exam Policy

There will be four exams. The best three out of four scores will be used towards your final grade. Exams will be in-class and open-notes (this does include supplemental materials). This does not mean that you can take the exam while in contact with other students. Cell-phones are not allowed for this purpose. The format for exams will include, but not be limited to, multiple-choice and true-false with several short answer questions. Possible plagiarism/unauthorized assistance includes but is not limited to accessing Chegg during an exam is

not accepted. Occasionally, exam questions will require a quantitative answer and so an algebraic calculation means simple, scientific calculators will be allowed (as documented in the required course materials section). A programmable calculator will not be allowed during an exam (and will not be necessary). Calculator applications on cell phones are not recommended. If a formula is required, a formula sheet will be provided by the instructor. There will be no make-up exams. My policy is designed to compensate for a missed exam by dropping your lowest score. However, if you miss multiple exams for a serious, documentable reason, I will provide a make-up exam possibility. You must contact me as soon as possible and submit documentation of your absence within a week. Do not simply presume that your situation or documentation merits an excused absence; that determination is not your prerogative.

Solutions:

Solutions to the exam will be posted on the eLC after every student has taken the exam.

Homework Policy

Homework is an essential part of the learning and understanding physics. Working through problems enables you to practice problem solving techniques, apply the methods you learn in class, and recognize areas that you may struggle with the material. Homework assignments will be assigned weekly to keep up with the pace of the class and ensure you master the concepts before moving to the next.

Logistics:

Assignments will be posted to the eLC and involve a range of various types of questions; multiple choice, ranking, etc. Some assignments will be responding to discussion questions that are posted to a forum on the eLC. Therefore, some assignments will be graded for correctness (such as problem solving) and some will be graded just for participation (discussion posts). These homework assignments will be your best preparation for the exams throughout the semester.

Dropping the lowest:

In the case that you complete the online course evaluation at the end of the semester, I will drop your lowest homework set grade. If you do not fill out the course evaluation, then all of your homework set scores will be included in your average. The intent of this policy is to encourage you to fill out the evaluation, but also to compensate for unavoidable circumstances (e.g. illness, emergency, etc.). Late problem sets will not be accepted or excused.

Teamwork vs. Plagiarism

Working together with your fellow classmates is *strongly* encouraged. However, your goal should be to attempt every problem on your own and then turn to your classmates for a team effort, and not plagiarism. The answers you submit should be your own! Discussing physics is a great way to learn, but simply asking someone how they solved a certain problem is not effective, will not help you prepare for the individual exams, and is in fact a form of plagiarism. Copying from someone else's work, or other homework solutions, is a form of plagiarism and a violation of academic honesty policies. In addition, I understand that internet searches can provide you with solutions or help you to work through a problem, but fundamentally understanding the problem and the solution are key to being successful in this class.

Classroom Policy

We would like to have a constructive learning environment and so the atmosphere must be free from distractions and disruptive behavior. Please make a reasonable attempt to arrive on time and refrain from activities that can be distracting during our class time. Laptops, cell phones, and tablets may be useful for taking notes, however, they can be distracting when used for social media sites, shopping, checking email, or

playing games. Be mindful and respectful of those around you. While being vaccinated against COVID-19 is not required for attendance at UGA, it is **strongly encouraged**. Please feel free to wear a mask and maintain social distancing as much as possible during the class, if you prefer doing so.

Student Distress

If your course performance is significantly affected by issues beyond your control, I urge you to let me know and to seek assistance promptly from the Office of Student Support Services. It is always easier to address exceptional circumstances when you raise these concerns as early as possible. Waiting until the end of the semester to take action may limit my ability to provide appropriate support.

Academic Support

The Division of Academic Enhancement (DAE) offers free peer tutoring for some of UGA's most challenging courses. For courses, locations, and times, please visit the website listed below. In addition to peer tutoring, the DAE also provides Academic Coaching, Student Success Workshops and more. The DAE is committed to the success of all students at the University of Georgia. For more on these and other resources, please visit dae.uga.edu.

Academic Honesty

The University of Georgia has a comprehensive policy on academic honesty, described in a document entitled A Culture of Honesty. This document is available through the Office of the Vice President for Instruction or online at <https://ovpi.uga.edu/academic-honesty>. This policy covers all academic work.

As a UGA student, you are responsible for knowing and understanding this policy. If you have any question about the appropriateness of your actions or your work, you are obligated to ask me for clarification.

I take the issue of academic honesty very seriously, and it is my responsibility to uphold the University's policy. This means, among other things, that I won't hesitate to report my suspicions of dishonesty to the Office of the Vice President for Instruction. Typical consequences of cheating on homework or an exam range from receiving a zero for that grade, to failing the course.

Coronavirus (COVID-19) Policies

As the COVID-19 pandemic transitions and public health conditions and treatments improve, UGA will begin treating COVID-19 as we do any other infectious disease cases.

If you need more information, please visit <http://coronavirus.uga.edu>.

Student Responsibilities

- You are responsible for all material: homework problems, assignments given in class, discussion forums, and viewing the content online via the eLC.
- You are responsible for all announcements made in class.
- Do all homework assignments.
- Know the University's policies concerning withdrawals and incompletes.
- Ask me if you do not understand **anything** that related to the course. There is no dumb question.
- Physics is fun and everywhere!

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

Tentative Class Schedule

This schedule is subject to change and any updates will be discussed in class.

Week	Dates	Topics	Comments
1	08/15 - 08/19	Introduction, Q&A, Language of physics/science	Wednesday- Class begins and Add/drop period begins
2	08/22 - 08/26	Scales, Unit Conversions, Energy	Wednesday- Add/drop period ends
3	08/29 - 09/02	Motion, Velocity, Newton's 1 st Law Acceleration, Newton's 2 nd , and 3 rd Laws	
4	09/05 - 09/09	Momentum, Collisions	Monday- No Classes (Labor Day) Friday, EXAM 1
5	09/12 - 09/16	Gravity, Satellites, Satellite motion	
6	09/19 - 09/23	Charges, Electricity	
7	09/26 - 09/30	Electrostatics and Electrodynamics	
8	10/03 - 10/07	Magnetism	Friday, EXAM 2
9	10/10 - 10/14	Electromagnetism	
10	10/17 - 10/21	Light, Waves and Optics	
11	10/24 - 10/28	Energy, Atoms (Chemistry), Atomic Structure	Monday, Oct. 24 - Withdrawal Deadline.
12	10/31 - 11/04	Atomic Structure, Nuclei and Radioactivity	Friday, EXAM 3
13	11/07 - 11/11	Nuclear Reactors	
14	11/14 - 11/18	Special Relativity	
15	11/21 - 11/25	The Universe & Astronomy Topics	Monday, class meets. Wed-Fri, Thanksgiving- No classes
16	11/28 - 12/02	Quantum Physics	Friday, EXAM 4
17	12/05	Quantum Physics	Monday, Last Day of Classes