

****PHYS1502Q: Physics for Engineers II  
Section 006****

****Department of Physics****

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# Syllabus – Spring 2022

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

**Per university guidance, the first two weeks of the Spring 2022 semester will be conducted remotely.**

## Course and Instructor Information

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| --- | --- |
| **Contact information:** | **Locations & Times:** |
| ****Instructor****: David Perry | **Class Meeting times**: 8 AM – 10 AM |
| ****E-mail****: [dave.perry@uconn.edu](mailto:dave.perry@uconn.edu) | **Class Location**: Tuesday and Thursday in GP-110, Friday in GP-113 |
| **Office**: S104 in Gant South **Office hours**: By appointment only | |

**Credits:** 4

**Format:** In person

**Teaching Assistants:** Dani Lipman ( [dani.lipman@uconn.edu](mailto:dani.lipman@uconn.edu) )

Abhirup Dutta ( [abhirup.dutta@uconn.edu](mailto:abhirup.dutta@uconn.edu) )

Gabriel Kovacs ( [gabriel.kovacs@uconn.edu](mailto:gabriel.kovacs@uconn.edu) )

**TA Office Hours:** See schedule in HuskyCT

## Scope of the Course

Announcements, syllabus, lecture notes, grades, exam schedules, textbook purchasing options, and other relevant course information will be posted on HuskyCT, found at <http://lms.uconn.edu> which should be visited on a regular basis.

## Classes will be held synchronously during the specific class times in Blackboard Collaborate Ultra in the first two weeks. A direct link can be found in HuskyCT. Starting the third week, all classes will be held in person during the scheduled times. All students are expected to complete the necessary assignments before each lecture, collaborate and discuss in groups, and participate actively.

## Course Description

Introduction to principles of electromagnetism: electrostatics, magnetostatics, electrodynamics, Maxwell’s equations, electromagnetic wave propagation, and optics, including some of their relevant applications to engineering, such as electric circuits and antennas. These core principles form the foundation of the engineering disciplines. The material is naturally cumulative, building on previous concepts and gradually becoming more abstract, so it is important to be diligent in following the course content to avoid falling behind!

## Course Learning Objectives

1. Study the basic principles of electromagnetism, circuits and optics.
2. Develop a basic understanding of physics as an experimental science.
3. Apply physical principles to solve problems.
4. Expand problem-solving skills.

## Course Expectations

Classes will be held during the specific class times in GP 110 and GP 113. All students are expected to complete the necessary assignments before each lecture, collaborate and discuss in groups, and participate actively.

## Classroom Behavior

No food is permitted in the physics classes or labs. Drinks are allowed in sealed containers only and should be consumed away from all equipment. Students are allowed and encouraged to bring their own laptops, but all such devices must be used for *academic purposes only*. Cell phones are not allowed to be used in the class, including texting, browsing, etc. Students are expected to treat their TA and peers with respect. Any language or behavior or racism or intolerance will not be accepted. Students in violation of any of these rules will be asked to leave the class or lab and will receive a 0 for that lab, and their case may be forwarded to the Physics Teaching Labs office for further disciplinary action.

## COVID-19 Guidance

**Masking:** Per [university COVID-19 campus guidelines](https://covid.uconn.edu/campus-guidelines/), masks are required when indoors, regardless of vaccination status. You are expected to bring a mask to each class and wear it correctly (covering nose and mouth) for the complete duration of the class.

**Illness or Exposure:** Do not come to class if you test positive for COVID-19 or if you are experiencing any of the following symptoms:

|  |  |
| --- | --- |
| * Fever or chills * Cough * Shortness of breath or difficulty breathing * Fatigue * Muscle or body aches * Headache | * New loss of taste or smell * Sore throat * Congestion or runny nose * Nausea or vomiting * Diarrhea |

Students with absences related to illness will be granted accommodations. You may still attend class with a negative COVID-19 test result.

## Course Preparation

The mathematical models of classical electromagnetism naturally involve multivariable functions, scalar and vector fields, along with vector calculus. A background in multivariable and vector calculus is therefore highly recommended to improve your chances of success in this course. [MATH 2110](https://courses.math.uconn.edu/spring2020/math-2110/), [2130](https://catalog.uconn.edu/directory-of-courses/course/MATH/2130Q/), or [2143](https://catalog.uconn.edu/directory-of-courses/course/MATH/2143Q/) (Multivariable Calculus) are all options that fulfill these mathematical prerequisites and may be taken concurrently. Phys1501Q is a pre-requisite for this course.

## Required Course Materials

* ****ExpertTA Homework System**:** This platform will be used for all homework and reading assignments. Please follow registration instructions provided on HuskyCT. Please use your UConn e-mail address and UConn NetID for registration. There is a 14-day free trial that can be used on the website if you are unsure whether you will stay in the course or class section.
* ****1502 Laboratory Manual:** Lab manuals\* are available through the UConn Bookstore.**

\*Students will need to purchase a lab manual once in-person labs start.

* **i>Clicker Reef (Required)**: Please download the iClicker Reef app on your phone and log in using your UConn email address. If you do not have an active subscription, you will need to purchase one through the iClicker website (<https://www.iclicker.com/>) or the UConn Bookstore. Please note that you do not need to purchase a clicker remote but you can use it for the in-person classes if you have one.
* ****Textbook**:** David Halliday, Robert Resnick, and Jearl Walker, ****Fundamentals of Physics Extended****, published by Wiley. This book is now in its 11th edition, but any edition should do. Newer editions may be expensive, but older editions are available at online retailers for a fraction of the cost of current editions and should be completely adequate.

Alternative (free) textbook:

A free alternative has been published as part of an opensource initiative. This text is part of the OpenStax project, and can be accessed online and downloaded free of charge at:

<https://openstax.org/details/books/university-physics-volume-2> (Electricity and Magnetism)

<https://openstax.org/details/books/university-physics-volume-3> (Optics and Modern Physics)

## Course Grading

|  |  |
| --- | --- |
| **Grade Component** | **Weight** |
| Reading Assignments | 10% |
| Tutorials and Clicker Questions | 10% |
| Paper Quizzes | 10% |
| Homework | 15% |
| Laboratory (Pre-labs 5% + Colab Notebooks 15%) | 20% |
| Midterms 1 & 2 | 10% each (20% total) |
| Final Exam | 15% |
| ****Total**** | ****100%**** |

## Course Components

****Reading Assignments****

Reading assignments are accessed and submitted on *ExpertTA.* They constitute multiple-choice questions and/or problems and are graded on correctness. Consult *ExpertTA* frequently for deadline details. Typically, there will an assignment due every week on **Sunday by 11:59 pm.** The lowest reading assignment grade will be dropped from your overall grade.

**No late submission will be accepted on Reading ASSIGNMENTS**

****Class Participation****

We will be using i>clicker Reef polling system to make our class time more engaging.

This will help me understand what you know, give everyone a chance to participate, and increase how much you learn when we are in class together. This will also provide you with feedback on how well you are comprehending course concepts, help you master challenging concepts, and allow you to review material after class.

You are required to bring a device to participate during class. I will be allowing participation with the iClicker Reef app on a smartphone, tablet or laptop. It is your responsibility to set up your iClicker Reef account in a timely fashion and follow the steps below to properly register in my iClicker course. It is also your responsibility to regularly check your iClicker records for any discrepancies and bring them to my attention within 48 hours.

****Clicker scoring is as follows**:** Incorrect answers to questions are given 1 point for participation. Correct answers are given an additional 1 point, for a total of 2 points

To allow for flexibility in these uncertain times, grading will be based on a maximum of **75%** of the maximum accumulated score.

****Example 1****: If the maximum number of available clicker points is 280, 75% of this is 210. Anyone with an accumulated score ≥ 210 will receive 100% credit in participation.

****Example 2****: A person with an accumulated score of 190 in the same course would receive (190/210) x 100% = 90.5% credit in participation.

iClicker activities fall under the provisions of our campus academic honesty policy. Students must not engage in academic dishonesty while participating in iClicker activities. This includes but is not limited to:

* Checking in while not physically in class
* Having another student check you into class
* Answering polling questions while not physically in class
* Looking at other students' devices while answering live questions

****Tutorials: In-class Problem Solving****

To do well in this class, you must work through problems. On the exams you will be asked to solve written problems from start to end. The tutorials that you will work on during each class period are intended to give you practice solving problems and working in groups. Tutorial work must be completed during class time. All students are expected to actively engage in the tutorials during each lecture. Help on the tutorial problems will be provided by TAs. Tutorials will be posted on HuskyCT.

****Homework****

Homework assignments are completed on *ExpertTA*. Typically, **they are due every week on **Mondays by 11:59 pm.**** Consult *ExpertTA* frequently for deadline details. *ExpertTA* provides immediate feedback and hints for problem solving. The problems will be available for viewing from when they are assigned until the end of the semester. Typically, you will have two weeks to work on each assignment. While student discussion on online homework is encouraged, all submitted work must be the original work of the student. Students get 50 attempts per question. For multiple choice questions, the deduction per incorrect answer is equal to: 100% divided by (the number of answer options - 1). For all other question types, no credit will be deducted for each incorrect answer. There is no penalty for using hints. The lowest homework grade will be dropped.

*ExpertTA Terms of Service*: *ExpertTA* problems are copyrighted. It is expressly forbidden in *ExpertTA*'s Terms of Service (TOS) for a student to post this copyrighted material. Violating the TOS can result in discontinuation of the student's *ExpertTA* account.

All deadlines are based on Eastern time. The instructor reserves the right to change dates accordingly as the semester progresses. All changes will be communicated in an appropriate manner.

****ExpertTA Late Homework Policy****

* 10% late penalty deduction per day for a maximum of one week late.

Every student has the right to request ****one late homework submission**** to be graded at no late penalty. **No questions asked!** If you would like to request your late homework submission, simply e‐mail me informing me: 1) class section (or meeting times), 2) homework # and 3) the date you would like to submit it at. Student access to *ExpertTA* ends on the day of your final exam to allow for final exam studying****. No late submissions, however, will be accepted after Friday, April 29, 2022 at 11:59 pm**,** there will be no exceptions.

**Paper Quizzes**

Paper quizzes will be completed and submitted individually. Quizzes will be administered throughout with advance notice. The lowest quiz grade will be dropped at the end of the course.

****Exams****

Exams will be a combination of conceptual, symbolic, and numerical problems, and will test how you apply your knowledge to solve problems.

Please be reminded that ****exams are individual assessments****. You are not permitted to receive help from anyone else (enrolled or not in the course). You are also not permitted to provide help on exam work to any other students.

**Midterm Exams:** There are two midterm exams during the semester. These are common to all sections and will be held on the following days and times:

**Exam #1 Friday, February 18 Time: 4 – 6 pm**

**Exam #2 Friday, March 25 Time: 4 – 6 pm**

**Final Exam**  **Scheduled by Registrar**

**Missing a midterm exam should not be taken lightly** *and will only be justified under extraordinary circumstances. You are required to offer extensive documentation to verify your situation, and if your case is approved, you will be offered a solution to make up the missed grade.*

*If you foresee missing an exam, you MUST contact your instructor two weeks in advance to schedule a make-up exam.*

****Final Exam****

**The final exam is cumulative.** The scheduling of final exams is done by the University, not by your individual Instructor or department. Students are required to be available for their exam during the stated time. When students are forced to miss a final exam, they must obtain permission in writing from ****the Dean of Students Office****. Finals week is from Monday May 2nd through Saturday May 7th. Please note that vacations, previously purchased tickets or reservations, social events, misreading the exam schedule and over-sleeping are not viable excuses for missing a final exam. If you think that your situation warrants permission to reschedule, please contact the Dean of Students Office with any questions.

**Laboratory**

The following materials are required for successful completion of the course. You are responsible for procuring these items.

* 1502 Lab Manual (available through the UConn Bookstore)
* Calculator with scientific functions (exponents, trigonometric functions, etc).
* Access to your UConn Google Drive account (no personal Google accounts).
* Internet browser capable of running HTML5 and other browser-based simulations (e.g. Chrome, Firefox)

**Class Format**

The lab component of this course will meet once each week for lab activities. Your TA will hold these sessions in-person. During these lab sessions, you will work in groups to complete the lab activity of the day.

**Per university guidance, the first two labs of the semester will be conducted virtually.** Your TA will hold these sessions via a live broadcast through the Blackboard Collaborate Ultra platform for each of these synchronous lab sessions. You will be expected to complete a portion of your lab activity asynchronously before attending each session. All digital materials necessary to complete each remote-based lab activity will be made available via HuskyCT prior to the start of the lab session.

Under the current guidance, all labs occurring after January 29th will be conducted in-person.

Given the collaborative nature of the lab activities you will be completing throughout the course, attendance at the lab sessions is required to receive credit for the corresponding lab activity. The lab sessions serve two primary purposes. First, you will receive real-time help from a TA who will provide guidance and support to groups in the completion of the lab activity, allowing opportunities for you to ask questions about the lab activities and receive supplemental information. Second, the lab sessions will facilitate collaboration with your group members in real time. Furthermore, your group's submission deadline for each lab will be at the end of the lab session, so it is important that you attend every lab session.

***Pre-labs:*** You will be required to complete a pre-lab before every lab. **Pre-labs are due before the start of lab.** These will be provided in Google Colab format, and must be submitted online **individually**. No collaboration between students is permitted on the pre-labs. Pre-labs will be graded on a per-question basis according to the 1502 Lab Grading Rubric. Pre-lab submissions will not be accepted late.

***Colab Notebooks:*** For each lab, you will be required to complete a Google Colab notebook about the lab. These digital lab notebooks are **due at the end of the lab session** and are to be submitted online to HuskyCT **as a group**. Colab notebooks will be graded on a per-question basis according to the 1502 Lab Grading Rubric.

Pre-lab and lab submissions must be in the proper .pdf format as compiled by the Colab notebook. Submission in an incorrect format (including, but not limited to, download of the entire Colab notebook or submissions in Word format) will not be accepted for credit. Students are allowed **one** opportunity to re-submit in the proper format.

***Participation:*** Students are expected to participate in all lab activities by collaborating and sharing the workload with their group members. An individual lab participation grade will be given with every group lab submitted.

**Grading**

Lab grades are broken down according to the following formula:

*Pre-lab work: 25%*

*Colab Notebooks: 75%*

Total: 100%

**Lab Policies**

**Late work:** Students are expected to hand in their pre-labs before the start of lab, and Colab notebooks before the end of the lab session. Lab notebooks submitted after the scheduled lab period are subject to a -10% deduction, with subsequent -10% deductions per 24 hours late up to a maximum of one week, at which point the submission will no longer be accepted. Pre-lab submissions will not be accepted late.

**Missing Labs:** Students who do not attend the lab session **or** who fail to submit a Colab notebook with their group will be considered absent for that lab. If a student misses a lab, they will receive a 0 for the missed lab submission.   Students who miss **more than 2 labs** will receive an “F” for the lab portion of the course, and will by departmental policy fail the entire course.

**Tardiness:** Students more than 10 minutes late to lab will be considered absent for that lab and will receive a 0 for the lab submission. Credit will not be given for the lab if a student is more than 10 minutes late and chooses to remain in the lab session.

**Valid Absences:** Students with valid prior engagements that conflict with their scheduled lab time may request to attend a different lab section during the same week. Requests for a lab make-up must be approved by a laboratory technician and are handled on a case-by-case basis. Accompanying documentation is required for all valid absence reasons. Examples of valid reasons for a make-up include (but are not limited to): religious observances, military obligations, academic conferences, and varsity sports (no club sports).

Students must give at least one week's notice if they wish to schedule a lab make-up. In accordance with [University policy](https://policy.uconn.edu/2018/08/01/religious-accommodation-policy/), students anticipating a lab absence due to their observation of a religious holiday must notify one of your TAs and course instructor in writing within the first three weeks of the semester.

A make-up is not guaranteed and depends on the reason for absence and on availability of space in alternative lab sections. If a lab is not able to be rescheduled, then the student will be considered absent from the lab and will receive a zero.

**Dropped Labs:**  The lowest one lab grade and pre-lab grade will be dropped from the overall grade calculation. This is to allow for unforeseen absences such as accidents, car trouble; appointments, etc. The grade drop is a rolling calculation that is always active for the entire semester. An absence for which the drop is used still counts as an absence from lab.

**Lab Make-up Day:** There will be one make-up lab held during the regularly scheduled lab session on the last week of classes, in addition to the lab drop mentioned above. This make-up lab has been implemented to account for any labs missed due to a non-valid absence or illness/COVID-19 related absence. This is a designated day for lab make-ups, and there will be no other opportunity available for make-ups should a student be absent from the make-up day.

All students may attend the make-up lab, regardless of any prior absences in the lab. It will not negatively affect your lab grade if you do not attend the make-up lab. The grade of this make-up lab can be used to improve your lab grade by replacing one low lab grade or an existing zero from one lab absence. The topic of this make-up session will be the same lab topic for all students, and there will be a pre-lab assignment and Colab notebook lab assignment corresponding to this topic for the make-up lab.

An absence for which the lab is made up on this lab make-up day does not count as an absence in lab. Failure to make up a missed lab will result in maintaining a zero and an absence in lab.

**Laboratory Safety:** Students must provide written consent to the safety policies at the beginning of the semester. The policies outline specific safety rules for the physics lab. Students not abiding to the appropriate safety rules will be asked to leave the lab and will receive a 0 for that lab.

More information on teaching lab policies can be found on the physics department at: <http://www.phys.uconn.edu/academics/undergraduate-programs/physics-teaching-labs/>

**Grading Scheme**

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| --- | --- | --- |
| **Grade** | **Letter Grade** | **GPA** |
| 93-100 | A | 4.0 |
| 90-92 | A- | 3.7 |
| 87-89 | B+ | 3.3 |
| 83-86 | B | 3.0 |
| 80-82 | B- | 2.7 |
| 77-79 | C+ | 2.3 |
| 73-76 | C | 2.0 |
| 70-72 | C- | 1.7 |
| 67-69 | D+ | 1.3 |
| 63-66 | D | 1.0 |
| 60-62 | D- | 0.7 |
| <60 | F | 0.0 |

****There will be no extra credit at the end of the course****

## Student Academic Help

Our desire is for you to succeed in this course and we are here to help you along the way. Please do not hesitate to ask questions or attend office hours. All questions are important here. Success in this course program depends heavily on your personal health and well-being. Recognize that stress is an expected part of the college experience, and it often can be compounded by unexpected setbacks or life changes outside the classroom. Your teaching assistants and I strongly encourage you to reframe challenges as an unavoidable pathway to success. Reflect on your role in taking care of yourself throughout the semester, before the demands of exams and projects reach their peak. Please feel free to reach out to me about any difficulty you may be having that may impact your performance in your courses or campus life as soon as it occurs and before it becomes too overwhelming. In addition to your academic advisor, I strongly encourage you to contact the many other support services on campus that stand ready to assist you.

**Physics Learning Resource Center:**

This is a service provided by the Physics Department to students seeking help in their studies or wishing to deepen their understanding of physics. Students in any physics class get help from the PLRC without an appointment to get help with any aspect of this or other physics courses (lecture and lab). PLRC help will be available through Blackboard Collaborate Ultra. There will be a schedule posted with the appropriate links. More information on the center can be found at: <https://physics.uconn.edu/learning-resource-center/>.

**The Q-Center**:

In addition to your Instructor's office hours and the PRLC, you can get help with the material in your course at the UConn Q Center. Help will be provided remotely. For information, please check the Q Center website: [http://www.qcenter.uconn.edu](http://www.qcenter.uconn.edu/).

## Students with Disabilities

The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or<http://csd.uconn.edu/>.

Blackboard measures and evaluates accessibility using two sets of standards: the WCAG 2.0 standards issued by the World Wide Web Consortium (W3C) and Section 508 of the Rehabilitation Act issued in the United States federal government.” (Retrieved March 24, 2013 from [Blackboard's website](http://www.blackboard.com/platforms/learn/resources/accessibility.aspx)).

Your success in this class is important to me. We will all need accommodations from time

to time because we all learn differently. If there are aspects of this course that prevent you

from learning or exclude you, please let me know as soon as possible. Together we will develop strategies to meet both your needs and the requirements of the course.

## Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. Review these important [standards, policies and resources](https://onlinestudent.uconn.edu/learn--more/#POL), which include:

* The Student Code
  + Academic Integrity
  + Resources on Avoiding Cheating and Plagiarism
* Copyrighted Materials
* Credit Hours and Workload
* Netiquette and Communication
* Adding or Dropping a Course
* Academic Calendar
* Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships
* Sexual Assault Reporting Policy

**Student Support Services**

* Counseling and Mental Health Services [www.cmhs.uconn.edu](http://www.cmhs.uconn.edu/) Phone: (860) 486-4705 (after hours, use (860) 486-3427)
* Career Services [www.career.uconn.edu](http://www.career.uconn.edu/) Phone: (860) 486-3013
* Alcohol and Other Drug Services [www.aod.uconn.edu](http://www.aod.uconn.edu/) Phone: (860) 486-9431
* Office of Student Services & Advocacy [www.ossa.uconn.edu](http://www.ossa.uconn.edu/) Phone: (860) 486-3426
* Center for Students with Disabilities [www.csd.uconn.edu](http://www.csd.uconn.edu/) Phone: (860) 486-2020 (voice), (860)486-2077 (TDD)

**Resources for Students Experiencing Distress**

The University of Connecticut is committed to supporting students in their mental health, their psychological and social well-being, and their connection to their academic experience and overall wellness. The university believes that academic, personal, and professional development can flourish only when each member of our community is assured equitable access to mental health services. The university aims to make access to mental health attainable while fostering a community reflecting equity and diversity and understands that good mental health may lead to personal and professional growth, greater self-awareness, increased social engagement, enhanced academic success, and campus and community involvement.

Students who feel they may benefit from speaking with a mental health professional can find support and resources through the [**Student Health and Wellness-Mental Health**](https://counseling.uconn.edu/) (SHaW-MH) office. Through SHaW-MH, students can make an appointment with a mental health professional and engage in confidential conversations or seek recommendations or referrals for any mental health or psychological concern.

Mental health services are included as part of the university’s student health insurance plan and also partially funded through university fees. If you do not have UConn’s student health insurance plan, most major insurance plans are also accepted. Students can visit the **Student Health and Wellness-Mental Health located in Storrs on the main campus in the Arjona Building, 4th Floor,** or contact the office at **(860) 486-4705, or** [**https://studenthealth.uconn.edu/**](https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fcounseling.uconn.edu%2F&data=02%7C01%7Csuzanne.lafleur%40uconn.edu%7C8de70653941b46a391c008d82eaa9de5%7C17f1a87e2a254eaab9df9d439034b080%7C0%7C0%7C637310657616301680&sdata=sV755zd9%2F4RCEkS3OHYwdjGjGkZRLNVdHklZLtnhHSI%3D&reserved=0)for services or questions**.**

## Evaluation of Course Experience

Students will be given an opportunity to provide feedback on their course experience and instruction using the University's standard procedures, which are administered by the[Office of Institutional Research and Effectiveness](http://www.oire.uconn.edu/) (OIRE).

The University of Connecticut is dedicated to supporting and enhancing teaching effectiveness and student learning using a variety of methods. The Student Evaluation of Teaching (SET) is just one tool used to help faculty enhance their teaching. The SET is used for both formative (self-improvement) and summative (evaluation) purposes. Additional informal formative surveys and other feedback instruments may be administered within the course.