

PHYS 6C – 01: Intro Physics III

MWF 2:00-3:05 pm, J Baskin Engr 152

Christopher M. Donohue

Summer 2024

COURSE INFORMATION

This course is a continuation of 6A and covers an introduction to electricity and magnetism, elementary circuits; electromagnetic induction and radiation and the polarization of light.

INSTRUCTOR INFORMATION

Hello, my name is Christopher M. Donohue, but I also go by CMD for short. I am a Physics graduate student here at UCSC doing research in theoretical particle physics, and I will be your instructor this summer. I have TA'ed 5A, 6A, 6B in the past, but this is the first time I am teaching a course. I am excited to teach 6C this summer, and hope to make it at least tolerable for y'all.

Office: Natural Sciences II, Room 373

Email: cmdonohu@ucsc.edu

Office Hours (in person & over zoom):

- Wednesday: 12:00pm-1:00pm
- Friday: 12:00pm-1:00pm

TEACHING TEAM INFORMATION

Physics 6N Instructor

Professor George Brown, gsbrown@ucsc.edu

Lab Teaching Assistants:

Name	email	Sections	Meeting Times
Siyu Zhu	szhu44@ucsc.edu	6N-01 6N-02	Tues 1pm-4pm Wed 9am-12pm

Discussion Teaching Assistants:

Name	email	Sections	Meeting Time
Samuel Christensen	sgchrist@ucsc.edu	Dis 1,2	Dis1: Monday 3:30-4:30pm Dis2: Wednesday 2-3pm OH: Tuesday 12-1pm

Supplemental Instruction Leaders:

Name	email
Violet McAllister	vimcalli@ucsc.edu

ACE Support:

Name	email
Monique Windju	mwindju@ucsc.edu

WHY AM I HERE!?!?!?!?

Are you here to get a grade, or are you here to learn about physics and develop your identity as a scientist? I hope the latter, but we can work with the former!

This class is a continuation of 6A, and is something that is probably required by your major. The most important reason that you are taking this class is that as a science major, it is important for you to understand how the laws of physics determine how things work in biology, chemistry and related fields. Many of the concepts we will learn about in this class are directly observable in nature and related to the technology we get to enjoy in our everyday lives, so I hope that you enjoy learning to see the world differently.

You're not just learning physics in my class. Whether you notice it or not, you're learning something incredibly valuable: how to approach general problem solving, which is a versatile skill that takes a lot of patience. Your experience in this class will be much less

painful if you understand that you're not supposed to get it right away - learning to ask for help and working in groups as you tackle hard problems are part of the grand plan.

In this class, I encourage you to ask questions. If you have a question, I promise that others in the class also have that question. There is so much to learn from talking about things we don't understand. No question is dumb and asking your questions as they form will help us build a strong foundation to build on, so ask away!

COURSE LEARNING OUTCOMES

By the end of this 10-week quarter, you will be able to...

- understand forces between stationary charged objects, electrostatic potential and capacitors.
- understand steady electric currents and Ohm's law, and the laws governing electric circuits with resistors and capacitors.
- understand magnetism due to magnetic materials and due to electric currents.
- understand the connection between electricity and magnetism through Faraday's law.
- be able to apply the concepts to physical problems, and some biological, chemical, earth and environmental science problems, and calculate quantitative answers.

PREREQUISITES/COREQUISITES

This course has the prerequisite physics courses of PHYS 5A or 6A and their associated labs 5L and 6L, respectively. Additionally, prerequisite math courses include MATH 11B, MATH 19B, MATH 20B, or AM 15B. You must also be concurrently enrolled in an associated PHYS 6C Discussion Section.

COMMUNICATION

I will make regular announcements via Canvas Announcements, which should be pushed to your email account. Please be sure that your Canvas notifications are set to push course announcements to your email so you don't miss anything, then regularly check your email for these announcements.

Please feel free to email me at cmdonohu@ucsc.edu. if you have questions regarding the course. Typically, I will respond to emails within one day of receipt during the weekdays. I will not respond to emails received on the weekends until the following workweek. You may also reach out to your lab or discussion TA via email. The contact information for our TAs is provided on the previous page.

A word of caution to those sending me emails in the last week of the quarter - I may not be able to address your question or concern in time to reach a deadline, and I encourage you to

reach out early on any questions or concerns you have, e.g. about quiz scores or homework deadlines.

REQUIRED MATERIALS, TEXTBOOKS AND TECHNOLOGY

We will use [The Expert TA](#) for our homework assignments and the [OpenStax University Physics – Vol II eBook](#). This system is an online homework and tutorial system for introductory physics. Register for this class with The Expert TA by clicking on a homework assignment from within Canvas. The system will direct you to The Expert TA site associated with the course and will require registration and payment the first time you access it. It costs ~\$35 per quarter.

Note that for your homework in The Expert TA, you sometimes need to access them via the Canvas link, just to make sure your grade ports into Canvas correctly. If you see an inconsistency between what The Expert TA tracking reports and what Canvas reports, try this before emailing me.

ASSIGNMENTS & ASSESSMENT

Your grade in this course will be based on six categories, with the overall grade breakdown summarized below. To get an accurate view of your grade, it's important that you have your Canvas grade book set up to show you your grade out of the *total possible* assignments rather than only out of the assignments that have been graded. This feature can either artificially inflate or artificially deflate one's grades since it does not actually account for all possible points. You can turn it off and on as you prefer: [here is an explanation](#) of how to change that setting.

Homework (10%)

Assignments will be completed with The Expert TA, accessible through the Canvas course. There will be 9 homework assignments due on Wednesday at midnight starting Week 2, covering the material from the previous week. For example, the assignment due on Wednesday Week 2 covers the material discussed in lecture during Week 1. Although homework only makes up 10% of your overall grade, this is one of the main ways you can work on learning the material. Doing homework counts as a type of studying, so should take up around 30% of your time spent in this course.

Note that some homework assignments will be worth more than others, since some modules cover more content than others.

For homework grading, you will get 5 free attempts to answer a question and then you get 2% off for each attempt after.. There are hints available for a number of problems, but you will lose 4% after accessing hints so these should be used sparingly and only after you have wrestled with the problem. Feedback is also available for when you submit an incorrect answer, and you will lose no credit for accessing this feedback. If you request an answer, you are forfeiting all credit for that problem. The full solutions for the homework problems are only available 1 week

after the due date of the homework set. The availability of these solutions limits my ability to extend deadlines for homework sets beyond one week. For each day a homework set is submitted late, you will lose 15% on the assignment. This means that submitting one week (7 days) late gives you zero credit for the assignment, but 6 days late means you can only earn up to 10% of the overall credit on the assignment. Once more, to be clear, I cannot extend any homework assignment deadlines beyond one week as the solutions to the problems will then be visible to all students.

One additional piece of flexibility I have built into the course is that the lowest homework assignment will be dropped from your grade.

Two Midterms (20% each)

This course will have an in-class. The first midterm will be given on **July 19th**, and assess Weeks 1-3 of material. The second midterm will be given on **August 9th**, and assess Weeks 4-6 of material. You will be given an equation sheet for use during the midterm, which will be available on Canvas prior to the exam. You are also allowed to bring a notecard (double sided) with any information or formulas you want on it. Makeup exams will only be possible for exceptionally extenuating circumstances.

Final Exam (25%)

This course will have an in-class final. This final exam is scheduled for **August 30th from 2:00-5:00pm** and will assess material from the entire course, but with a focus on stuff covered during Weeks 7-10. I will provide you with an equation sheet for use during the final. You will be given an equation sheet for use during the midterm, which will be available on Canvas prior to the exam. You are also allowed to bring a notecard (double sided) with any information or formulas you want on it. I allow makeup exams only for exceptionally extenuating circumstances.

Lecture Participation (Up to 5% Extra Credit)

With the intention of ensuring you are pacing your studies with the course content, it is important that you regularly attend lectures. As motivation, up to 5% of extra credit will be possible through lecture participation. I will record your attendance on randomly selected days possibly through a Canvas activity.

I stress that the real value of coming to class is your ability to interact with your fellow classmates, and me, as well as keep pace with the content. It is not the extra credit earned by attending.

Discussion Participation (5%)

Being enrolled in Physics 6C means you are enrolled in discussion though the exact discussion time has not been determined yet. There will be 9 discussions starting week 2. **You get two dropped discussions. There will be no excused absences** (unless there are extreme

circumstances). Arriving late to a discussion section and missing more than 15 minutes of a meeting will result in an automatic absence.

In these discussion sections, you will work together on a discussion sheet. 50% of the discussion grade will come from attending the discussion. The other 50% will be determined by the correctness of the student's solutions to the discussion sheet. Solutions to the discussion activities will be available immediately following the final discussion section of the week.

Mastery Quizzes (20%)

There are 9 online mastery quizzes that you can access via Canvas. Each quiz covers a week of material. You will have three attempts on each quiz, but some questions can alter slightly between attempts. Any score of 70% or higher will automatically count as full credit. Any score below will just be your score on the quiz.

When you do not pass a quiz attempt on the first time, you should not immediately attempt the quiz again. You need to stop and build your knowledge which you did not master on your previous quiz attempt. Keeping this in mind, I will consider your display of progress and the timing at which you are taking your quizzes in any requests for additional quiz attempts.

After you complete a quiz attempt, you will not get a summary of correct answers. However, you will see answer-specific feedback for incorrect answers. The mastery quizzes do not have strict due dates, but instead are set with suggested timelines for completion. ***Please note that you must complete all mastery quizzes before Friday, August 30th at midnight.*** There will be no exceptions to this deadline because the university does not allow due dates past the last day of the quarter.

TUTORING

There is tutoring available for this class, provided by [Learning Support Services \(LSS\)](#)!

- Learning Support Services Tutors are an important part of the teaching team and are here to help you be successful. [Tutoring](#) is for everyone and open to all students in class to get extra practice on the things you already know or the things you want to know better.
- Your tutor(s) is an undergraduate student who took the class, did well, and received extensive training on how to help you learn! Sessions are one-hour long, available several days a week and attendance is voluntary.
- Why attend? Students who attend sessions weekly tend to earn a higher final grade than students who do not participate.
- Ask your tutor for more information about session times, visit the LSS [website](#), or visit [in person at the ARCenter](#). You can also view your Tutor's schedule on [Tutor Hub](#).

- Students can sign up for tutoring on Monday June 24th at 12 p.m, although some students may have access to sign-up before the 5th based on priority groups.
- Tutoring Sessions begin Wednesday, June 6th.
- [Learning Support Services](#), catch-up, keep-up, excel!

STUDENT HOURS FOR COURSE

One academic credit corresponds to a total of 30 hours of work for the average student over a quarter. This 5-unit course should therefore take about 15 hours of your time each week. This does not include lab time. An example of how you might distribute this time over a standard week is as follows:

- 3 hours attending lecture,
- 2 hours preparing for mastery quiz,
- 1 hour reviewing lecture content,
- 1 hour attending discussion section,
- 6 hours dedicated to homework and study time, maybe including office hour attendance,
- 1-2 hours taking a mastery quiz.

INSTRUCTOR FEEDBACK

You will receive immediate feedback on homework within The Expert TA interface. You will also receive feedback on mastery quizzes for incorrect answers, but due to the flexible due dates and multiple attempts that are possible with the mastery quizzes, you will not have access to the problem solutions of the mastery quiz questions. I know that this can be frustrating, but it's an important safeguard for academic integrity. If you have questions on the mastery quizzes, please feel free to drop by office hours and speak to me about them verbally.

STUDENT FEEDBACK

At the end of the quarter, I will ask you to complete a Student Experience of Teaching survey for this course. SETs provide an opportunity for you to give valuable feedback on your learning that is honest and constructive. This anonymous feedback will help me consider modifications to the course that will help future students learn more effectively.

TENTATIVE COURSE SCHEDULE

Week	Topic	Notes
1 (starts June 24)	Electric Charge and Force	

2 (starts July 1)	Electric Field & Gauss's Law	
3 (starts July 8)	Electric Potential	
4 (starts July 15)	Capacitance, Dielectrics	Midterm 1 on Friday, July 19
5 (starts July 22)	Circuits and Resistors	
6 (starts July 29)	RC Circuits	
7 (starts August 5)	Magnetic Forces	Midterm 2 on Friday, August 9
8 (starts August 12)	Magnetic Fields (continued)	
9 (starts August 19)	Electromagnetic Induction	
10 (starts August 26)	Electromagnetic Waves	Final on Friday, August 30

Note: This schedule is very subject to change. Stay tuned

LAB SCHEDULE

Week of:	Lab
June 24	No Lab
July 1	Electrostatics
July 8	Charge, Potential, Capacitance
July 15	DC Circuits
July 22	Magnetic Fields
July 29	e/m
August 5	Magnetic Induction
August 12	Step Response
August 19	No lab
August 26	No lab

ACCESSIBILITY

UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please affiliate with the DRC. I encourage all students to benefit from learning more about DRC services to contact DRC by phone at 831-459-2089 or by email at drc@ucsc.edu. For students already affiliated, make sure that you have requested Academic Access Letters, where you intend to use accommodations. You can also request to meet privately with me during my office hours or by appointment, as soon as possible. I would like us to discuss how we can implement your accommodations in this course to ensure your access and full engagement in this course.

TITLE IX/CARE ADVISORY

UC Santa Cruz is committed to providing a safe learning environment that is free of all forms of gender discrimination and sexual harassment, which are explicitly prohibited under Title IX. If you have experienced any form of sexual harassment, sexual assault, domestic violence, dating violence, or stalking, know that you are not alone. The Title IX Office, the Campus Advocacy, Resources & Education (CARE) office, and Counseling & Psychological Services (CAPS) are all resources that you can rely on for support.

Please be aware that if you tell me about a situation involving Title IX misconduct, I am required to share this information with the Title IX Coordinator. This reporting responsibility also applies to course TAs and tutors (as well to all UCSC employees who are not designated as “confidential” employees, which is a special designation granted to counselors and CARE advocates). Although I have to make that notification, you will control how your case will be handled, including whether or not you wish to pursue a formal complaint. The goal is to make sure that you are aware of the range of options available to you and that you have access to the resources you need.

Confidential resources are available through [CARE](#). Confidentiality means CARE advocates will not share any information with Title IX, the police, parents, or anyone else without explicit permission. CARE advocates are trained to support you in understanding your rights and options, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more. You can contact CARE at (831) 502-2273 or care@ucsc.edu.

In addition to CARE, these resources are available to you:

- If you need help figuring out what resources you or someone else might need, visit the [Sexual Violence Prevention & Response \(SAFE\) website](#), which provides information and resources for different situations.
- [Counseling & Psychological Services \(CAPS\)](#) can provide confidential counseling support. Call them at (831) 459-2628.

- You can report gender discrimination and sexual harassment and violence directly to the University's [Title IX Office](#) by calling (831) 459-2462 or by using their [online reporting tool](#).
- Reports to law enforcement can be made to the UC Police Department, (831) 459-2231 ext. 1.
- For emergencies, call 911.

ACADEMIC INTEGRITY

All members of the UCSC community benefit from an environment of trust, honesty, fairness, respect, and responsibility. You are expected to present your own work and acknowledge the work of others in order to preserve the integrity of scholarship.

Academic integrity includes:

- Following exam rules.
- Using only permitted materials during an exam.
- Viewing exam materials only when permitted by your instructor.
- Keeping what you know about an exam to yourself.
- Incorporating proper citation of all sources of information.
- Submitting your own original work.

Academic misconduct includes, but is not limited to, the following:

- Disclosing exam content during or after you have taken an exam.
- Accessing exam materials without permission.
- Copying/purchasing any material from another student, or from another source, that is submitted for grading as your own.
- Plagiarism, including use of Internet material without proper citation.
- Submitting work that was produced by artificial intelligence (e.g., ChatGPT).
- Using cell phones or other electronics to obtain outside information during an exam without explicit permission from the instructor.
- Submitting your own work in one class that was completed for another class (self-plagiarism) without prior permission from the instructor.
- Violations of the Academic Integrity policy can result in dismissal from the university and a permanent notation on a student's transcript. For the full policy and disciplinary procedures on academic dishonesty, students and instructors should refer to the [Academic Misconduct page](#) at the [Division of Undergraduate Education](#).

INTELLECTUAL PROPERTY

The materials in this course are the intellectual property of their creators. As a student, you have access to many of the materials in the course for the purpose of learning, engaging with your peers in the course, completing assignments, and so on. You have a moral and legal

obligation to respect the rights of others by only using course materials for purposes associated with the course. For instance, you are not permitted to share, upload, stream, sell, republish, share the login information for, or otherwise disseminate any of the course materials, such as: video and audio files, assignment prompts, slides, notes, syllabus, simulations, datasets, discussion threads. Conversely, any materials created solely by you (for example, your videos, essays, images, audio files, annotations, notes) are your intellectual property and you may use them as you wish.

RELIGIOUS ACCOMMODATION

UC Santa Cruz welcomes diversity of religious beliefs and practices, recognizing the contributions differing experiences and viewpoints can bring to the community. There may be times when an academic requirement conflicts with religious observances and practices. If that happens, students may request reasonable accommodation for religious practices. The instructor will review the situation in an effort to provide a reasonable accommodation without penalty. You should first discuss the conflict and your requested accommodation with your instructor early in the term. You or your instructor may also seek assistance from the [Dean of Students office](#).

REPORT AN INCIDENT OF HATE OR BIAS

The University of California, Santa Cruz is committed to maintaining an objective, civil, diverse, and supportive community, free of coercion, bias, hate, intimidation, dehumanization, or exploitation. The Hate/Bias Response Team is a group of administrators who support and guide students seeking assistance in determining how to handle a bias incident involving another student, a staff member, or a faculty member. To report an incident of hate or bias, please use the following form: [Hate/Bias Report Form](#).

STUDENT SERVICES

[Counseling and Psychological Services](#)

Many students at UC Santa Cruz face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional well-being. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.

[Campus Mobile Crisis Team](#)

If you are concerned about yourself or someone around you and feel they may be having a behavioral health crisis, do not hesitate to call our team. Behavioral Health concerns can

include mental health or substance use-related situations where you or someone around you may be a danger to self or others. Dial [831-502-9988](tel:831-502-9988) to reach the team.

[Student Success and Engagement Hub](#)

The Division of Student Success provides campus-wide coordination and leadership for student success programs and activities across departments, divisions, the colleges, and administrative units.

[Tutoring and Learning Support](#)

At Learning Support Services (LSS), undergraduate students build a strong foundation for success and cultivate a sense of belonging in our Community of Learners. LSS partners with faculty and staff to advance educational equity by designing inclusive learning environments in Modified Supplemental Instruction, Small Group Tutoring, and Writing Support. When students fully engage in our programs, they gain transformative experiences that empower them at the university and beyond.

[Slug Support Program](#)

College can be a challenging time for students and during times of stress it is not always easy to find the help you need. Slug Support can give help with everything from basic needs (housing, food, or financial insecurity) to getting the technology you need during remote instruction. To get started with SLUG Support, please contact the [Dean of Students](#) Office at 831-459-4446 or you may send us an email at deanofstudents@ucsc.edu.

[Slug Help/Technology](#)

The ITS Support Center is your single point of contact for all issues, problems or questions related to technology services and computing at UC Santa Cruz. To get technological help, simply email help@ucsc.edu.

[On-Campus Emergency Contacts](#)

For all other help and support, including the health center and emergency services, Click here to go to UCSC's [Emergency Services](#) page. **Always dial 9-1-1 in the case of an emergency.**