

PHYS 2220-011  
 PHYSICS FOR SCIENTISTS AND ENGINEERS II  
 Spring 2022, Physics & Astronomy Department, University of Utah

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**Updated January 6, 2022. Syllabus subject to change:** This syllabus is meant to serve as an outline and guide for our course. Please read it carefully. Please note that I may modify it with reasonable notice to you. Any changes will be announced in class and posted on Canvas.

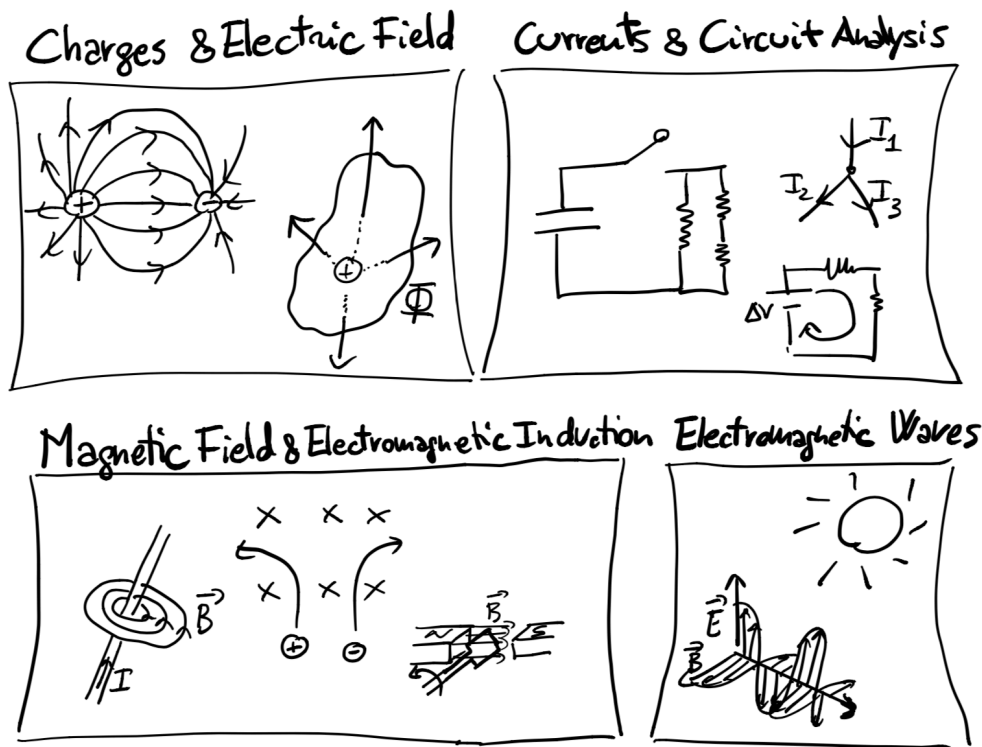


Figure 1: Illustrative overview of topics covered in PHYS 2220.

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## 1 Your learning goals

Significant learning combines the logical and the intuitive, the intellect and the feelings, the concepts and the experience, the idea and the meaning. When we learn in that way, we are whole. *Carl Rogers, 1983*

PHYS 2220 is the second of a two-part sequence, calculus-based course in introductory physics. In class we will explore standard concepts of electrostatic, circuit analysis, magnetic fields, and electromagnetic waves. The class will assume a working knowledge of calculus. After successful completion of this course, you should be able to:

- Appreciate the power of physics and mathematics to deepen your scientific understanding of some of the physical phenomena we observe everyday.
- Identify, apply and master problem solving strategies to reach a quantitative understanding in a variety of circumstances.
- Monitor your learning process, understand your mistakes, and develop strategies for success and improvement.
- Collaborate productively in a group and learn from your peers.

In addition, I hope that you will:

- Further develop your own passion for learning, not be afraid of being challenged, believe in yourself as capable of improvement.
- Be creative, have fun and make good friends.

## 2 Welcome from the Teaching Team

This class strives to be an inclusive community, learning from the many perspectives that come from having differing backgrounds and beliefs. As a community, we aim to be respectful to all. We reject all forms of prejudice and discrimination, including but not limited to those based on age, color, disability, size, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, and veteran status. The instructional staff and students are expected to commit to creating an environment that facilitates inquiry and self-expression, while also demonstrating diligence in understanding how others' viewpoints may be different from their own.

### Teaching Assistants (TAs)

Teaching Assistants are graduate or undergraduate students in physics, they are working towards their Bachelor, Master or PhD degree in physics. They will lead discussion sections, staff Study Hall, hold Office Hours, present Reviews and grade Exams and Problem Sets. The names and contacts of the TAs will be posted on the Canvas website on the Teaching Staff page.

### Learning Assistants (LAs)

Learning Assistants are undergraduate students who have taken this course previously, or a similar course, and who receive special training on how to help students learn science (see more details on the [U of U Learning Assistant program](#) page). LAs will help during class and discussion sections to facilitate student learning, they will also staff Study-Hall and hold Office Hours. LAs are not responsible for grading assignments and can be thought of as peer mentors. The names and contacts of the LAs will be posted on the Canvas website on the Teaching Staff page.

### 3 Accessibility, accommodations, and meeting your needs

It is my goal to provide you with the tools you need to learn, be engaged, and succeed in my class. I'll make available multiple resources that you can use as best fits your learning style. For example, I'll always post a draft of my slides and lecture notes before class, and I'll post a finalized version for each of them after each class. I'll record my lectures and make them available by the end of the day on the course Canvas site. All videos posted on Canvas will be automatically closed-captioned. I'll have a break in the middle of each class.

- If you have a formal accommodation through the [Center for Disability and Access](#) please reach out to me as soon as possible during the first weeks of class. I'll be happy to meet with you to discuss how I can best meet your needs in my class.
- If you don't know about the CDA (Center for Disability and Access) and/or if you may need a formal accommodation, I encourage you to visit the [Center for Disability and Access](#) website to learn about the process and eligibility and to schedule an appointment. The CDA gets very busy at the start of the semester the sooner you make an appointment the better. Feel free to reach out to me as well if you like to discuss your situation with me and how I can support you in my class.
- If you don't have or need a formal accommodation but you find any aspect of the course inaccessible to you or if you have any suggestions for me that can help your learning experience in my class, please do not hesitate to reach out to me and I'll do my best to meet your needs. Please send me an email or come talk to me at the end or beginning of class or during study-halls. You can also submit an anonymous comment through the "Anytime Feedback" tool linked on our Canvas homepage.

### 4 In-person attendance requirements and Covid guidelines

This course is In Person; in person attendance will be required as follows:

*Discussion Section:* in person attendance to two Discussion Sections per week is required. You'll be excused to miss up to **six** Discussion Sections over the entire course of the semester.

*Quizzes:* in person attendance is required for Quizzes. There will be five Quizzes administered and proctored during the Tuesday Discussion Section. You'll be excused to miss **one** Quiz over the entire course of the semester.

*Lectures:* in person attendance to the lectures is highly encouraged; attendance via Zoom is available to all students who need to quarantine or self-isolate or for other special circumstances. In person attendance guarantees the best classroom experience, especially for what regards classroom demonstrations, and engagement with classmates and the instructor.

*Exams:* Exams will be in a take-home format. No in-person attendance will be required; a stable internet connection will be required to access and complete the exam.

For all in person meetings, students in this course and all members of the teaching team are recommended to follow the University's guidelines:

**Get Vaccinated, if you are not yet vaccinated, get weekly asymptomatic coronavirus tests  
Follow CDC guidelines and wear face masks indoors**

Please find information about vaccination, testing, and latest Covid-19 Response at  
[COVID-19 CENTRAL @TheU](#).

**If you have symptoms do not come to class**, instead attend lectures online and go over the discussion section material on your own for practice.

**If you test positive for Covid-19:**

- You are required to self report at [COVID-19 CENTRAL @TheU](#), click on "SELF REPORTING FORM."
- You are encouraged to tell your instructor (or the chair [Chair@physics.utah.edu](mailto:Chair@physics.utah.edu) and associate chair [bromley@physics.utah.edu](mailto:bromley@physics.utah.edu)), so that our Department can act more swiftly to manage contacts within the department/our class. Your name will remain confidential and not disclosed to the class.

## 5 Class meetings

### Class Times

This course consists of two 80-minute lectures and two 50-minute Discussion Sections every week. Before every lecture you will have some Pre-class Assignments to complete by midnight of the previous day. A typical lecture will be run by the instructor together with the help of Learning Assistants(LAs), it will consist of interactive lecturing, short clicker questions, physics demonstrations, and some small group discussions. Discussion Sections will consist primarily of group problem-solving activities and will be run by a Teaching Assistant(TA) with the help of Learning Assistants(LAs). Every other week there will be a quiz administered during Discussion Section. Additional help will be provided via optional Study-Halls.

- Lectures: in JFB 103 (James Fletcher Building): Monday and Wednesday, 1:25pm-2:45pm
- Discussion Sections (in person attendance required):
  - 012 Tuesday-Thursday 9:40am-10:30am in CSC 025 (basement of Crocker Science Center)
  - 013 Tuesday-Thursday 10:45am-11:35am in CSC 208 (2nd floor of Crocker Science Center)
  - 014 Tuesday-Thursday 12:55pm-1:45pm in AEB 320 (Emery Building- East of Crocker Science Center)
  - 015 Tuesday-Thursday 2:00pm-2:50pm in CSC 205 (2nd floor of Crocker Science Center)

**IMPORTANT:** You are required to attend the Discussion Section in which you are enrolled. Additionally, you may not attend a Discussion Section in which you are not enrolled.

- **Study-halls** in JFB 209 (James Fletcher Building):
  - Monday 3:30pm-5:00pm
  - Tuesday 3:00pm-6:00pm
  - Wednesday 5:30pm-7:00pm (also on Zoom)
  - Thursday 3:00-6:30pm
- Additional Study-hall times may be added based on needs and they will be announced and posted on Canvas. Keep in mind that Study-hall does serve the purpose of office hours, but with the additional ability to work in groups, see more below about the format of **Study-halls**.

**Punctuality:** Please be on time for lectures and Discussion Sections. The Teaching Team appreciates that you arrive to class on time; if you arrive late, you may not be able to join some of the class activities (e.g. taking a quiz).

**Lecture Attendance** is not mandatory, although strongly recommended to succeed in the class. Student feedback from previous semesters indicates that attending lectures is the second most helpful tool after working on the homework. All lectures will be recorded and posted before the end of the day on Canvas; if you happen to miss a class make sure to watch the recording soon and before the following Discussion Section. **Discussion Sections Attendance is required** and will contribute to your final course grade. In addition, roughly every two weeks there will be a Quiz administered during the Tuesday Discussion Section. See more details below under **Course work**.

**Lecture Recording:** Lectures will be recorded on Zoom and made available on Canvas by the end of the day. Automatic closed captioning will be generated shortly after each recording is uploaded on Canvas. Lecture recording will be available only to students enrolled in this course. The instructor will also be available right before class and right after class for questions and conversations that will not be recorded. If you have any concerns about Recording of the Lectures please reach out to the instructor anytime.

### Meeting with the instructor

I will be available for short questions before and after each class and to schedule one-on-one appointments. I'll be at Study-Hall regularly every week on Thursday from 5pm to 6:30pm. Depending on the week, I'll stop by occasionally during other Study-Hall times. Please email me if you want to schedule a time to meet during other Study-Hall times. If you cannot attend Study-Hall, please email me and I'll accommodate your schedule to find a time to meet.

## Special Dates

There will be no lecture on:

- Monday, January 17 (Martin Luther King Jr. Day holiday)
- Monday, February 21 (Presidents' Day holiday)
- During Spring Break: March 7-11

## Study-Halls

There will be the following study-halls each week:

- Monday 3:30pm-5:00pm
- Tuesday 3:00pm-6:00pm
- Wednesday 5:30pm-7:00pm (also on Zoom)
- Thursday 3:00-6:30pm

The goal of study hall is to provide a place where you can come to do the homework and study for quizzes and exams individually or with other classmates. The instructor, TAs and LAs will be there available to advise you, and answer questions. Because participation in study hall has proven to be an important factor leading to success in physics, **attendance to at least one of these study halls for at least one hour each week is strongly recommended**. In previous semesters, students have repeatedly expressed their gratefulness and need for study-hall. Below are a few comments from an anonymous survey administered at the end of the semester

- “Interact with the people around you. Go to study halls and do the problem sets with your peers, but also don't be afraid to talk to the professors and get to know them as well. It makes a huge difference because once you're comfortable with the people around you, you're not afraid to ask questions during class. You're far less likely to feel lost or overwhelmed when you're comfortable enough to sense how you learn best and ask questions.”
- “When I first started the course I remember the professor saying how much past students loved the study halls and I didn't know what to expect to see at the study halls. Now I know: It's not just a room where everyone works quietly on their own, but it's also not a loud room that you can't think in. It's a place full of passion for physics. It gets pretty nerdy solving all the homework problems with the other students or even just the LA's and TA's. Don't worry about having a group of friends to go with because as long as you have a chair and a section of a table to work, you can work on your problems and ask questions when you have them or hear others ask their questions and start a physics conversation with that. It's not just about socializing, it's about the learning environment with the inspirational vibes and getting to learn physics to a decent length.”

Study-hall will be held in JFB 209. Depending on your needs, at study-hall you can:

- Work on your own and ask for help when you need
- Work in groups: find new classmates to work with everytime, or come with your study-group
- Ask questions or just listen to others' questions
- Ask questions and/or review any of the class material with the Teaching Team or with your classmates
- Work on the Homework (many people start and finish the homework during study-hall coming a few times a week)
- Find classmates to work with and make friends
- Interact with the teaching team and the instructor.

**IMPORTANT:** There is no expectation to come to study-hall with specific questions, you can just drop by and see what people are doing. Most people find helpful to come to study-hall to just listen to others' questions, and work together on the homework. Study-hall should not be interpreted as an extra obligation to this class, instead it's a resource to make your working on the homework more *efficient*. The Instructor and Teaching Team look forward to meeting you at Study-Hall!

## 6 Classroom expectations and requirements

### Classroom guidelines

The following are guidelines for participation and engagement in class. We expect all students to follow these guidelines.

- Take care of yourself and be aware of others. Feel comfortable to engage, as needed, in any activities that reduce stress or anxiety (stimming, support people, caretaker, support animals, leaving the room for breaks, etc.), but also be open and aware of other members' sensitivities.
- Limit distractions on phones and laptops. Although a laptop and/or cellphone will be required for some in-class activities, please limit the use of these technology to activities related to class. You can make it easier to focus on the lecture or Discussion Sections by turning off notifications, and muting your smartphone.
- Avoid multitasking. You'll retain the material better if you refrain from replying to emails or text messages during class. There are [studies](#) that show how multitasking during class time is detrimental for your learning and affect your class performance.
- Keep any class conversation/questions on-topic. Feel free to be friendly and chat with your classmates before/after class or during the breaks, during the lecture time please be professional, avoid jokes, and stay on topic.
- Respect the TAs/LAs, they are there to help you. TAs and LAs will be around in discussion section or lecture.

### Community guidelines

The following are community guidelines we expect all students in the class to respect during Lecture and Discussion Sections. Your suggestions for this list are welcome!

- Treat your instructor, teaching team, and classmates with respect in any communication (in person or online).
- Be professional in your interactions with the teaching team and your classmates.
- There are no bad questions! All questions are welcome.
- Mistakes are good! Everyone makes them! (including the instructor and TAs)
- Support your peers and help them when you can.
- Learn to collaborate well with others. Make sure to always include everyone in the group.
- Be yourself, be present, engage with the material.

### Technical requirements

In order to participate in this course you will be required to:

- Have access to a laptop or desktop computer to access the course Canvas site regularly throughout the week to complete the course assignments. Some features of Canvas and of the online Homework platform do not work on cellphones or tablets, so you'll need a laptop/desktop to be able to access these.
- Be computer literate to be able to easily navigate Canvas as well as other software to scan your homework/exams (e.g. Adobe Scan).
- Be able to access Canvas during the lectures and discussion sections to access worksheets, polling software, etc. A cellphone/tablet may be enough in most situations, but a laptop will be required for Quizzes and Exams.
- Bring a laptop computer to class to access Quizzes on Canvas.

A regular scientific calculator (not a graphing calculator) may be needed for some of the homework questions.

*Electronic or equipment failure:* It is your responsibility to have regular access to a computer and internet connection to access the course information and complete assignments. Equipment failures will not be an acceptable excuse for late or absent assignments.

Note: Access to some technology equipment is available to students through [the Marriott Library](#).

## 7 Materials and resources

### Content

Course topics overview:

1. Charges and Electrostatic Force
2. Electric Field and Gauss's law
3. Circuit Analysis
4. Magnetic field and Electromagnetic Induction
5. Electromagnetic waves

For more details on the content covered each week and the corresponding textbook chapters visit the Canvas page: [Topics and Textbook Chapters](#).

### Canvas

All course materials will be posted on the PHYS 2220 Canvas site <https://utah.instructure.com/courses/751792>. Make sure to be comfortable and familiar to navigate Canvas and with the “Quick Links” showed on the course Homepage. Here are a couple of Canvas Guides for Students I encourage you to visit:

- [Student Canvas Guide-short](#)
- [Student Canvas Guide-extensive](#)

Class announcements will be sent through the Canvas server, and individual email communication with you will also happen through Canvas. **Therefore, it is extremely important that you receive your Canvas notifications and emails at your preferred email address.** To [manage your preferred email on Canvas](#), go on Canvas under *Account* → *Settings*, at the top right of the screen edit *Email Addresses*. In addition, it is important that you received the Canvas Course Announcements as soon as they are posted, these will often contain timely information; to [edit your Notification settings](#), go on Canvas under *Account* → *Notifications*, and select “Notify me right away” for Announcements.

### Textbook, Inclusive Access and MasteringPhysics

The book adopted for this course is *Physics for Scientists and Engineers: A Strategic Approach with Modern Physics* with MasteringPhysics, Fourth Edition, by Randall D. Knight. The electronic version of the textbook and associated resources and access to MasteringPhysics are available to you as part of the *Inclusive Access Program*. The *Inclusive Access Program* delivers all required course material as part of your tuition or fees. **If you are enrolled in this course, you do not need to buy course material as they will be provided to you starting the first day of class.** You will get the required resources and access to the book directly through the Canvas site. A paper copy of the book is not necessary, but if you'd like one, you could find it at the Campus Book store, or you can order an “unbound” copy through the MasteringPhysics web interface (\$44.97, free shipping).

Homework submission will happen through MasteringPhysics as well as access to LearningCatalytics, therefore you will need to make sure to have a MasteringPhysics account set up starting the first day of class. [The instructions on how to access MasteringPhysics are posted on the Canvas site.](#)

### In-class Response Tools: Learning Catalytics and Desmos

We will use [Learning Catalytics](#) to capture your input in class. Learning Catalytics is an interactive student response tool that you will be able to access online through your MasteringPhysics account (the same account that gives you access to the textbook and homework platform, see more details under Textbook). Information on how to access and use Learning Catalytics will be given the first week of class (you will NOT need to create an account). You will never be penalized for answering an in-class question incorrectly, but you are encouraged to try your best to answer, your responses will help the instructor tailor the class to your needs.

We will also use [Desmos](#) for some in-class activities. **By January 11 please make sure to create a free Desmos account** (simply choosing a username and email) to be ready to use Desmos during class starting January 11. To create a student account go on the homepage [Desmos](#) and click on the top right under “Sign Up.”



## Lecture videos, slides and notes

A draft of slides and lecture notes will be posted on Canvas everyday before class time. A finalized version of slides and notes will be posted after class. Lecture recording will be also available by the end of the day. All materials for this course are copyrighted. Do not distribute or share course resources without instructor permission.

## Discussions Boards

We will be using the Canvas Discussions Boards in this course, an online platform embedded on Canvas for everyone to post questions to the teaching team and classmates. There will be different Discussion Boards based on the topic and purpose. Post questions on the Discussions Board to get quick responses from your instructor, TAs, LAs, and classmates. In this way, everyone can learn from your questions and you will be answered more quickly. I also encourage you to post answers to help your fellow classmates.

## Group work

Group work and collaboration are essential tools to succeed in almost any career (research teams, nursing teams, construction teams, dance groups, orchestras, committees, firefighting personnel, etc.) and they will be fundamental and invaluable tools for your learning of physics in this class. That is why one of the learning goals of this course is to learn to work effectively with your classmates. Learning to work effectively with a variety of people will prepare you to work with your colleagues and collaborators at your work place, and will enhance and deepen your understanding of physics. The best discoveries in science very often arise from the group work and collaboration of several people. By discussing ideas, posing questions, listening to other people's way of thinking, we each grow intellectually and can overcome struggles that seem daunting individually. I encourage you to start to hone your team work skills in this course. Specifically, I encourage you to collaborate, talk, discuss, make your classmates your best study-partners, bug them with questions, build ideas together. There will be group activities and group work several times throughout the course and working effectively in a group will be fundamental to your success in this class. The course is designed to encourage the collaboration with your classmates inside and outside the class. You will work in groups during the *lectures* when you will be asked to discuss and work with your classmates. In the *discussion sections* you will work on problem solving in groups of 3-4 classmates, groups will be changed for every discussion section. You will also work in groups for some of the class assignments, such as *groups quizzes*. *Study-halls*, I hope, will enable you to meet and work together with colleagues in the class; the Discussion Boards on Canvas will be another place where interact with your peers online. You can set up your own study-groups, or come together to study-hall. There will be a lot to understand and discover in this class, and while it can sometimes be rewarding to struggle on your own, often it can be fun to struggle together in a group. **I am NOT grading on a curve in this class, so your classmates are friends, collaborators, and team mates, not competitors.**

# 8 Communication

## Communication and email

You will be responsible for any information contained in **Canvas Announcements, individual emails sent to your Canvas email, as well as information announced in class**. Please keep in mind that **it is also your responsibility to regularly check your Umail** (make sure you set up forwarding if you do not check it regularly), your Umail is the only email contact we have access to as instructors, and the only way for us to communicate privately with you. There will be occasions during the semester that we may need to reach out to you individually (e.g. regarding a grade or missing assignment) and it is in your best interest to respond promptly.

Feel free to contact me by email for questions at [claudia.degrandi@utah.edu](mailto:claudia.degrandi@utah.edu), I will do my best to answer emails promptly. I would like to encourage you to email me only if it is something personal that requires individual attention, **if instead you have questions about logistics of the class, course material and assignments, and anything else your classmates may wonder as well, please post a question on the appropriate Discussion Board instead**. This way the information is shared quickly to the entire class, and each of you can benefit from seeing other classmates' questions. Given the large enrollment of the course, the Discussions Boards will be a faster channel for communication for everyone. Therefore, even if you do not post questions yourself, **make sure to check the Discussions Boards regularly** as you may find some helpful information (for instance a typo in the homework, some helpful discussion to prepare for the quiz, etc.).



I will always do my best to ensure the communication relevant to the course is clear and transparent, **it is your responsibility as well to keep yourself updated by regularly checking:** the announcements on Canvas, your default email address on Canvas, your Umail, the posts on the Discussions Boards, and pay attention to the announcements given in class and Discussion Section.

### Email Etiquette: How to Email your Professor

When emailing your Instructor and Teaching Team keep a professional tone. For example, you are recommended to:

- use your University email, not a personal email (spam filter systems may sometimes categorize as “spam” emails not sent from U of U email addresses)
- use a descriptive subject line
- avoid “Hey” and other colloquial language
- always use your professors’ proper title: Dr. or Prof.
- sign your message with your name and return e-mail address.

Please consult [this page for tips](#) on how to write appropriate professional emails.

## 9 Course work

### Pre-Class Assignments

The night before each lecture there will be a Pre-class Assignment due at midnight, therefore there will be two Pre-Class assignments due every week on Sunday at midnight and on Tuesday at midnight. The purpose of the Pre-Class Assignment is to introduce you to new class concepts and material prior to the lecture, and gather feedback from you on which topics you find most difficult. Pre-class assignments may include:

- watching some short video lectures and/or reading related course material;
- completing a quiz or survey;
- posting on a Canvas Discussion Board based on given prompts.

Your Discussion Board post associated with the Pre-Class Assignment will be read by the instructor and Teaching Team prior to the lecture; this way the lecture can be better tailored to address your questions and interests. This is why the Pre-Class assignments are due the night before the lecture, to give time to the Teaching Team to read carefully through all students’ posts prior to class.

The Pre-class Assignment due on Sunday will be available since the prior Thursday morning; the Pre-Class Assignment due Tuesday, will be available on Monday after class. I encourage you to do these assignments early as soon as they are posted.

*Dropped Pre-Class Assignments* Pre-Class Assignment contribute 10% to your final grade. There will be about 26 Pre-Class Assignments throughout the entire semester, some will count more points than others. You will be allowed to miss a few of these without affecting your final course grade, *your lowest six Pre-Class Assignment scores (or equivalent points) will be dropped* in calculating your cumulative course grade. **Effectively, you are automatically excused if you miss up to six Pre-Class Assignments.**

The first Pre-Class Assignment will be available after the first class on Monday January 10 and due on Tuesday, January 11 at midnight.

### Discussion Sections

Attendance and active participation in Discussion Sections is **required**. During Discussion Section you will work on problems and exercises meant to help you practice with concepts and prepare for homework and exams. Roughly every couple of weeks on Tuesday there will be a Quiz administered during Discussion Section (see next section on Quizzes). In Discussion Section you can choose to either work individually or join a group of 3-4 classmates. Groups will be changed every discussion section. You can change your preference to work individually or in group every Discussion Section. We encourage you to join a group regularly, or at least once a week, but it will be understood if you prefer to work individually.

In order to get full credit for attending a Discussion Section, you need to:

- Come on time and stay until the end of the section
- Work and participate actively on the activities assigned by your TA
- Submit on Canvas the required work assigned by your TA **at the end of your Section or at the latest by midnight of the day of the Discussion Section.**

If you fail to meet one or more of the criteria above, you will be given partial or no credit.

*Dropped Discussion Sections* Participation in Discussion Sections contribute 10% to your final grade. There will be about 24 Discussion Section meetings throughout the entire semester, *your lowest six Discussion Section scores will be dropped* in calculating your cumulative course grade. **Effectively, you are automatically excused if you miss up to six Discussion Sections.**

The first Discussion Section will be on Tuesday, January 11.

## Quizzes

Roughly every two weeks there will be a Quiz on the material of the previous two weeks. The Quiz will be administered and proctored during Discussion Section on Tuesday with the following schedule and topics:

- Quiz 1 [Week 3-January 25]: Electrostatic Force and Electric Field of point charges
- Quiz 2 [Week 5- February 8]; Electric field of continuous charge distributions and Gauss's Law
- Quiz 3 [Week 8- March 1]: Electrostatic Energy and Potential
- Quiz 4 [Week 10- March 22]: Circuit Analysis
- Quiz 5 [Week 13- April 12]: Magnetic Fields and Electromagnetic Induction

*Format of the Quiz* The quiz will be a multiple-choice quiz on Canvas. You will have two attempts with a time limit of about 20 minutes for each attempt. Your final score will be the average of your two attempts. The first attempt will be done individually at the beginning of discussion section; for the second attempt you will be given the option of joining a group and resubmit while discussing with your classmates.

*Dropped Quiz* Quizzes contribute 12% to your final grade. Of the 5 total quizzes administered this semester, *your lowest quiz score will be dropped* in calculating your cumulative course grade. **Effectively, you are automatically excused if you miss one Quiz.** There will be no make-up quiz option. If you have a non negotiable event or condition that will prevent you from taking the quiz, please reach out to the instructor at least 24 hours ahead of time.

## Homework

There will be about 11 problem sets, assigned weekly and **due Thursdays at midnight**. The purpose of the homework is to review topics covered during one week of class, to get deeply involved in thinking about the material, and ultimately to prepare for the exams. Homework problems might, at times, walk you through a situation or concept not covered in lecture. In short, the homework is a an excellent venue for checking whether you truly understand the material.

The homework also is a good way of getting used to **clear written communication**. **Make sure the steps of your solution can be followed by another reader.** Even if your logic is sound, if the steps and reasoning are not written down and clearly communicated to the reader your solution will be incorrect. Remember that the emphasis is on the logical process and analytic reasoning you do in order to solve problems, so the final line of the solution is not the basis for judging an answer to be correct or incorrect.

You are encouraged to discuss the problems with your classmates and teaching staff, especially during study-hall. However, the solutions you submit must be your own and represent how you understand the problem. **Students caught cheating will receive no credit for the homework, and will be sent on to the University Disciplinary Committee for further action.**

## Homework submission and Solutions

Homework sets are assigned on Fridays and posted on the course website. They are due the following Thursday at midnight. In general, the homework will consist of two parts:

1. **Part 1: on MasteringPhysics.** Problems and questions to be worked out and submitted on MasteringPhysics. You will have multiple attempts, hints available, and immediate feedback on your answers.
2. **Part 2: on Gradescope.** A few additional problems posted on Canvas for which you will write and submit a careful solution that shows all your steps. Make sure the steps of your solution can be followed by another reader. You will turn in Part 2 **online on Gradescope as a single pdf attachment.** You will find all the details on the format requirement and submission of your homework on the Canvas page [Homework Format and Submission](#).

Late homework submission will be penalized according to the Late Submission Policy discussed below.

### *Homework grading*

- Problems in Part 1 on MasteringPhysics will be automatically graded.
- Problems in Part 2 on Gradescope will be graded by the TAs. You must do all assigned problems. Of these, **only a portion of the homework will be graded**, selected after the homework has been handed in. The reason for this procedure is to free up TAs' time, so that they can be available to staff study-hall and hold office hours, which is a more useful way to employ their time than grading alone.

Solutions to the entire homework set will be always posted, and it will be your responsibility to check the solutions to all problems, not just the ones that were graded, and consult with the teaching staff for any question.

*Dropped problem sets* Homework contributes 22% to your final grade. Of the 11 problem sets assigned this semester, *your lowest two problem sets score will be dropped* in calculating your cumulative course grade.

The first homework set will be due on Thursday, January 20th.

## Dynamics Study-Modules

There will be 6 Dynamics Study-Modules to complete on MasteringPhysics throughout the semester. These are great tools to help you review conceptually the topics of the class. They are adaptive multiple-choice quizzes of about 25 questions which you can take as many times you need in order to master all concepts. They will be assigned roughly every two weeks and due on Friday at midnight. You are encouraged to complete these Modules sooner rather than later to help you prepare for Quizzes and Exams.

*Dropped Dynamic Study-Modules* Dynamic Study-Modules contribute 12% of your final grade. Of the 6 assigned this semester, *your lowest score will be dropped* in calculating your cumulative course grade. The first Dynamic Study Module will be due on Friday, January 28th.

## Surveys and additional assignments

During the course of the semester, you will be asked to submit a few surveys and other assignments. These assignments will never be graded for correctness, but simply by being completed and submitted. These assignments will contribute 2% to your final course grade.

## Late Submissions

Almost all assignments (Pre-Class Assignments, Discussion Posts, Homework, Survey, etc.) will be subjected to the following Late Penalty policy:

- A 5% of total points possible in the assignment will be deducted **per each hour** the submission is late. Minutes will be rounded to the next integer hour. For instance, if the homework is due at 11:59pm and you submit at 12:02am, you will be deducted 5% of the total homework points, if you submit 4 hours late, you will receive a 20% deduction (in this case for example, if the homework is out of 20 points and you are awarded full points, your homework grade will be 16 instead of 20).
- Therefore, for a submission 20 hours after the deadline, you will be deducted 100% of the total point, and so effectively you will receive no credit for your submission.

*Exception:* there will be no credit for late submission of the Dynamic Study-Modules. This is because of their completion-by-mastery structure they need to be completed before the set deadline (MasteringPhysics is not able to grant partial credit for late submission in this case).

## Excuses

As described above, for each assignment category some of the lowest scores will be dropped from the calculation of your final course grade (in particular 6 Pre-class Assignments, 6 Discussion Sections, 1 Quiz, 2 Homework sets, 1 Dynamic Study Module). These dropped scores are intended as **Automatic Excuses for everyone**, that means you'll have them without asking for it. It is understood that you may have some days where you will have to miss an assignment or class, you may be sick, you may have some conflict, etc. This can happen to everyone. As long as this happens only a few times throughout the semester, you are automatically excused and your grade will not be affected.

Additional excuses may be provided if you find yourself in a situation for which you can prove you have already used up all the already allotted excuses due to an exceptional circumstance out of your control (for instance for an extended medical leave). In those cases please reach out to the instructor to discuss possible accommodations.

## 10 Exams

All exams will be take-home with a time limit of three hours. In order to access and take the exam you'll need to have access to a stable and strong internet connection for the three hours during which you take the exam. You will have a window of at least 24 hours during which you can start the exam when you like. From when you start you will then have 3 hours to complete and submit your exams. All instructions about the take-home exam format will be discussed in class.

### Midterm Exams

There will be two take-home midterm exams. They will be made available on Wednesday afternoon after an in-class exam review and will be due by midnight on Thursday. **You'll have 3 hours to complete the exam once you start it.**

Midterm exams will occur on the following dates:

- **Midterm 1:** opens Wednesday February 23 after class - due Thursday February 24 at midnight
- **Midterm 2:** opens Wednesday March 30 after class- due Thursday March 31 at midnight

There will be no Discussion Section the Thursday when an Exam is due.

Each midterm exam contributes 10% to your final course grade.

**Make-up exams** will only be offered in the following cases (a) absence due to a University sponsored activity or to military or jury duty, and (b) serious medical emergencies. In any case the student must provide complete documentation. In the case of exception (a) the request for a make-up exam must be filed with Professor De Grandi **at least three weeks in advance** of the anticipated absence. **Please note that all exam dates and times have already been determined: mark your calendars now and resolve any conflicts as soon as possible!**

### Final Exam

The final exam for this course is scheduled for Thursday **April 28, 3:30-5:30pm** and contributes 12% to your final course grade. The final exam will be cumulative and therefore it will cover the material of the entire semester.

#### *Homework and Exam Regrading Request*

If you feel an error was made in grading part of your homework or exam, you may request a regrading of problems. This means that your grade on the problem could be raised or lowered; thus, it is highly recommended that you only use this option if there is a clear and egregious error in the grading. Regrade Requests can be submitted on Gradescope within a week from when the grades are posted.

## 11 Grading

### Checking your Course Grades

It is the **student's responsibility to ensure the accuracy of all recorded homework, quizzes, online assignments, and exam grades.** Also you should keep as record all your graded assignments. If

you see any error in your grades on Canvas, reach out to the instructor as soon as possible, or at the latest **within two weeks from when the assignment grade was posted.**

## How I determine your final grade

There are two grading schemes to calculate the final course grade. I will use whichever is in your favor. Exams constitute 32% of your overall course grade. This portion of your cumulative grade can come from Midterm 1, Midterm 2 and the Final exam (10% +10% +12%) OR entirely from your final exam score (32%), whichever is higher.

|                       |     |    |                       |     |
|-----------------------|-----|----|-----------------------|-----|
| Pre-Class Assignments | 10% |    | Pre-Class Assignments | 10% |
| Homework              | 22% |    | Homework              | 22% |
| Discussion Sections   | 10% |    | Discussion Sections   | 10% |
| Quizzes               | 12% |    | Quizzes               | 12% |
| Dynamic Study Modules | 12% | OR | Dynamic Study Modules | 12% |
| Surveys               | 2%  |    | Surveys               | 2%  |
| Midterm 1             | 10% |    | Final Exam            | 32% |
| Midterm 2             | 10% |    |                       |     |
| Final Exam            | 12% |    |                       |     |

The rationale for these two schemes is that I believe that if you have mastered the material at the end of the course and your performance on the cumulative final exam demonstrates this, you should not be held back by a rough start earlier in the semester.

## Grade boundaries

Your final letter grade will be determined from your total course grade percentage (calculated as described above) and according to the following grade boundaries:

| Score in % | Grade |
|------------|-------|
| 93-100     | A     |
| 89-93      | A-    |
| 85-89      | B+    |
| 80-85      | B     |
| 75-80      | B-    |
| 70-75      | C+    |
| 65-70      | C     |
| 60-65      | C-    |
| <60        | D,F   |

## 12 Academic Code of Conduct

### Academic Integrity

While I encourage students to work together in groups, either in preparation for the weekly homework or for the exams, each student must ensure a thorough understanding of the material and the problems solved. After your group study, you should always write up your work individually. Being able to rework your group's effort will show you whether you really understood everything.

If you are expected to collaborate on a group quiz or group exam it will be clearly stated. All individual quizzes, and the individual components of midterm exams and the final exam must be done entirely on your own. Sharing of information through any means (notes, internet, talking, texting, copying, etc.) will be considered a case of academic dishonesty.

Violations of the Student Code of Conduct erode the equitable learning environment that we strive for in this course. Therefore, at the beginning of the semester I will require all students in this course to agree to the academic integrity statement below.

## Code of Conduct

All work submitted as part of your enrollment in this course should be your own work and you must follow all the rules associated with the assignment. Incidents of academic misconduct (including cheating, plagiarizing, research misconduct, misrepresenting one's work, and/or inappropriately collaborating on an assignment) will be dealt with in accordance with the Student Code (Policy 6-400, Section V). Instances of academic misconduct could result in a failing grade for the course; probation, suspension, or dismissal from a program; suspension or dismissal from the university; or revocation of a degree or certificate. Inappropriate behavior includes, for example, submitting assignment problems to online tutoring resources or searching for solutions on such websites and submitting the result as your own work.

All study materials in this course are considered intellectual property of the instructor and the University of Utah (this includes lecture slides, problem sets, exams, answer keys etc.). Unauthorized uploading or distribution of the aforementioned materials to any website, either during or after the semester, is prohibited and may be addressed both as a violation of the behavioral standards as well and an act of academic misconduct. The Department will actively monitor websites for unauthorized distribution and refer all instances of the violation to VP for Student affairs and the College of Science Academic Affairs Committee for investigation. You need written permission from the instructor permitting you to upload the material.

Events of academic dishonesty will be dealt with in the following way:

- First Offense: Student will receive a zero on exam or assignment.
- Second Offense: Students will receive a failing grade in the course.
- Particularly egregious attempts at cheating will result in a referral to the advocacy system and a permanent mark on your record.

You are encouraged to review the Student Code for the University of Utah:

<https://regulations.utah.edu/academics/6-400.php>.

## 13 Additional Policies and Resources

### COVID-19 Considerations

Follow the University's guidelines: 1) get Vaccinated; 2) if you are not yet vaccinated, get weekly asymptomatic coronavirus tests; 3) follow CDC guidelines regarding face masks, which now call for everyone to wear face masks indoors. Please find information about vaccination, testing, and latest Covid-19 Response at [COVID-19 CENTRAL @TheU](#).

Students must self-report if they test positive for COVID-19 via <https://coronavirus.utah.edu/>.

### The Americans with Disabilities Act

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the [Center for Disability and Access](#), 162 Olpin Union Building, (801) 581-5020. CDA will work with you and the instructor to make arrangements for accommodations. You are encouraged to come and talk to me about your necessary accommodations within the first two weeks of the semester.

### Campus Safety

The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit [safeu.utah.edu](https://safeu.utah.edu)

### Addressing Sexual Misconduct

Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the [Office of Equal Opportunity and Affirmative Action](#), 135 Park Building, 801- 581-8365,

or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the [Center for Student Wellness](#), 426 SSB, 801-581-7776. To report to the police, contact the [Department of Public Safety](#), 801-585-2677 (COPS).

I will listen and believe you if someone is threatening you, and help you connect with the appropriate help and resources. **As University Employees, myself and all the Teaching Assistants are mandatory reporters.**

## Violence Prevention

I am committed to make sure all students in my class have the support they need if they are experiencing violence, including but not limited to domestic violence, interpersonal violence, and stalking. If you are experiencing violence I encourage you to tell someone and seek help from the resources listed below.

### Campus Resources

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|  |  |
|--|--|
| Safe U                                 | <a href="http://safeu.utah.edu">safeu.utah.edu</a>             |
| <a href="#">Advocacy/Mental Health</a> |  |
| Contact a Victim Advocate              | <a href="mailto:advocate@sa.utah.edu">advocate@sa.utah.edu</a> |
| University Police                      | 801-585-2677   |

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### Area Resources

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|                                       |  |
|---------------------------------------|--|
| Utah's Domestic Violence Coalition    | <a href="http://www.udvc.org">www.udvc.org</a>                   |
| YWCA of Utah                          | <a href="http://www.ywcautah.org">www.ywcautah.org</a>           |
| Utah Coalition Against Sexual Assault | <a href="http://www.ucasa.org">www.ucasa.org</a>                 |
| Rape Recovery Center Crisis Line      | 901-467-7273   |
| Love is Respect                       | <a href="http://www.loveisrespect.org">www.loveisrespect.org</a> |

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## Student Names and Personal Pronouns Statement

Canvas allows students to change the name that is displayed and allows them to add their pronouns to their Canvas name. This is possible on Zoom as well through the "Rename" tool. I will honor you by referring to you with the name and pronoun that feels best for you. Please advise me of any name or pronoun changes (and update CIS, Canvas and Zoom) so that I can help create a learning environment in which you, your name, and your pronoun will be respected. If you need assistance getting your preferred name on your uID card, please visit the [LGBT Resource Center](#).

## Office of the Dean of Students

The [Office of the Dean of Students](#) is dedicated to being a resource to students through support, advocacy, involvement, and accountability. It serves as a support for students facing challenges to their success as students, and assists with the interpretation of University policy and regulations. Please consider reaching out to the Office of Dean of Students for any questions, issues and concerns. 200 South Central Campus Dr., Suite 270. Monday-Friday 8 am-5 pm.

## University Counseling Center

The [University Counseling Center](#) (UCC) provides developmental, preventive, and therapeutic services and programs that promote the intellectual, emotional, cultural, and social development of University of Utah students. They advocate a philosophy of acceptance, compassion, and support for those they serve, as well as for each other. They aspire to respect cultural, individual and role differences as they continually work toward creating a safe and affirming climate for individuals of all ages, cultures, ethnicities, genders, gender identities, languages, mental and physical abilities, national origins, races, religions, sexual orientations, sizes and socioeconomic statuses.

## Wellness Statement

Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources, contact the [Center for Student Wellness](#); 801-581-7776.



## **Learners of English as an Additional/Second Language**

If you are an English language learner, please be aware of several resources on campus that will support you with your language and writing development. These resources include: the [Writing Center](#); the [Writing Program](#); and the [English Language Institute](#). Please let me know if there is any additional support you would like to discuss for this class.

## **Veterans Center**

If you are a student veteran, the University of Utah has a [Veterans Support Center](#) located in Room 161 in the Olpin Union Building. Please visit their website for more information about what support they offer, a list of ongoing events and links to outside resources. Please also let me know if you need any additional support in this class for any reason.

## **Undocumented Student Support**

Immigration is a complex phenomenon with broad impact— those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please contact the Dream Center at 801.213.3697 or visit <https://dream.utah.edu/>.

## **Too Many Resources! Where to start?**

Reach out to the Student Success Advocates for assistance navigating resources and mentoring! Watch this [short video](#) on how Student Success Advocates can help you! The mission of Student Success Advocates (<https://ssa.utah.edu/>) is to support students in making the most of their University of Utah experience. They can assist with mentoring, resources, etc. In addition, any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact a Student Success Advocate for support.

## **Suggestions and other arrangements**

Your suggestions are always encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you.