

# PHYSICS 130

## Electricity and Magnetism

NATHALIE HAURBERG

Email: [nhaurber@knox.edu](mailto:nhaurber@knox.edu)

Google Classroom Course Code: [wgtykr5](#)

### Class Period:

Mondays, Tuesdays, Thursdays, and Fridays – 6<sup>th</sup> Period: 3:40-4:50 PM

- The class period may be used for various activities sometimes you will be asked to log in for interactivities such as going over homework problems or general interactive sessions going through examples. Other times this period will serve as a time that I will make sure the new lecture material is posted by and will be a time where I will be available for questions or just interaction. I'm going through this with you... and I like physics!
- *A piece of advice:* Use the daily class period for class work and as part of your daily routine if at all possible **even if we aren't having a required interactive activity**. Keeping engaged will be important.

### Lab Period:

Wednesdays; time varies by student – use lab website for more information

### Course Content:

The course will cover the topics of electricity (electrostatics and electrodynamics) and magnetism. As you will learn, magnetism is inseparable from electricity and it is natural to study these topics together. We also will cover some elements from introductory circuit theory and basic electronics as these topics naturally connect to electricity and magnetism.

We will be using basic concepts from calculus, for example, differentiation, integration, and working in non-cartesian coordinate systems. Having either previously taken and passed, or to currently be enrolled in MATH 152 (or equiv.). This is a pre-requisite for the course.

This course is an introductory physics course. No previous physics knowledge is required and no physics courses are pre-requisites. However, if this is your first physics course, the learning curve for some things may be a little steeper and you will want to make sure you read through the review materials and use the index of the text to look up things when necessary.

## **Text:**

*Physics for Scientists and Engineers*, 4<sup>th</sup> ed. by Douglas C. Giancoli (Prentice-Hall, Englewood Cliffs, NJ, 2008)

This is the same text that is used for the entire introductory physics series.

The text is required. It is best to have an up to date version – however you are allowed to have an older edition as the content is similar but you may face some annoyances as some chapter numbers, table numbers, etc. will not match exactly with what I am using.

## **Course Websites:**

Google Classroom Course Code (Most Important – will be updated regularly):  
[wgtykr5](#)

Landing page for all PHYS 130 (130/130A/and Lab):  
<http://course.knox.edu/physics130/>

Direct connection to the homework site:  
<https://physics.knox.edu/OnlineHW/phys130/spring/homework/>

## **Homework:**

Homework problems sets are adapted from Giancoli's text but are available through: <https://physics.knox.edu/OnlineHW/phys130/spring/homework/> (Also linked on course landing page and in Google Classroom).

The software displays the problems to you and provides you with randomized numbers for specific parts of the problem making the problem unique to your account. The system is very simple:

- If you correctly answer the problem before the due date (and time) you earn full credit.
- If you correctly answer the problem within one week of the due the date you can earn 50% credit.
- There are **no penalties** for amount of time spent on problem, guessing any number of times\*, using hints, etc.
  - The only penalties are for submitting the work late.
  - \*except when made explicit (rare)
- You are given instant feedback on if your attempt is correct.

Working out the homework problems is probably the most important part of a physics course as it is where a lot of the learning occurs. In the hard work to understand specific problems that you make real progress in understanding.  
***This is still true in our new situation.***

You are still encouraged to work together in groups on the homework problems even though you can't be together in person.

*Working on problems doesn't require you physically being in the same room. I know it won't be easy – but as a graduate student I texted about some really complex stuff over the weekends if I couldn't find a fellow student... and that was just out of laziness. I know you can do this! You have video-calling, faster internet, and more motivation! ☺*

You absolutely may still consult with each other and with me. It will be different but I will be doing several things to help enable these things to happen.

The department is working to try to instate some level of virtual homework help session if possible and the CTL is also working to put in place some level of virtual tutoring.

### **Labs:**

Labs are still occurring during the online portion of the term. Your lab instructor will be Prof. Chuck Schulz ([cschulz@knox.edu](mailto:cschulz@knox.edu)). You will be receiving information about the lab portion of the class at the course landing page: (<http://course.knox.edu/physics130/>) or directly from Prof. Schulz.

### **Exams and Quizzes:**

There will still be examinations during this term. You will be taking them remotely with certain rules and the honor code in place. More details will be discussed as we get to them.

Currently, the plan is to have **quizzes every Friday** to check in on how you are doing with the course material. These will be timed and you will not be able to use any outside resources.

The current plan is for 2 midterm examinations and a final exam during the regularly scheduled finals period (however, I'm uncertain at the time how that is going to work exactly)

Midterm Exam 1 – Thursday, April, 23<sup>rd</sup>

Midterm Exam 2 – TBA (around May 14<sup>th</sup>)

Final – TBA (during regularly scheduled finals period)

## Honor Code:

The honor code applies like a regular term.

If you have never read [The Honor System](#) at Knox, now is a good time! You may work together (remotely or practicing good social distancing) in groups to discuss and solve problems related to the homework problems. In calculating final solutions and entering answers on the problem sets, each person must do their own work. The use of solution manuals is prohibited. **All work you submit is to be your own work**, if you have any questions as to what this means you should ask; there is no shame in having questions.

## Grade Breakdown:

Participation	4%
Homework	16%
Labs	16%
Quizzes	12%
2 Midterm Exams	30% (15% each)
Final	22%

## APPROXIMATE SCHEDULE (SUBJECT TO CHANGE)

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Week 1	Electric Charge and Electric Field	Chapter 21
Week 2	Gauss' Law	Chapter 22
Week 3	Electric Potential	Chapter 23
Midterm Exam 1		
Week 4	Electric Potential (cont'd)	Chapter 23
Week 5	Capacitance	Chapter 24
Week 6	Electric Currents and Resistance, DC Circuits	Chapters 25, 26
Midterm Exam 2		
Week 7	Magnetism, Sources of Magnetic Field	Chapters 27, 28
Week 8	Sources of Magnetic Field (cont'd), Magnetic Induction	Chapters 28,29
Final Exam		

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