

WELCOME TO PHY 481

ELECTROSTATICS

Prof. Danny Caballero

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IMPORTANT SITES

- Course Webpage: dannycab.github.io/phy481msu_f2019/
- Slack Team: msuphysics481fall2019.slack.com
 - *Invite link in syllabus*

COURSE ACTIVITIES

- Evening Exams (2 of them) - 20% each
 - 1415 BPS; Oct 2 and Nov 6; 7-9pm
- Final Exam (Dec 10: 1415 BPS) - 20%
- Homework (Lots of it; Due on Fridays) - 40%
- Clickers - Extra Credit for Lowest Midterm

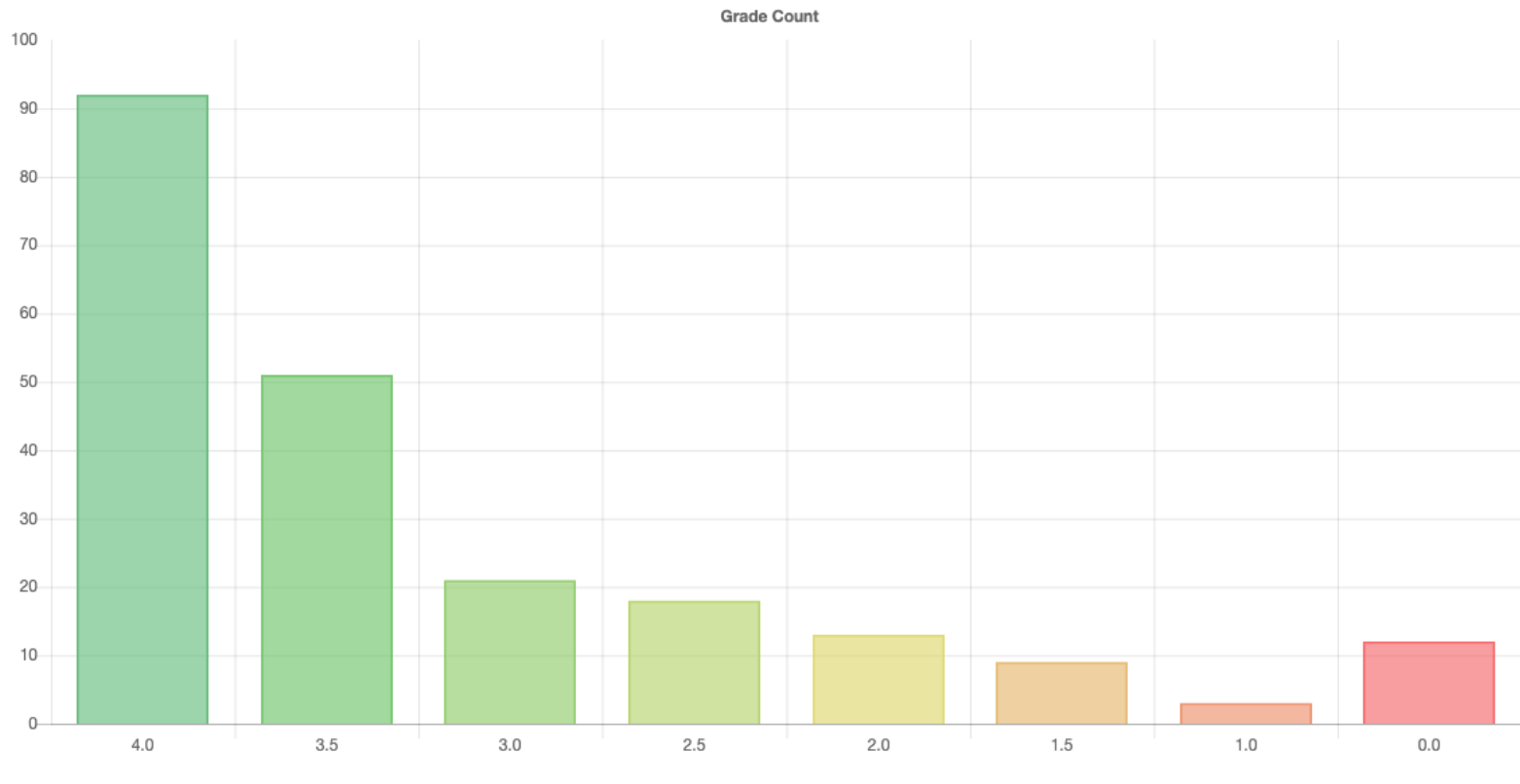
[Much more detail on website](#)

GRADING SCHEME

- 4.0 - 90-100
- 3.5 - 80-90
- 3.0 - 70-80
- 2.5 - 65-70
- 2.0 - 60-65
- 1.5 - 55-60
- 1.0 - 50-55
- 0.0 - Below 50

I do not curve grades.

HISTORICAL GRADES IN 481



CLICKERS

Self-register your clicker

<https://goo.gl/nrebCr>

Type the 8 digit code on the back of the clicker next to your name. If you can't read the code, please come see me.

I give you credit for any click.

EXAM RE-WRITES

Exams can be very stressful.

- For both Exam 1 and 2, you will be allowed to rework the exams to earn up to 50% of the credit back.
- You will need to rework the exam and turn in a page that addresses what you did incorrectly.

Learning is a social and collaborative act!

HOMEWORK HELP SESSION

Evening sessions twice per week (1300 BPS)

Question to you: When should we do this?

- A. Wednesday 6-7pm
- B. Wednesday 7-8pm
- C. Thursday 6:30-7:30pm
- D. Thursday 7:30-8:30pm
- E. None of these times work

Reminder: Homework is due on Fridays.

How likely are you to attend the help sessions?

A. Very likely

B. Likely

C. Not likely, I really want a different day/time

D. I'm unlikely to attend regardless of schedule

THIS WEEK!!!

- Homework 1 is already up (Due Fri. Sept. 6)
- Read (seriously do this!) Griffiths Ch 1.1-1.4 & 2.1-2.2 [1]
- [Download Anaconda distribution of Python](#)

Stay up-to-date by checking website, calendar, and Slack regularly.

[1]: *I am assuming that Ch. 1 of Griffiths is mostly review.*

COMPUTATIONAL HOMEWORK PROBLEMS

- We will be using Python on homework problems this semester.
- Installation instructions will appear on the Slack team site.
- Homework questions will take the form of [a Jupyter notebook](#), which you can print to PDF and turn in.
- If you get stuck somewhere, post on Slack, so your classmates benefit from your question.
- Computational HW problems are turned in via Dropbox file requests. *Look for link at the top of each homework assignment and include your name in the filename!*

COMMITMENT TO AN INCLUSIVE CLASSROOM

I am committed to creating an inclusive classroom. If I can do anything to make the classroom a better learning environment for you, please let me know.

If you observe or experience behaviors that violate our commitment to inclusivity, please let me know as soon as possible.

If I violate this principle, please let me know or please tell the undergraduate department chair, Stuart Tessmer (tessmer@pa.msu.edu).

CONFIDENTIALITY AND MANDATORY REPORTING

One of my responsibilities is to help create a safe learning environment. It is my goal that you feel able to share information related to your life experiences. I will seek to keep information you share private.

However, I am required to share information regarding sexual misconduct, relationship violence, or information about criminal activity with the University.

CONFIDENTIALITY AND MANDATORY REPORTING

Students may speak to someone confidentially by contacting:

- MSU Counseling and Psychiatric Service (CAPS)
 - caps.msu.edu or ph: 517-355-8270
- MSU's 24-hour Sexual Assault Crisis Line
 - endrrape.msu.edu or ph: 517-372-6666
- Olin Health Center
 - olin.msu.edu or ph: 517-884-6546

SPARTAN CODE OF HONOR ACADEMIC PLEDGE

As a Spartan, I will strive to uphold values of the highest ethical standard. I will practice honesty in my work, foster honesty in my peers, and take pride in knowing that honor is worth more than grades. I will carry these values beyond my time as a student at Michigan State University, continuing the endeavor to build personal integrity in all that I do.

ADVICE FROM THOSE WHO CAME BEFORE YOU

- Go to class every day and participate in the clicker questions/discussion
- The homework is challenging but very important, don't short cut it
- Start your homework early and spend your time on understanding all of it
- Don't do it alone; form study groups
- Attend the help session, but start the homework first
- Danny is never trying to trick you.

QUESTIONS?

**WHAT DO YOU THINK PHY 481 IS
ABOUT?**

ELECTROMAGNETISM IS THE FOUNDATIONAL FIELD THEORY OF PHYSICS

Think about everything you already know about electromagnetism (it's a lot already!).

Work with a partner to map out the electromagnetism concepts that you know and how they are related to each other.



Physics GRE Prep Sessions



- Physics Graduate Students will be hosting Physics GRE Prep Sessions
- Go over practice problems
- Help with any specific questions you may have
- Go over test taking strategies
- *Suggested topics can change based on the questions you have
- Contact Devyn Cantu with any questions (rysewykd@msu.edu)

Date	Time	Location	Suggested Subjects*
Wed. September 4 th	4-5 pm	BPS 1400	Classical, E&M, Optics/Waves
Thurs. September 12 th	4-5 pm	BPS 1400	Thermo/Stat Mech, Quantum/Atomic, Special Relativity, Misc.
Mon. September 30 th	4-5 pm	BPS 4270	Classical, Optics/Waves
Tues. October 8 th	4-5 pm	BPS 4270	E&M, Thermo/Stat Mech
Wed. October 16 th	4-5 pm	BPS 1400	Quantum/Atomic, Special Relativity
Thurs. October 24 th	4-5 pm	BPS 1400	Exam Tips/Methods, Misc.

MATHEMATICAL PRELIMINARIES

$$\nabla \cdot \mathbf{E} = \frac{\rho}{\epsilon_0} \qquad \int \mathbf{E} \cdot d\mathbf{A} = \int \frac{\rho}{\epsilon_0} d\tau$$

$$\nabla \cdot \mathbf{B} = 0 \qquad \int \mathbf{B} \cdot d\mathbf{A} = 0$$

$$\nabla \times \mathbf{E} = -\frac{\partial \mathbf{B}}{\partial t} \qquad \int \mathbf{E} \cdot d\mathbf{l} = -\int \frac{\partial \mathbf{B}}{\partial t} \cdot d\mathbf{A}$$

$$\nabla \times \mathbf{B} = \mu_0 \mathbf{J} + \mu_0 \epsilon_0 \frac{\partial \mathbf{E}}{\partial t} \qquad \int \mathbf{B} \cdot d\mathbf{A} = \mu_0 \int \left(\mathbf{J} + \epsilon_0 \frac{\partial \mathbf{E}}{\partial t} \right)$$

Two charges $+Q$ and $-Q$ are fixed a distance r apart. The direction of the force on a test charge $-q$ at A is...

- A. Up
- B. Down
- C. Left
- D. Right
- E. Some other direction, or $F = 0$

