

PHYSICS 272: GENERAL PHYSICS II
ELECTRICITY + MAGNETISM AND GEOMETRIC OPTICS

Spring 2020

Instructor: David Rubin, WAT 228	Time: Tu Th 9:00 – 10:15
Email: drubin@hawaii.edu	Place: WAT 112

Office Hours: WAT 228, after class Tu Th 10:15 – 11:15 or by appointment.

Course Pages:

1. Laulima
2. Mastering Physics (set up an account at <https://www.masteringphysics.com> course ID: rubin56717 using access code DCKUP-SMELL-LEARY-GUSHY-RIGOT-SPIES)

Main Reference:

- Young and Freedman's *University Physics* (15th edition)

Learning Outcomes: Learn about and understand the following:

- Charge and currents.
- Electric and magnetic fields.
- Field determination for various configurations of charges and currents.
- Forces on charges and currents due to fields.
- Potential energy and potential.
- Electrical circuits (AC and DC) composed of resistors, capacitors, and inductors.
- Energy transfer in electric circuits.
- Maxwell's equations of electricity and magnetism.
- Electromagnetic waves.
- Properties of light.
- Reflection and refraction.
- Mirrors and lenses.

Prerequisites: 151 or 170 and MATH 242 or MATH 252A, MATH 216 may be substituted with consent.

Grading Policy: iClicker (20%), Homework (10%), Midterm 1 (20%), Midterm 2 (20%), Final (30%).

Important Dates:

Midterm #1 Thursday, 13-Feb
Midterm #2 Thursday, 2-Apr
Final Exam Exam Period

iClicker: You will need an iClicker for this class. You can purchase them in the campus bookstore. Register your iClicker for this class on Laulima (see the iClicker tab in the course page) by Lecture 2 (Thursday, January 16).

Course Policies:

- Regular attendance is essential and expected. That said, shit happens. It's okay to miss a few classes, but missing too many (say, more than three) will impact your grade. If you need to miss more than that, email the professor for an alternative assignment before you miss the class.
- Homeworks should be submitted before the class they are due (homeworks are due most Thursdays). You can turn in one homework late without penalty. Otherwise, late assignments will be docked 10% per day (including the first day).
- Do the required reading before class. We will go through about one chapter per week; aim to read about half the chapter for each class.

Tutoring: If you would like a tutor on campus, see this site for details:

<https://manoa.hawaii.edu/undergrad/Learning/tutoring/>

Approximate Course Outline:

Day	#	Date	Ch.	HW	Topic
Tuesday	1	14-Jan	n/a		Electric Charge and Electric Field
Thursday	2	16-Jan	21		
Tuesday	3	21-Jan	21		
Thursday	4	23-Jan	22	HW1 (Ch 21) due	Gauss's Law
Tuesday	5	28-Jan	22		
Thursday	6	30-Jan	23	HW2 (Ch 22) due	Electrical Potential
Tuesday	7	4-Feb	23		
Thursday	8	6-Feb	24	HW3 (Ch 23) due	Capacitors and Dielectrics
Tuesday	9	11-Feb	24		
Thursday	10	13-Feb	n/a		Midterm I
Tuesday	11	18-Feb	25		Current, Resistance, and Electromotive Force
Thursday	12	20-Feb	25	HW4 (1/2 Ch 25) due	
Tuesday	13	25-Feb	26		Direct-Current Circuits
Thursday	14	27-Feb	26	HW5 (Ch 25) due	
Tuesday	15	3-Mar	27		Magnetic Field and Magnetic Force
Thursday	16	5-Mar	27	HW6 (Ch 26) due	
Tuesday	17	10-Mar	28		Sources of Magnetic Field
Thursday	18	12-Mar	28	HW7 (Ch 27) due	
Tuesday		17-Mar	Spring Break		
Thursday		19-Mar	Spring Break		
Tuesday	19	24-Mar	29		Electromagnetic Induction
Thursday		26-Mar	Kuhio Day		
Tuesday	20	31-Mar	29		
Thursday	21	2-Apr	n/a		Midterm II
Tuesday	22	7-Apr	30		Inductance
Thursday	23	9-Apr	30	HW8 (1/2 Ch 30) due	
Tuesday	24	14-Apr	31		Alternating Current
Thursday	25	16-Apr	31	HW9 (Ch 30) due	
Tuesday	26	21-Apr	32		Electromagnetic Waves
Thursday	27	23-Apr	32	HW10 (Ch 31) due	
Tuesday	28	28-Apr	33		The Nature and Propagation of Light
Thursday	29	30-Apr	33	HW11 (Ch 32) due	
Tuesday	30	5-May	34		Geometric optics
Thursday	31	7-May	34	HW12 (Ch 33) due	
			Exam Period		(Final During Exam Period)