

Phys 163 Fall 2023 Schedule

This schedule may change. Students will be notified of changes as quickly as is reasonable.

Wk #	Monday's Date	Lecture Topics & Links	Lab 163 Lab Links
1	08/14	Coulomb's Law (Electric <i>Forces</i> between point charges) John Travoltage Balloons & Static Electricity Good vid on charging by induction Openstax link	Do Excel tasks associated with workbook problems 21.4-8 XL Training vids Turn-in files on Canvas
2	08/21 08/25 = Last Drop with refund 08/27 = Last Drop no W	Electric <i>Fields</i> (point charges & continuous distributions) Wind Field Map Charges & Fields Phet Openstax link	Coding Coulomb's Law with Python Assignment in Canvas No coding experience? Watch this vid . If time, also watch first 2 of this .
3	08/28	Gauss's Law Techniques (Electric <i>Flux</i> & Electric <i>Fields</i>) Openstax link Gaussian outside sphere Gaussian inside sphere Gaussian outside cylinder Six Charges released inside spherical conductor Many charges released inside spherical conductor Gaussian Pillbox	Make electric field simulation for 1D rods, arc, etc, Assignment on Canvas Slow pace training vid
4	09/04 Holiday Mon 9/4 Labor Day	Electric Potential Openstax link Charges & Fields Phet	Pre Lab (on Canvas) EFieldMap3.0.pdf 1cmCrossGrid.pdf Fake data for V vs (x, y) : 163VData.xlsx Template for E_x data: 163ExData.xlsx Template for E_y data: 163EyData.xlsx
5	09/11	Continue with Electric Potential Begin Capacitance Openstax link Capacitor Phet (HTML 5, 1 cap only, no κ) Capacitor Phet (Old, allows cap networks & κ) Video showing dielectric in/out	Discussion Complete & self-grade at least 2 old exams before coming to lab 163 Exams & Sol'ns
6	09/18 Exam Mon 09/18 Up to & Including Potential	Continue Capacitance You need to take at least 2 practice tests to have a chance a passing. If you haven't been doing homework, you need to do all 4 to have any hope of passing. When taking practice tests: <ul style="list-style-type: none"> • Time yourself (2 hours) • Grade yourself • Come into discussion with a list of questions 	Coders (Canvas turn in) Visualize fields and potentials in Python Brief intro vid Non-Coders Capacitance lab

7	09/25	<p>Current, Resistance, & Resistivity</p> <p>Openstax link</p> <p>Resistance versus length</p> <p>Ohm's Law</p> <p>Resistance versus temperature (inside battery)</p> <p>Resistance at molecular level</p> <p>Water Analogy</p> <p>Glass conducts electricity vid</p> <p>Why are resistors used? video</p>	<p>Ohm's law & Resistivity</p> <p>3 brief DMM training Vids</p> <p>R vs L Lab</p> <p>XL sheet</p> <p>Do Wkbk 26.10 & 26.11 before coming to lab</p>
8	10/02	<p>DC Circuits & KVL</p> <p>DC Circuit Phet (HTML 5)</p>	<p>Series and Parallel Circuits</p> <p>Pre Lab (on Canvas)</p> <p>Each student should make their <i>own</i> Excel spreadsheet prior to as explained in pre-lab.</p>
9	10/09	<p>Magnetic Forces & Torques</p> <p>Charge in helical motion in uniform field</p> <p>Van Allen Belt Simulation</p> <p>Cyclotron Sim</p> <p>Realistic DC motor simulation (slow to load)</p>	<p>Discussion</p> <p>Complete & self-grade at least 2 old exams before coming to lab</p> <p>163 Exams & Sol'ns</p>
10	10/16	<p>Sources of Magnetic Fields</p> <p>Biot-Savart Law Straight Wire Starter</p> <p>Ampere's Law for Long Wire, Coax, and Solenoid</p>	<p>Motor Lab</p>
	Exam Mon 10/16 Caps thru mag force/torque (Mag Flux, BS, & Ampere's on test 3)		
11	10/23	<p>More Sources of Magnetic Fields</p>	<p>Magnetic Fields with Oral Presentations</p> <p>Acquire Data</p> <p>Absence/tardiness penalties are more significant</p>
12	10/30	<p>Faraday's Law and RL Transient Circuits</p> <p>Old version with generator HTML 5 Version</p>	<p>Create Presentations</p> <p>Absence/tardiness penalties are more significant</p>
	11/03 = Last Drop with W		
13	11/06	<p>LC Oscillators & RLC Damped Oscillators</p> <p>AC Circuits (damped, <i>driven</i> oscillators)</p> <p>AC Phet (HTML 5)</p> <p>Crazy LRC Sim with a lot going on</p>	<p>Present to the class</p> <p>Absence/tardiness penalties are more significant</p>
	Holidays 11/10 & 11/11 Veterans Day		
14	11/13	<p>More AC Circuits</p> <p>AC Phet (HTML 5)</p> <p>Crazy LRC Sim with a lot going on</p> <p>Note: Instead of discussion and practice tests, we are doing a lab with the LRC series circuit. You should still do practice tests on your own.</p>	<p>LRC series circuit</p> <p>Function gen training vid</p> <p>Scope training vid</p> <p>AC circuit vid lecture</p> <p>Pre-lab (on Canvas)</p> <p>163seriesLRC2.0.xlsx</p>

15	11/20 Exam Mon 11/20 Sources of B thru LRC Series Holiday 11/23-25 Thanksgiving	Wednesday Alternate Assignments Watch this vid starting at 5 min mark Watch my vid lecture on Chapter 32 start at 14 min Watch my vid lecture on Chapter 33 Great short intro to EM waves	No Lab
16	11/27	Problems I particularly like from Chapters 32 & 33 Chapter 32: 1, 4-5, 7-9 Chapter 33: 1-2, 6, 8-12, 14-16 Optional vid on Divergence & Curl	To be determined...
17	12/04	Final Exam Mon 12/04 @ 11-1 in M311 Cumulative	