

PHYSCS 221 Tentative Schedule Fall 2020

Week	Date	Topics	Chapters	Labs	Homework Due
1	9/3	Introduction. Lab Safety, Lab report writing. Scientific notation. Measurements and Uncertainties. MATLAB & GNU Octave	I, 1	Lab 0 – Lab safety, Introduction and MATLAB	
2	9/10	Multimeters, Resistors, potentiometers, short and open circuit concepts	2, 8	Lab 1 – Power supplies, multimeters (analog and digital), resistors, Clips, connectors, cables.	Lab Safety Quiz, MATLAB sample calculation.
3	9/17	Signals, wave patterns and measuring	XYZ Oscope	Lab 2 – Function Generators and Oscilloscopes (analog and digital)	Uncertainty Calculation
4	9/24	Ohm's Law, Series and parallel circuits	3, 4, 5, 6	Lab 3 – Understanding protoboard. Soldering workshop - Resistor cubes and measuring R	Guide for using an oscilloscope
5	10/1	Capacitors and Inductors	16, 19	Lab 4 – Measuring C and L	Resistor Cube Calculation
6	10/8	RC and L/R Time constants, Digital waveforms and data acquisition	22	Lab 5 –Data acquisition (oscilloscope), RC / RL circuits	Capacitor and Inductor Quiz
7	10/15	Introduction to Arduino	Arduino guide	Lab 6 –Introduction to Arduino	RC time constant calculation.
8	10/22	Arduino Input and Output	Arduino guide	Lab 7 - Generating signals with Arduino, receiving input	Arduino working code.
9	10/29	Analysis of digital signals		Lab 8 - Analyzing Arduino's output, A to D conversion.	Arduino signal code.
10	11/5	Arduino and MATLAB/Octave		Lab 9 - Interfacing Arduino with MATLAB or Octave	Analysis of digital output.
11	11/12	Physics Project with Arduino		Lab 10 - Physics project research ideas and begin.	MATLAB or Octave code and data showing interfacing with Arduino.
12	11/19	AC Circuits and Filters	23, 26	Lab 10 - Work on Project	Project Statement
	11/26	Thanksgiving Break			
13	12/3	Diodes and Transistors	27, 28	Lab 10 - Work on Project	
14	12/10	Present Projects			Project Report
15	12/15	Final Exam, on Tuesday Dec. 15 th , 2:30 – 4:30 pm			Final Exam (Cumulative)