

CLASS: 1.) point out that E-flds are modified force fields whereas B-flds are not-- identify difference with example of E and B flds extending from wall with point charge placed in field in both case; 3.) talk about how to determine the direction of an E-fld, then a B-fld; 4.) show B-fld lines for a bar magnet--notice that B-fld lines leave N-poles; 5.) talk about $q \times v \times B$ and $i \times L \times B$; 6.) LECTURE L-2	CLASS: 1.) do survey; 2.) talk about $i \times L \times B$ and how wires interact with B-flds; 3.) introduce $F = q \times v \times B$ --look at Prob 19.36 (velocity trap); 4.) talk about lab tomorrow; 5.) talk about Orstead 6.) LECTURE L-3	Day 2	CLASS: 1.) Do Magnetic Fields/Mass of an Electron lab (due Tuesday, 3/12); (how can this be made into a run-and-shoot lab?) 3.) talk about how B-fld of wires interact with one another;	end of third quarter CLASS: 1.) demo: show current-carrying wire feeling force due to magnet; 2.) talk about where B-flds come from; 3.) mention Ampere's theory (how B-flds are generated in iron bar); 4.) magnitude of B fld due to current carrying wire, and how B-flds interact with one another (F4) 5.) briefly talk about solenoids (more next time)
HMWK: ASSIGNED: 1.) download Fletch's chapter on magnetic fields; 2.) do Fletch's Prob 16.4, 16.22, 16.23 and 16.24	HMWK: ASSIGNED: 1.) do XtraWrk Prob 19.2 and 19.4 <u>xtrawrk:</u> 2.) in Fletch's book in the chapter on magnetism, do Prob 16.1 through 16.7b; 3.) note that every single question at the end of Fletch's chapter on Magnetism will (or could be) on your test--look over those problems as soon as you have time to do so (there are 24 of them--don't put this off); 2.) look at zPoly: 43 (B-fields and current-carrying wires) at http://youtu.be/0Z2ku_T-0GE		HMWK: ASSIGNED: 1.) write up Mass of an Electron lab ;	HMWK: ASSIGNED: 1.) do problems 19.34 and 19.36;

Fourth Quarter, 2023-2024

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
3/11	3/12	3/13	3/14	3/15
L-day 5 CLASS: 1.) talk about solenoids 2.) talk about shortcut to finding force between current-carrying wires 3.) begin looking at devices: Hall effect, motors, speakers, doorbells, ramp problem, galvanometers, other demos;	CLASS: 1.) finish up	CLASS: TEST 11 (magnetism)	Day 2	CLASS: 1.) go over test; 2.) 45 min period--Speed Test
HMWK: 1.) if you have time--from Fletch's chapter on Magnetism, Prob 16.11, 12, 20 and 21;	HMWK: 1.) review for test; 2.) Chipotle night from 5:30 - 7:00 pm;	HMWK: 1.) relax		HAVE A GREAT SPRING BREAK
3/18	3/19	3/20	3/21	3/22
Spring Break	Spring Break	Spring Break	Spring Break	Spring Break
3/25	3/26	3/27	3/28	3/29
Spring Break	Spring Break	Spring Break	Spring Break	Spring Break

4/1	4/2	4/3	4/4	4/5
<p>CLASS:</p> <p>0.) ask who isn't going on MM trip</p> <p>1.) begin Faraday's Law and induction section with mini-lab (Island Series--induction);</p> <p>2.) do horseshoe magnetic and coil demonstration--talk about classical explanation;</p> <p>3.) do horseshoe magnetic and coil demo--talk about it from Faraday's perspective;</p> <p>4.) define magnetic flux mathematically</p>	<p>L-day 5</p> <p>CLASS:</p> <p>1.) reiterate horseshoe magnetic demo--point out that rotating coil in power plants generates AC;</p> <p>2.) redefine magnetic flux in more complete way, complete with example calculation;</p> <p>3.) present Faraday's Law both in short and expanded form;</p> <p>4.) do a full problem (a. what flux, b. what induced EMF, c. what's current (given R), d. what's i's direction (can't do until define Lenz's Law);</p> <p>5.) talk about Edison and Tesla</p>	<p>CLASS:</p> <p>1.) finish problem;</p> <p>2.) talk about Lenz's Law (production of AC using coil demo);</p> <p>3.) do Faraday's Law Lab--PhET;</p> <p>4.) start discussion about transformers</p>	<p>CLASS:</p> <p>0.) test on Wednesday</p> <p>1.) collect PhET labs;</p> <p>2.) do lab/demo of rail gun--introduce idea of transformers during the talk;</p> <p>3.) talk more fully about transformers (show yoke ppt);</p> <p>4.) talk about what will happen if the primary coil is attached to an AC source;</p> <p>5.) show symbol for a coil in a circuit, and the symbol for a transformer (the two coils making up the transformer);</p> <p>6.) talk about Edison and power production) (should have done yesterday)</p> <p>7.) finish PhET lab</p>	<p>Day 2</p>
<p>HMWK:</p> <p>ASSIGNED:</p> <p>1.) do Prob 20.1 and 20.4 (this last one is tricky--THINK ABOUT IT before turning to the solutions--how do magnetic fields act around current-carrying wires, and how is magnetic flux mathematically defined--this is all about knowing how the variables are defined!)</p>	<p>HMWK:</p> <p>ASSIGNED:</p> <p>1.) do Prob 20.10;</p> <p>2.) from Fletch's Chapter on Induction (Ch 17), do Prob's 17.1, 17.2, 17.3 and 17.4 (these are all possible test questions).</p> <p>XtraWrk:</p> <p>3.) do Prob 20.1 and 20.4 (this last one is tricky--THINK ABOUT IT before turning to the solutions--how do magnetic fields act around current-carrying wires, and how is magnetic flux mathematically defined--this is all about knowing how the variables are defined!)</p>	<p>HMWK:</p> <p>ASSIGNED:</p> <p>1.) do Prob 20.15 and 20.30;</p> <p>2.) if you want to see the video on motional EMFs, it is at zPoly: 45 (motional EMFs) at http://youtu.be/4hZhwrUNUz8</p>	<p>HMWK:</p> <p>ASSIGNED:</p> <p>1.) do Prob 20.45 and 20.48;</p> <p>2.) from Fletch's Induction chapter (Ch 17), look at Prob's 17.5, 17.7-9, 17.13 and 17.15 (these are all possible test questions);</p>	
<p>CLASS:</p> <p>1.) look at motional EMF's by looking at Prob 20.67 (FL-4);</p> <p>2.) look at motional emfs ppt;</p> <p>3.) discuss eddy currents;</p> <p>4.) show eddy current demo--rotating disk;</p> <p>5.) talk about inductance in RL circuits;</p> <p>6.) show current versus time graph for an inductor</p> <p>7.) talk about time constant for RL circuit</p>	<p>CLASS:</p> <p>1.) show AI foil dropping through magnetic field demo;</p> <p>3.) show magnet through wrapped coils and LEDs demo;</p> <p>4.) tell "bar sliding down incline in B-field story" and do demo;</p> <p>5.) tell pendulum story</p>	<p>L-day 5</p> <p>CLASS:</p> <p>TEST 12 (Faraday's Law)</p>	<p>CLASS:</p> <p>1.) go over test;</p> <p>2.) show AC demo (heartbeating speaker);</p> <p>3.) talk about AC and RMS values ;</p> <p>4.) talk briefly about vacuum tubes;</p>	<p>CLASS:</p> <p>1.) prepsre for Magic Mountain day</p>
<p>HMWK:</p> <p>1.) if you have nothing else to do and want something challenging to chew on, try Prob 20.67;</p>	<p>HMWK:</p> <p>1.) prepare for test--</p> <p>2.) CHIPOTLE NIGHT tonight from 5:30-7:00 PM</p>	<p>HMWK:</p> <p>1.) relax</p>	<p>HMWK:</p> <p>ASSIGNED:</p> <p>1.) from Fletch's book, do Prob 13.31, 32 and 33;</p> <p>2.) skim first half of Fletch's Chapter 15 (it's on semiconductors</p>	<p>HMWK:</p> <p>1.) prepare for Magic Mountain day</p>
4/15	4/16	4/17	4/18	4/19

Day 2 Magic Mountain trip	CLASS: 1.) show AC demo (heartbeating speaker); 2.) talk about AC and RMS values; 3.) talk about how oscilloscopes work if time (didn't do this year--on Thursday);	CLASS: 1.) talk about semiconductors; 2.) talk about diodes (half-wave rectifiers); 3.) talk about LED's; 4.) talk about full wave rectifiers	L-day 5 CLASS: 1.) CHANGING TEST FOR NEXT WEDNESDAY (but will give you until a week from Friday to turn in MM lab); 2.) do transistors 3.) talk about circuit elements in AC circuits -- RL, RC, and RLC circuits, and impedance; finish up RLC circuits and impedance;	CLASS: 1.) talk about radios (last topic for next week's test)
	HMWK: ASSIGNED: 1.) Write up Magic Mountain lab (this will be due next Monday, 4/22) xtrawrk: 2.) skim last half of Fletch's chapter on semiconductors (Ch 15)--look at chapter end problems (they are all qualitative and similar to what you will run into on your last test)	HMWK: 1.) from Fletch's book skim Circuits 13, parts B and E (this has to do with AC circuits and RMS values); 2.) from Fletch's book skim Circuits 14, part F (this has to do with capacitors in AC circuits); 3.) from Fletch's book skim Circuits 17, part H (this has to do with inductors in AC circuits);	HMWK: ASSIGNED: 1.) From Fletcher's book, do 13.34 and 13.35	HMWK: 1.) Read Fletch's Ch18 Part C and D (this talks about circuit elements in AC circuits and how RLC circuits can be used to "tune" a radio circuit); 2.) look at video zPoly 48 (reactance, impedance in RL and RC, AC circuits) at http://youtu.be/1R9Rj--74IQ
4/22	4/23	4/24	4/25	4/26
CLASS: 0.) MAGIC MOUNTAIN LAB DUE ; 1.) finish radios; 2.) tear into VCRs	Day 2	CLASS: TEST 13 (AC circuits, RMS values, RLC circuits, semiconductors, diodes, transistors, and radios)	CLASS: 1.) look over review document--questions/review?; 2.) talk about Chipotle night; 3.) mention what will be happening later; 4.) talk about breadboarding	L-esy 5 CLASS: 1.) go over test; 2.) finish off VCRs
HMWK: 1.) prepare for test (Chipotle night); 2.) if you are confused about what we've been talking about in class, finish skimming through Fletch's chapter 18 (it's about AM radios in general)		HMWK: 1.)	HMWK: 1.) relax	CLASS: TEST 13 (AC circuits, RMS values, RLC circuits, semiconductors, diodes, transistors, and radios)
4/29	4/30	5/1	5/2	5/3
CLASS: 1.) introduce breadboarding;	CLASS: 1.) introduce the solar robot lab; 2.) learn how to solder	Day 2	CLASS: 1.) work on solar robots	CLASS: 1.) determine when we'll meet in next two weeks to determine day for Parting Shot and for end-of-year demonstrations ; 2.) continue working on solar robot
5/6	5/7	5/8	5/9	5/10
L-day 5 U.S. Govt AP; Art History CLASS: 1.)	MicroEcon AP; Statistics CLASS: 1.)	English Lit; Comp Sci CLASS: 1.)	Day 2 Chinese Lang AP; Psych	U.S. History; Spanish Lit CLASS: 1.)
5/13	5/14	5/15	5/16	5/17
Calculus CLASS: 1.)	L-day 5 English Lang; Physics C CLASS: 1.)	French Lang; Comp Sci Prin Music Theory CLASS: 1.)	L-day 1 Spanish Lang; Biology CLASS: 1.)	Day 2 Lstin
5/20	5/21	5/22	5/23	5/24
CLASS: 1.) senior week	CLASS: 1.) senior week	L-day 5 CLASS: 1.) senior week	CLASS: 1.) senior week	CLASS: 1.) senior week
5/27	5/28	5/29	5/30	5/31