ECE 2210

Electrical Engineering for Nonmajors
Fall 2021 Class Syllabus

Instructor: Arn Stolp
 Office: MEB 2262
 Phone: U of U: 581-4205
   Only if it's important: Cell: (801) 657-7766 text 1st, start text with "ECE 2210"
 E-mail: arnstolp@ece.utah.edu (I don't check my e-mail everyday, so let me know by some other method if you send me email that I need to read.) Subject should start with "ECE 2210"
 Office hours: My "office hours" are the problem sessions. Otherwise it's catch me when you can. If I'm not in my office, check the lab. To increase your chances, talk to me in class to say when you'd like to see me. I teach another class at 2:00 p.m. T & Th. If I'm not in my office, check the labs.

Web Site: http://www.ece.utah.edu/~ece2210/

Required books and lab supplies:
  Practical Electronics for Inventors, 3rd or 4th Ed, by Paul Scherz & Simon Monk
  Ring binder & weekly class material packs downloaded form canvas or website
  Lab notebook (bound or spiral)
  Breadboard & Lab parts available for purchase at lab (~$20 on your U-card)

Prerequisites: MATH 2250 and PHYCS 2220

Introduction:

In case you haven't noticed, you're surrounded by electrical and electronic devices. Electrical motion, measurement and control are powerful and cheap, so they're used everywhere and are part of every technical career, including yours. Maybe you can find a job where other people make all the decisions concerning wiring, power distribution, electric motors, communications systems, instrumentation, and control; but do you *really want* that? Do you really *want* to be the clueless one?

ECE 2210 will introduce you to some of the basics of electrical engineering. This may not seem important now, but I think you will find these concepts very useful in your future classes and jobs. Besides, they'll help you pass the FE exam, and that should be of immediate concern.

I teach concepts and the use of those concepts to solve problems, not formulas and memorization. The hands-down easiest way get a good grade in this class is to learn those concepts.

This class consists of:
Lectures: T & H 9:10 -10:10 am in WEB L103
Lectures set the direction and tone of the class and cover more than the written material. You will be held accountable for everything discussed in the lectures, so your attendance is important.

Problem Sessions: T & H 10:10 -10:30 am in WEB L103 (directly after class)
We cover a lot of material in this class and there is rarely enough lecture time to work examples or to answer your questions in detail. I will not cover new material in the problem session, so you can get by without staying, but I think you'll find it worth your while.

Textbook:
The text contains a great deal of practical, useful information beyond the theoretical material we cover in this class. It should prove to be a good reference.

Weekly Download Packets (in place of class handouts):
I've supplemented the textbook with weekly packs of class material which you will download from the class web site (http://www.ece.utah.edu/~ece2210/), also linked in canvas. You should have received a class email with links. The packets are separated into class notes and homework assignments. Most of this material is also available individually on the web site. You will probably want to print much of this material. You can sign on to computers in the lab with the same user name and password you use (or can get) in the Engman computer lab (the one in WEB, floor L2). Then you can use the printers in the lab. The packets are designed to be printed on both sides of the pages. Please conserve paper and weight in your backpack.

Homework, homework, and more homework: 100 pts.
I will assign many problems for you to turn in, most of which will come from hand-outs, expect homework at every lecture. Homework will be your main study tool. As such, I'll give you all the answers so that you can check your work immediately. In fact, you'll have to self-correct your homework. If you can't get the answer, check the web site for corrections, study some more, come to the problem session, ask for help, or see the posted solutions in my office window. Sometimes I even post solutions *before* the homework is due. So, you might ask, "Why is it handed in and 'graded'?".   Well, to answer a question with a question, "Would you even do it otherwise?"

Your homework should be neat and clear and show all your work. For most problems the grader will simply check to see that you've done it and that your paper shows the enough work to get the answer. Only a few problems will be checked in greater detail. You may collaborate with others to learn how to do the homework, but will need to hand in your own work. Copying or allowing another student to copy your work is considered cheating.

You will probably learn more from doing the homework than any other part of this class. If you thoroughly understand the homework, you will know what the class is about, and the exams should give you no trouble.

You will need to scan your homework, create a .pdf file and hand that in on canvas by 11:59 pm of the due date. (A paper option may also be made available, but that would be due by 5:00 pm of the due date.

Midterms: 300 pts.

You will take three 50-minute midterms throughout the semester. They will cover material up to the time of the test. My exams are designed to see if you learned concepts and problem solving strategies and whether you can work with them, sometimes in new and different ways. Don't try to memorize formulas or specific problems. Exams also cover what you learn in the labs. The midterm exams will be closed book, closed notes, no phones, tablets or computers allowed. The final may be different. Listen in class for details.

Final: Wednesday, 12/15/21, 8:00 am   180 pts.

The final will be comprehensive with greater emphasis on the most recent material. There will be a review Tuesday 12/14 at 1:00 pm. Listen for details in class.

Labs: MEB 2267   120 pts.

Lab will be held every week, beginning the second week and including the last week of class. Many of the subjects covered in lab aren't covered anywhere else in class, so make sure you pay attention and read the lab instructions. You will have to keep a laboratory notebook as a requirement of the lab. Your lab TA will either collect and grade these notebooks or scans submitted on canvas, Your TA will let you know which.

Two labs will be replaced by a special lecture during lab time. (Friday labs will have one week with both, because the last Friday of the semester is "reading day".)

Labs are **not optional.** For each lab that you miss or fail (< 60% score), your final grade will suffer a **half letter drop** (5% of possible points). Be sure to make-up any labs you miss or fail.

Grades:

	Pts		% of total	Grade
Homework:	100		> 93	A
Labs:	120		90-93	A-
Midterms:	300		87-90	B+
Final:	180		83-87	B
Total:	700		80-83	B-
			77-80	C+
Failed lab:	-35		73-77	C
			70-73	C-
Cheating:	-700		67-70	D+
			63-67	D
			60-63	D-
			< 60	E

If you want any deviations from the normal requirements (say credit for labs, you've done before) you will need to see me before the work would normally be due and get an agreement *in writing*. You'll need to turn in your copy of the agreement with your final, so I'll remember to grade you properly.

Disclaimer:

All information provided here is subject to change due to external factors or unintended typos or errors.

ECE 2210

A. Stolp

Tentative

08/20/21

COURSE SCHEDULE

Week		Date	lect	Topics	Textbook
1	T	08/24	1	Introduction, Basic electrical units & symbols, Kirchhoff's laws	Ch1, 2.1-3, 2.17
	Th	08/26	2	Resistance, Ohm's law, Power, Resistors in parallel & series	2.5-7, 2.11-12, 3.5
2	T	08/31	3	Voltage and current dividers, Sources, Nodes, Grounds, Branches, Meters	2.10, 2.12-16
	Th	09/02	4	Superposition, Practical voltage and current sources	2.18, 3.2
3	M	09/06		Labor Day	
	T	09/07	5	Thevenin & Norton Equivalent Circuits, Max power transfer	2.19
	Th	09/09	6	Thevenin & Norton Equivalent Circuits	notes
4	T	09/14	7	Networks, Nodal analysis	2.17, notes
	Th	09/16	8	Introduction to AC & Signals, Capacitors	2.29, 2.23
5	T	09/21		Exam 1	
	Th	09/23	9	Capacitors, RC first order transients	2.23, 3.6, 2.24
6	T	09/28	10	Inductors, Resonance, RL first order transients	2.24, 3.7, 2.30
	Th	09/30	11	First order transients, Complex numbers	2.34
7	T	10/05	12	Steady-state Sinusoids, Phasors, & Impedance	2.25-26
	Th	10/07	13	Phasors, Impedance, & AC circuits	2.27
	S	10/09		Fall Break	
	Su	10/17			
8	Th	10/21	14	AC circuit examples	2.29-30
		lab lect	15	Filters & Bode plots	2.31-33, notes
	Th	10/21		Exam 2	
9	T	10/26	16	Second order transients, Laplace Impedance, Transfer functions	2.34, notes
	Th	10/28	17	Second order transients, Time-domain solutions	notes
10	T	11/02	18	Second order transients, Initial and final condtions	notes
	Th	11/04	19	Second order transient examples, Systems	notes
11	T	11/09	20	Diodes basics, Diodes in DC circuits	4.2
	Th	11/11	21	Diodes in AC circuits, Rectification	4.2, notes
12	T	11/16	22	Diodes, Transistors	4.3
		lab lect	23	Transistors & Switching circuits	4.3, notes
	Th	11/18		Exam 3	
13	T	11/23	24	Operational Amplifiers	Ch 8
	Th	11/25		Thanksgiving	
14	T	11/30	25	Operational Amplifiers	Ch 8
	Th	12/02	26	RMS and AC Power	2.21-22
15	T	12/07	27	AC Power, RMS, examples	2.28, 3.8
	Th	12/09	28	AC Power, Transformers, 3 phase, Y, Delta	Appendix A
16	T	12/14		Review, 1:00 pm	
	W	12/15		Final Exam, 8:00 - 10:00 am	

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A. Stolp 8/18/20

Month	Week	Mon	Tue	Wed	Thur	Fri
Aug	1	23	24 First Class	25	26	27
Sept (wed)	2	30	31	1	2	3 Last day to add or drop 2210
	3	6 Labor Day	7	8	9	10
	4	13	14	15	16	17
	5	20	21 Exam 1	22	23	24
	6	27	28	29	30	1
Oct	7	4	5	6	7	8
	0	11 Fall break	12	13	14	15
	8	18	19	20	21 Exam 2	22 Last day to withdraw
	9	25	26	27	28	29
Nov	10	1	2	3	4	5
	11	8	9	10	11	12
	12	15	16	17	18 Exam 3	19
	13	22	23	24	25 Thanksgiving	26
Dec (wed)	14	29	30	1	2	3
	15	6	7 ME Design Day in Union bldg (maybe)	8	9 Last Day of Classes	10 Reading Day
	16	13	14 ECE 2210 review 1:00	15 ECE 2210 Final 8:00 - 10:00	16	17

ECE 2210 Fall Semester, 2021

MERRILL ENGINEERING BUILDING (BLDG. 064)

SECOND FLOOR PLAN

north

Checkout Window

Stockroom to buy parts

Arn's Office (MEB 2262)
(Homework solutions will be posted here)

Lab

2267

Door with card access

Lockers for homework
and lab notebooks
(if not handed in on canvas)

ECE office

Homework, labs and exams are
returned to a file cabinet in MEB
2101
(paper returns only)

2480B
2488
2490
2536
2532
2528
2524
2520
2516
2298
2296
2294
2292
2290

2480A
2480
2478
2474
2004P
2489
2491T
2475
2560
2505B
2513
2005G
2285
2288
2286
2284
2282

2473
2562A
2560A
2505A
2509
2505
2005G
2005E
2005B ELEC
ELEV
2005K

2460
2458
2456
2454
2452
2565
2555
2565A
2551
2543
2541
2355C
2355B
2005F WOMEN
2005C MEN
CHASE

2440
2365
2355A
2355
2003
2267
2262
2264A
2266B
2266C
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2270
2272
2274
2276
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2280
2002L

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2410
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2325 CLASSROOM capacity: 50
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2002
2258
2256
2254
2260
2259
2305
2261

2407
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2234
2232
2230
2224
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2259
2222
2220

2405
2405A
2405B
2151B
2151C
2215A
2215
2239
2237
2235
2233
2231
2216
2220-B

2004R
2004C
2001R
2165
2155A
2155
2151A
2151
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2141
2131
2105
2103
2101
2002C

2196
2196B
2196C
2196D
2180A
2180
2172
2135
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2127
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2123
2121
2109
2110
2110A
2102

2196A
2180C
2180B
2162
2138
2136
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2126
2124
2122
2120
2110D
2110C