

EE 311: Electronic Devices and Circuits 2 (Spring 2014)

EE 311 Spring 2014													
Depending on the class background and the level of difficulty encountered in discussing each topic, the number of lectures devoted to any specific topic could be revised upwards or downwards as deemed appropriate by the instructor.													
Lec	Date	Chapters	Series	L1(M)	L5(T)	L2(W)	L3(W)	L6(Th)	Quiz	HW	HW Due		
1	01/27/14	M	Review EE310	1	No Lab					H1			
2	01/29/14	W		2									
3	01/31/14	F		3									
4	02/03/14	M		4	Lab #1								
5	02/05/14	W		5									
6	02/07/14	F	Chapter 7	1	Lab #2				P7.1				
7	02/10/14	M		2								P7.10, P7.19	
8	02/12/14	W		3								P7.30	
9	02/14/14	F		4	Lab #3				1				
10	02/17/14	M		5								P7.42, P7.45	
11	02/19/14	W		6								P7.48	
12	02/21/14	F		7	Lab #4				P7.60				
13	02/24/14	M		8								P7.78, P7.79	
14	02/26/14	W		9	Lab #5						H1 (Due)		
15	02/28/14	F		10								2	
16	03/03/14	M	Chapter 8	1	Lab #6				P8.1, P8.2				
17	03/05/14	W		2								P8.6, P8.9	
18	03/07/14	F		3								3	
19	03/10/14	M		4	Lab #7				P8.21				
20	03/12/14	W		5								P8.29	
21	03/14/14	F		6								P8.35	
	03/17/14	M	Spring Recess										
	03/19/14	W	Spring Recess										
	03/21/14	F	Spring Recess										
22	03/24/14	M		7					P8.54, P8.85, P8.121(a)(b)				
23	03/26/14	W		8								4	H2 (Due)
24	03/28/14	F	Chapter 9	1	Lab #8				P9.3, P9.4				
25	03/31/14	M		2								P9.8	
26	04/02/14	W		3								5 P9.16, P9.17	
27	04/04/14	F		4	Lab #9				5 P9.31				
28	04/07/14	M		5								5 P9.38, P9.51	
29	04/09/14	W	Chapter 11	1	Lab #10				5				
30	04/11/14	F		2								5 P11.11	
31	04/14/14	M		3								5	
32	04/16/14	W	Chapter 13	1	Lab #11				5 P13.2	H3 (Due)			
33	04/18/14	F		2								6 P13.11	
33	04/21/14	M			Lab #12				6				
34	04/23/14	W		3								6	
35	04/25/14	F		4								6 P13.26	
36	04/28/14	M		5	Lab #13				6				
37	04/30/14	W		6								6 NOR, P13.45	
38	05/02/14	F		7					6		H4 (Due)		
39	05/05/14	M		8									
40	05/07/14	W	Review										
41	05/09/14	F	Wrap-Up										
	05/14/14	W	Final Exam 11:45-2:45 Knox 110										

EE 311: Electronic Devices and Circuits 2 (Spring 2014)

Time & Location: M/W/F, 2:00 -2:50 PM, Knox 109

Instructor: **Victor Pogrebnyak**
230W Davis Hall, vp23@buffalo.edu (Please put "EE 311" in subject header)
Office Hours: Friday 3:00 PM – 4:00 PM or by appointment

Description: **EE 311 Electronic Devices and Circuits 2, Lecture and Lab, 3 Credits**
Biasing and active loads in bipolar junction transistor (BJT) and field-effect transistor (FET) integrated circuits; current sources; differential and multistage amplifiers; frequency response of single and multiple transistor amplifier circuits; digital circuits with an emphasis on complementary metal-oxide-semiconductor (CMOS) technology.

Objectives: **By the end of the course, students will be able to:**

1. Design and analyze single-stage all-transistor circuits
2. Simulate single and multiple stage transistor circuits to determine dc operating point and frequency response
3. Analyze differential pair/multistage amplifier circuits to determine operating point
4. Determine the frequency response of single-stage transistor circuits
5. Analyze basic CMOS digital logic and memory circuits

Textbook: Microelectronic Circuits, 6th Ed, A. S. Sedra and K. C. Smith, Oxford University Press, 2010, ISBN #: 978-0-19-532303-0

Prerequisite: EE 310 Electronic Devices and Circuits 1 (Ch 1 through Ch 6)

Grading **HW 20%, Labs 35%, Quizzes 30%, Final Exam 15%, there are no midterms**

The following ranges determine the letter grade:

A (89.49%), A- (84.49%), B+ (79.49%), B (74.49%), B- (69.49%), C+ (64.49%), C (59.49%), C- (54.49%), D (44.49%), F (<44.49%)

TAs: **Xu Han** xhan3@buffalo.edu L1, L3, **Friday 3-4 pm**
Zhiyong Zhan zzhan@buffalo.edu L5, L6, **Wednesday 4-5 pm, Davis**

Laboratory:

Xu Han xhan3@buffalo.edu

EE 311LLB L1 Lab Mon 11:00 am-12:50 Furnas 214 20

EE 311LLB L3 Lab Wed 12:00 pm-01:50 Furnas 214 20

Zhiyong Zhan, zzhan@buffalo.edu

EE 311LLB L5 Lab Thu 2:00 pm- 3:50 Furnas 214 18

EE 311LLB L6 Lab Thu 06:30 pm-08:20 Furnas 214 11

The labs start next Monday 02/03/Mon. The students have to attend their own session in any circumstance. TAs will assist you in doing your laboratory assignments during this lab session. You should be able to use NI Multisim for simulation. NI Multisim is installed in the computers in Furnas 214. An NI Multisim v.11.0 Student Edition is included in the DVD of Sedra/Smith 6th ed. NI Multisim and PSpice can both do the job, but NI Multisim is easier and more intuitive to use. Instructor and TAs strongly recommend students to use NI Multisim rather than PSpice. You may do your Multisim simulation on your own computer and/or on a computer in the Computer Lab. If you do the simulation in the computer lab, make sure to copy the simulation source files onto your USB memory after each session. The instructor and TAs will assume that all students know how to use NI Multisim. If you have not used this before, please contact your TAs immediately. During each lab session, you need to finish and submit given lab assignments (e.g., paper assignment and Multisim simulation files).

Grading:

- **13 lab assignments (35%)** (Using simulators, open-book and open-notes): best 10 reports are considered while 3 worst will be discarded, max $10 \times 3.5\% = 35\%$. You need to finish and submit each lab assignment during the lab session. If you answer for each (sub)question, **you will get at least 50% of the assigned maximum** points for each (sub)question. If you leave a blank space for each (sub)question, you will get 0%. Be in touch with a TA supervising your session!
- **4 homework assignments (4 x 5% = 20%)**: You must submit HW on due date. All assignments have two parts: 1) problems and 2) examples/exercises. You must submit part 1 - problems. As for part 2, submission is optional. Remember, quizzes and final exam are some modifications of the problems, examples, exercises, as well as lab assignments. Note that pop-up quizzes can be given even before homework due date, if the related material is covered. Therefore, please do your HW following the pace of the lectures.
HW Grade 20%: If your submitted HW shows that you have **attempted** each question then **you will get at least 50% for that questions**. If you don't attempt and submit blank space then you will get zero for that part of HW.

- **6/7 pop-up open-book quizzes, 30%** (duration from **15-min and up to 50-min**): best 4 quizzes will be counted toward the final grade while 2 worst will be discarded (max 4 x 7.5% = 30%). Pop-up quizzes are based on the homework assignments and can be given even before the homework due date, if the related material is covered. The quiz questions are similar/same to those questions included into HW, the textbook examples and exercises. The pop-up quizzes will be offered during any lecture to increase your attention and attendance. If you attempt to answer a (sub)question, **you will get at least 50%** of the assigned maximum points for that (sub)question. If you leave a blank space, you will get 0% for that (sub)question.

- **Final exam (15%, 2-hour-exam, closed-book and closed-note, bring your-own-formular sheets)**. The exam questions are modified questions from HW, lab assignments, and the quizzes. If you try to answer to each (sub)question, you will get at least 50% of the maximum point for that (sub)question. If you leave it blank, you will get 0%.

Course Webpages: UBLearns → All course materials can be found there. Lecture materials may be posted there, but not all of them. Visit there often for announcements!

Late Work:

- Missed homework assignments, labs, quizzes, exam cannot be made up.
- Missed HW, labs, quizzes, exam will result in a grade of zero (in the case of illness, bring a note from your physician).

Academic Conduct: Students in this class are expected to abide by the UB Honor Code and avoid any instance of academic dishonesty. See the Academic Dishonesty: <http://undergrad-catalog.buffalo.edu/policies/course/integrity.shtml>

Note: Students may work in small groups in the preparation of homework assignments, lab report provided that each student makes a “good faith” effort to contribute to the group effort and turn in his/her own write up of the assignment. Identical reports and HW get zero grad.

Schedule: See the next page. Depending on the class background and the level of difficulty encountered in discussing each topic, the number of lectures devoted to any specific topic could be revised upwards/downwards as deemed appropriate by the instructor. If the instructor cannot teach specific lectures due to his planned/emergency schedule and/or meetings, TA will teach the lectures, instead of the instructor.