

**EEE3308C Electronic Circuits  
Syllabus  
Fall 2017**

			Lecture		Homework, etc.	6 <sup>th</sup> Edition
	M	21	1	Intro	HW1 D-OA	Ch. 1
Aug	W	23	2	Amplifiers intro, design-oriented analysis		Ch. 2
	F	25	3	Voltage/current dividers, cascade amps	Example 1	Video
	M	28	4	Feedback intro, loop gain, ideal gain	HW2 Op Amps	Ch. 10
	W	30	5	More FB, op amp applications	HW3 Op Amps	10.9
	F	1	6	Series, shunt resistances		Ch. 2
	M	4		<b>Labor Day (No class)</b>		
	W	6	7	Frequency response, Bode plots	HW4 Op Amps	Ch. 2
	F	8	8	MOSFET intro		Append E, F
Sept	M	11	9	MOSFET amplifier	HW5 Tone Ctl	Ch. 5
	W	13	10	More FET amplifiers	HW6 LF Caps	
	F	15	11	Degeneration, source follower		
	M	18	12	AC coupling		9.1
	W	20	13	Coupling, bypass caps, more small-signal		
	F	22		<b>Test 1</b>		
	M	25	14	FET bias		Ch. 8
	W	27	15	Resistor biasing	HW7 FET bias	
	F	29	16	FET amps	HW8 FET amp	
	M	2	17	Diff pair active load	HW9 Cu Mirr	7.4
	W	4	18	PMOS		
	F	6		<b>Homecoming (No class)</b>		
	M	9	19	Op amp circuits, diff pair, comparator	HW10 Diff FB	Ch. 6
Oct	W	11	20	PMOS, JFET	HW11 Compar	Ch. 12
	F	13	21	BJTs		
	M	16	22	Vos, CM range	HW12 BJT	
	W	18	23	Op amp circuits, review		
	F	20		<b>Test 2</b>		Ch. 9
	M	23	24	Test 2 review, op amp DC specifications		9.4
	W	25	25	Input-referred errors		9.10
	F	27	26	Noise, output stages	HW13 lab prep	Ch. 10
	M	30	27	Parasitics, frequency response		
	W	1	28	Time-constant analysis		
	F	3	29	Stability	HW14 TC's	Ch. 11
	M	6	30	Miller effect, slew rate, GBW		
	W	8	31	Filters	HW15 Specs	Ch. 16
Nov	F	10		<b>Veterans Day (No class)</b>		
	M	13	32	Parallel and series resonance, op amp		
	W	15	33	Second-order filters, universal filter		
	F	17		<b>Test 3</b>		
	M	20	34	CMOS logic circuits		Ch. 13
	W	22		<b>Thanksgiving (no class)</b>		
	F	24		<b>Thanksgiving (no class)</b>		
	M	27	35	Comparators, Schmitt trigger		Ch. 17
	W	29	36	Wave-shaping circuits		
Dec	F	1	37	Oscillators	HW16	
	M	4	38	Tubes		
	W	6	39	Review		

## EEE3308C Electronic Circuits

Fall 2017

**Description:** Fundamentals of electronic circuits and systems. Lab.

**Prerequisites:** EEL3008 Physics of EE; EEL3112 Circuits 2

**Class times:** MWF 7th period (1:55 – 2:45 PM)

**Room:** LAR 330

**Professor:** Robert Fox ([fox@ece.ufl.edu](mailto:fox@ece.ufl.edu)) NEB 537

**Fox's office hours:** I'm available almost every day. Email to make sure I'm in.

**TAs:** Dooyoung Kim ([dkim14719@ufl.edu](mailto:dkim14719@ufl.edu)), Keenan Lind ([klind13@ufl.edu](mailto:klind13@ufl.edu)), Ling Lin ([abc123456@ufl.edu](mailto:abc123456@ufl.edu)) TA Office Hours: TBD

**Supervised Teaching PhD Student:** Amir Moeini ([ahm1367@ufl.edu](mailto:ahm1367@ufl.edu))

**Course Organization:** Each major topic will include homework assignments emphasizing analysis and design and in-class demonstrations emphasizing practical applications. Three tests plus a final exam.

**Text:** A. Sedra and K. Smith, *Microelectronic Circuits*, 6<sup>th</sup> or 7<sup>th</sup> Ed., Oxford University Press.

**Diligent Analog Discovery Board:** Required. Versions 1 or 2 are OK. Works with PC or Mac. See <http://tinyurl.com/NAD-UF-fl7>.

**Software:** LTSpice <http://www.linear.com/designtools/software/#LTspice>

### Grading:

HW:	10% (drop lowest one)
Labs:	15%
Attendance, participation	10%
Tests (3@15% each):	45%
Final exam:	20%

· Final exam: Thursday December 14, 10 AM – 12 AM

### Course Themes

- Practical electronics: How do you create circuits to do useful things?
- Basic electronic elements
- Design-oriented analysis

### Labs

- 6 sections; NEB 289
- 6 or 7 labs as assigned (about 2 weeks/lab)
- Supply fee is \$67.12

**Lab Schedule:**

Monday	E1-E2 (7:20 - 9:10)	Ling Lin	<a href="mailto:abc123456@ufl.edu">abc123456@ufl.edu</a>
Tuesday	E1-E2 (7:20 - 9:10)	Dooyoung Kim	<a href="mailto:dkim14719@ufl.edu">dkim14719@ufl.edu</a>
Wednesday	E1-E2 (7:20 - 9:10)	Keenan Lind	<a href="mailto:klind13@ufl.edu">klind13@ufl.edu</a>
Thursday	9-10 (4:05 - 6:00)	Dooyoung Kim	<a href="mailto:dkim14719@ufl.edu">dkim14719@ufl.edu</a>
Thursday	E1-E2 (7:20 - 9:10)	Dooyoung Kim	<a href="mailto:dkim14719@ufl.edu">dkim14719@ufl.edu</a>
Friday	2-3 (8:30 - 10:25)	Keenan Lind	<a href="mailto:klind13@ufl.edu">klind13@ufl.edu</a>

- You must attend all of the labs. Be sure to work out any conflicts with the TA, in advance if possible.
- Lab handouts will be available well before the lab meeting time.
- It is required that you be prepared for labs. Generally you will need to have your lab circuit built and working and all pre-labs done before you come to lab. If you are unprepared, you will receive a score of zero for the lab.
- The TAs will be available in the week before the lab meets to help you get things working and to answer questions about the labs.
- Since most of the work will be done before lab, you should be done with the actual lab in less than two hours.

**Diligent Boards:**

- The labs require the Diligent/National Instruments boards.
- NAD-2 available for \$179 at <http://tinyurl.com/NAD-UF-f17> .
- DAD-2 available for \$179 (with some extra effort) at <http://tinyurl.com/NAD-UF-f17> .
  - Select Get Academic Pricing
- The UF Bookstore carries some NAD-1 (\$199) and NAD-2 (\$311.25) for those who want to use financial aid or want it right away.
- I also recommend the Analog Parts Kit

**Tests:** Open-book open-notes; in-class during regular class period.

**Review sessions:**

- Test/review workshop sessions Thursday @ 6 PM before each of the three tests in LAR 310:
  - Thursday Sept 21
  - Thursday Oct 19
  - Thursday Nov 16

**Homework:** ~ 1 or 2 per week

- Usually due next class, where solutions will be discussed
- Goals are to illustrate and reinforce lecture topics and to provide practice for quizzes
- Lowest score will be dropped
- It's OK to work in groups or to get tips from other students, you must push your own calculator buttons and the work you turn in must be your own.
- You won't learn as much from the homework if you depend on somebody else to tell you how to do it.
- Homework is usually assigned at the end of a lecture and is almost always due just before the start of the next class meeting.
- I go over the homework solutions at the start of the next class, while it's fresh in your mind.
- Turn in homework electronically in Canvas as .pdf, .doc, .xls, or .asc.
- Late homework may be accepted at the instructor's discretion, typically for reduced credit.
- Turning in homework late based on my published solutions would be cheating.

**Attendance:**

- Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. See <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.
- I'll be tracking attendance using the multi-platform clicker software PollEverywhere. I'll help you get signed up using your ufl email address. If you create an account using a different email address we may lose track of you.
- Soon after the beginning of each class meeting, I'll provide a few warm-up questions plus a "secret word" question to answer using your phone or computer. If you don't know the secret word, you'll be marked absent.
- If you come in late, after the quiz, I may choose to give you partial attendance credit.
- I will give partial or complete credit for excused absences, in compliance with the University's attendance policies.
- I'm more likely to give credit if you let me know in advance.

You are responsible for everything in the lecture unless I tell you otherwise.

- If you need to miss class, be sure to see me or a TA to find out what you missed.
- Handouts: I put as much as possible in the notes, but the lectures usually cover more
- Textbook: Supplements lecture; follow by topic; syllabus may include some pointers to topics
- Problems: Work as many as you can find: the best possible quiz preparation.
- Supplementary problems: Sometimes we can help find more; try assigning yourself design problems and look at other books.

### **Class Participation:**

- The purpose of the participation score is to encourage all students to take an active role in the class and to improving the learning experience for everyone.
- Being in class, paying attention, showing respect for colleagues, and doing the required work are *minimum* requirements for the class. They do not automatically earn points for participation. The participation score reflects how well students actively contribute to making the class a better experience for everyone.
- With input from the TAs, I will routinely update the current participation score for each student. The scores are derived subjectively to discourage students from “gaming the system” by asking irrelevant questions or posting trivialities in forums.
- Participation scores will tend to improve during the semester as I and the TAs get to know you better. Be sure to introduce yourself and make sure we know how involved you are in the class.
- A student with a 20% participation score: rarely contributes in class, forums, or elsewhere.
- A student with a 40% participation score: only occasionally asks questions in class or in forums, rarely contributing relevant and appropriate material to forums. Usually passive. Waits to be told what to do for class or lab.
- A student with a 60% participation score: asks questions when necessary in class or in forums, and occasionally participates appropriately in forums. Gets help when needed for labs.
- A student with an 80% participation score: usually well-prepared for class; typically asks good questions in class or in forums, and sometimes contributes relevant and appropriate material to forums. Works well with colleagues in lab.
- A student with an 100% participation score: always prepared for class or labs; routinely asks appropriate questions in class and in forums; contributes relevant and appropriate material to forums; provides helpful responses to questions in forums. Helps other students with labs. Makes constructive suggestions to improve the course.

### **SPICE assignments**

- LTSpice; download from <http://www.linear.com/designtools/software/>.
- To help debugging SPICE runs, we need print-outs of input and output files, a schematic with labeled node numbers, .OP (Bias Point Detail) information, .OPTIONS, .MODELS, etc.
- If you turn in .asc files, make sure all needed files are included.

### **Academic Honesty Policy**

- UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

- You are expected to do your own work.
- You are expected to report any violations of the Honor Code that you become aware of.
- It is a violation of the Honor Code to turn in solutions to homeworks, labs or tests copied from other students or from published handouts or solutions.
- You are welcome to work with other students on homeworks and lab reports. However, once you understand the method of solution you should work through the calculations yourself.
- Sending someone the “secret word” so they can pretend to be present when they’re not would be blatant cheating, and both parties would risk failing the course.

### **How to study for this course**

The best way to learn how to analyze circuits and to prepare for tests is to *practice*. There are at least two sets of skills that you must master. One is figuring out how to approach an unfamiliar circuit or problem; the other is how to work through the solution to the problem or the analysis. If you always get help with setting up the problem, or just watch someone else solve the problem, you do not get any practice at all. To learn this material and to do well in the course, you must work problems and analyze circuits by yourself.

**Disabilities Accommodations:** Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) by providing appropriate documentation. Once registered, students will receive an accommodation letter that must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

**UF Religious Holiday Policy:** “Students, upon prior notification of their instructors, shall be excused from class or other scheduled academic activity to observe a religious holy day of their faith. No major test, major class events or major university activity should be scheduled on a major religious holiday. Professors and university administration shall not penalize students who are absent from academic or social activities because of religious observance. Students shall be permitted a reasonable amount of time to make up material or activities covered in their absence.”

To excuse religious holidays, please give the instructor a 1 week notice prior to the specific holiday.

**UF Counseling Services:** Resources are available on-campus for students having personal problems or lacking clear career and academic goals. Resources include:

U Matter, We Care: If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department, 392-1111 (or 9-1-1 for emergencies). <http://www.police.ufl.edu/>

Student Complaints Campus:

[https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>

**Software Use:** All faculty, staff and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. “We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity. “

**Course Evaluations:** Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

**Make-Up Opportunities:** It is very hard for me to make you a customized exam. If you have a University-approved excuse and arrange for it in advance, or in an emergency, a make-up exam will be allowed.