EEE3308C Electronic Circuits
Syllabus Spring 2024 Rev. 1: Tentative Schedule

			Lecture	Topic	Text	Lab
Jan	T	9	1	Logistics, Intro to Electronics	Ch. 1	
Jan	R	11	2-3	Design-oriented analysis, KCL, KVL Voltage/current dividers, Cascaded Amps	Ch. 1	
Jan	T	16	4	Op-Amps, Application of Op-Amps	Ch. 2	
Jan	R	18	5-6	Ideal vs. Non-Ideal Op-Amps AC coupling, Biasing, Port Resistances	Ch. 2	1
Jan	T	23	7	GBW, Poles and Zeros, Feedback	Ch. 2,10	1
Jan	R	25	8-9	Diodes: Ideal and Non-Ideal Wave Rectifiers	Ch. 4	1-2
Jan	T	30	10	Online: AC-DC Converters, Diode App.	Ch. 4	2
Feb	R	1	11-12	BJTs, small/large-signal concepts	Ch. 6	2
Feb	T	6		**Review: Test 1**		
Feb	R	8		**Test 1**		
Feb	T	13	13	Biasing BJTs, BJT Ckts (Part 1)	Ch. 6,7	3
Feb	R	15	14-15	BJT Ckts (Part 2), Coupling/Bypass caps Transitioning to MOSFETs from BJTs	Ch. 6,7 Ch. 5	3
Feb	T	20	16	N-MOSFET Physics and Regions	Ch. 5	4
Feb	R	22	17-18	P-MOSFET Physics, MOSFET I-V Biasing, small/large-signal concepts	Ch. 5 Ch. 5,7	4 5
Feb	T	27	19	MOSFET amplifiers (part 1): CS, CG, CD	Ch. 5,7	5
Feb	R	29	20-21	MOSFET amplifiers (part 2): CS, CG, CD Examples and Review of MOSFET amp.	Ch. 5,7	5
Mar	T	5	22	Degeneration, Cascoding, Folding	Ch. 5,7	
Mar	R	7	23-25	Multi-stage amplifier design example Current mirrors and Active load Differential Amp (Part 1)	Ch. 8,9	
Mar	T	19		**Review: Test 2**		Spice
Mar	R	21		**Test 2**		Spice
Mar	T	26	26	Differential Amp (Part 2)	Ch. 9	6
Mar	R	28	27-28	CMRR and PSRR of Differential Amp Instrumentation Amplifier, Comparator	Ch. 9	6
Apr	T	2	29	Frequency Response of Amp. (Part 1)	Ch. 10	
Apr	R	4	30	Frequency Response of Amp. (Part 2)	Ch. 10	
Apr	T	9	31	Op-Amps Revisted: Int. Circuitry (Part 1)	Ch. 9	7
Apr	R	11	32-33	Op-Amps Revisted: Int. Circuitry (Part 2) Logic: Inverters,	Ch. 9 Ch. 16	7
Apr	T	16	34	Logic: NAND, NOR, Delay, **Review: Test 3**		7
Apr	R	18		**Test 3**		
Apr	T	23	35	Logic: Transmission gate	Ch. 16	
Apr	R	25	Optional	Final Review		

Lab 1: Intro: Thevenin, Norton, etc.	Lab 5: Tone Control
Lab 2: Non-Ideal Op Amps	Spice Workshop
Lab 3: Diodes	Lab 6: BJT Amplifiers
Lab 4: MOSFET Common-Source Amp	Lab 7: CMOS Logic

UF UNIVERSITY of FLORIDA

The Foundation for The Gator Nation

EEE3308C Electronic Circuits

Spring 2024

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

Prerequisites: EEL 3111C Circuits I

Class times: Tuesday (T) 7th period (1:55 – 2:45 PM) , Thrusday (R) 7th-8th (1:55-3:50 PM)
Room: NEB 0202

Professor: Hamed Dalir (hamed.dalir@ufl.edu)

Office Hours: Every Monday (1:00-4:00 PM) Appointment Only

UPI Office Hours: (MAEB 0226)

Paolo D'Alessandro,	(paolodalessandro@ufl.edu)	Tuesday 8th (3:00-3:50 PM)
		Thursday 9th (4:05-4:55 PM)
Liam Negron	(liam.negron@ufl.edu)	Monday 7th (1:55-2:45 PM)
		Wednesday 7th (1:55-2:45 PM)
		Friday 7th (1:55-2:45 PM)

Office Hours: Every Monday (1:00-4:00 PM) Appointment Only

Supervised Teachers: (Zoom or by Appointment)

Belal Jahannia (b.jahannia@ufl.edu)

Russell L Schwartz (rschwartz2@ufl.edu)

Office Hours: Every Monday (1:00-4:00 PM) Appointment Only

Course Organization: Each major topic will include homework assignments and labs emphasizing practical applications. There will be three in-class tests. No final exam.

Textbook: A. Sedra and K. Smith, *Microelectronic Circuits*, 8th Ed. (You will need access to the textbook. Digital is fine.)

Digilent Analog Discovery Board: Required. Versions 1/2 are OK. Works with PC/Mac.

Parts Kit: You will need to order your own parts. See Parts List on the Canvas page.

Grading:

HW (10@2% each):	18% (+2% bonus)
Labs, projects (7@4% each):	28%
Tests (3@18% each):	54%

Course Themes:
· Practical electronics: How do you create circuits to do useful things?

· Basic electronic elements
· Design-oriented analysis

Labs/ Times: MAEB0226

Monday	Period 11	(6:15 PM - 8:10 PM)	UPI: Liam
Tuesday	Period 4 - 5	(10:40 AM - 12:35 PM)	UPI: Paolo
Wednesday	Period 4 - 5	(10:40 AM - 12:35 PM)	PPI: Russel
Wednesday	Period 6 - 7	(12:50 PM - 2:45 PM)	UPI: Liam
Wednesday	Period 11	(6:15 PM - 8:10 PM)	UPI: Paolo
Thursday	Period 3 - 4	(9:35 AM - 11:30 AM)	UPI: Paolo
Friday	Period 5 - 6	(11:45 AM - 1:40 PM)	UPI: Liam

Homework: ~ 1 per week (a max of total 10 homeworks over the semester)

· Usually assigned Friday; due by class start time on next Friday, where solutions will be discussed
· Goals are to illustrate and reinforce lecture topics and provide practice for quizzes
· It's OK to work in groups or to get tips from other students; but 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. But feel free to discuss/ask questions to the instructor.
· Turn in homework online in Canvas as .pdf
· 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.

Class Meetings:

Class Participation: The lectures will be in-person. However, previous year's recorded videos will also be made available through mediasite, whenever required. It is strongly encouraged to attend the in-person lectures so you can ask questions and participate in the class. For certain scenarios when the instructor is traveling, classes will be arranged through Zoom and will be notified ~1week early.
Zoom Etiquette, whenever applicable:
I can teach more effectively if you keep your video on and audio off during lectures.

- Attendance at labs is required. Work out any conflicts with the lab UPI in advance if possible and/or arrange makeups.

Handouts: I put as much as possible in the notes, but the lectures usually cover more.
Textbook: Anything in an assigned chapter of the book is fair game unless I tell you otherwise.
Problems: Work as many as you can find, this is the best possible test preparation.
Supplementary problems: Sometimes we can help find more; try assigning yourself design problems and look at other books.

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.
- Have fun with this interactive online circuit simulator: https://everycircuit.com/

Labs:

Labs in 3308C are run similarly to 3701.
1. Before starting your lab section you will be expected to:
   a. Understand the lab manual
   b. Analyze and build the circuits
   c. Perform most measurements at home with your Analog Discovery board
   d. Submit your pre-lab document on Canvas 15 min before your lab section
2. You must demonstrate your working circuit by the end of your lab section
3. A **lab handout** will be provided on Canvas for each lab. The lab handout is broken into pre-lab and in-lab sections. They will be graded separately.
4. The pre-lab steps and results are due before the lab starts.
5. You complete the in-lab steps while in contact with your UPI, and turn in
6. Failure to do any of these will negatively affect your lab score
7. **Lab Manuals** and **Pre-Lab documents** will be accessible before your lab date
8. There will be office hours to answer questions and help you get your lab working

Academic Honesty Policy:

You are not allowed to cheat or to tolerate cheating. The University's honesty policy, which I follow, can be found at https://sccr.dso.ufl.edu/wp-content/uploads/sites/4/2018/08/The-Orange-Book-Web.pdf.

You may consult with other students on homeworks or projects. However, solutions or reports that you turn in must be **your work alone**. For example, you must create your own computer files and run your own simulations.

- 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.

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 Accomodations:

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

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, students need to 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:

· University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.

· SHCC Mental Health, Student Health Care Center, 392-1171, Personal and Counseling.

· Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.

· Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

Software Use and Pledge:

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."

Make-Up Opportunities:

It is very hard for me to make you a customized exam. However, with a University-approved excuse and arranged for in advance, or in an emergency, a make-up exam will of course be allowed and accomodated.