



COURSE OUTLINE

Fall 2020

GOALS: To master the fundamentals of electrical circuits; to use these in addition to your knowledge of math, science and engineering — to setup, calibrate and use various sensors in conjunction with digital oscilloscopes and data acquisition equipment.

OBJECTIVES: You will be able to analyze and solve DC and AC circuits, connect voltmeters and power supplies to strain gages and other types of sensors and conduct experiments using the devices. Based on the output from the sensors, you will be able to reduce the raw data, and formulate an engineering conclusion based on the results.

OUTCOMES: You shall possess the knowledge and experience to specify, connect, conduct and reduce the output from the sensors that are commonly used in industry.

INSTRUCTOR: George Lopp, 265H Weil Hall, 352-294-7825, (glopp@ce.ufl.edu)
Office Hours: M, W, F 1:30-2:30pm, but also anytime I am in my office (& free)

TA's/Graders: Huziafa Lukmanji, and Brian Roche
244 Weil Hall, and/or online, office hours will be posted on Canvas

REFERENCES: 1) **Notes & Videos** for CGN 3710 – Posted on Dropbox and/or Canvas
2) AllAboutCircuits.com
3) Basic Engineering Circuit Analysis (any edition) – Irwin & Nelms - Not Required
4) NCEES Download from their Website Formula Sheet

LECTURE SCHEDULE: MWF, 3rd Weil 238 & 4th Weil 234

LAB SCHEDULE: MTWTh, 8th period & 9th period, Room 244 Weil Hall

Grade Evaluation	Points	% of Total Points	Example Final Grading Scale	
Test #1	90	(18.0 %)	470 (94 %)	A
Test #2	90	(18.0 %)	455 (91 %)	A-
Test #3	90	(18.0 %)	440 (88 %)	B+
Test #4	90	(18.0 %)	420 (84 %)	B
Homework	60	(12.0 %)	405 (81 %)	B-
Lab reports	60	(12.0 %)	385 (77 %)	C+
Quizzes	20	(4.0 %)	370 (74 %)	C
TOTAL	500	(100.0 %)	350 (70 %)	C -

GRADING POLICY:

1. No make-up tests will be given except for **medical reasons** and/or unless arrangements have been made **prior to tests**.
2. Homework will be assigned, and graded – online submission.
3. Lab material will definitely be on tests.
4. Individual lab reports are due one week following the lab – online submission.
5. Every lab is **REQUIRED** in order to get credit for the lab.

I understand that the University of Florida expects its students to be honest in all of their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action, up to and including expulsion from the University.

Tentative Course Schedule

Date			Lecture Topic	Lab
M	Sep	31	INTRO & EXPECTATIONS – Electricity & the Body	
W	Sep	2	OVERVIEW -BASIC CONCEPTS & REAL POWER	NO LAB
F	Sep	4	RESISTANCE & OHM'S LAW	
M	Sep	7	Labor Day – No Class	
W	Sep	9	DC CIRCUIT ANALYSES – SERIES v/s PARALLEL	USE OF MULTIMETERS
F	Sep	11	DC CIRCUIT – SERIES & PARALLEL COMBINATIONS	
M	Sep	14	DC CIRCUIT ANALYSIS USING THEVENINS	
W	Sep	16	DC CIRCUIT ANALYSIS USING SUPERPOSITION	DC CIRCUIT MEASUREMENTS
F	Sep	18	RESISTORS AS SENSORS - INTRODUCTION to the STRAIN GAGE	
M	Sep	21	EXAMPLE PROBLEMS / REVIEW FOR EXAM NO. 1	
W	Sep	23	EXAM NO. 1	NO LAB
F	Sep	25	WHEATSTONE BRIDGE CIRCUIT ANALYSIS	
M	Sep	28	BRIDGE CIRCUITS (Cont.)	
W	Sep	30	PRESSURE/LOAD	STATIC & DYNAMIC STRAIN
F	Oct	2	Homecoming – No Class	
M	Oct	5	PRESSURE/LOAD (cont.)	
W	Oct	7	OP AMPS	PRESSURE & LOAD
F	Oct	9	OP AMPS (Cont.)	
M	Oct	12	CAPACITANCE & Transient Analysis	
W	Oct	14	INDUCTANCE & Transient Analysis	OP AMPS or TRANSIENT CIRCUITS
F	Oct	16	EXAMPLE PROBLEMS / REVIEW FOR EXAM NO. 2	
M	Oct	19	EXAM NO. 2	
W	Oct	21	PHASOR NOTATION	NO LAB
F	Oct	23	INTRODUCTION TO AC SIGNALS & CIRCUITS	
M	Oct	26	AC CIRCUITS – SERIES v/s PARALLEL	
W	Oct	28	AC CIRCUITS - SERIES & PARALLEL COMBINATIONS	AC CIRCUIT MEASUREMENTS
F	Oct	30	AC CIRCUITS – THEVENIN & SUPERPOSITION	
M	Nov	2	INTRODUCING TRANSFORMERS	
W	Nov	4	TRANSFORMERS (Cont.)	TRANSFORMERS
F	Nov	6	TRANSFORMERS AS SENSORS - DISPLACEMENT MEASUREMENT	
M	Nov	9	EXAMPLE PROBLEMS / REVIEW FOR EXAM NO. 3	
W	Nov	11	Veterans Day – No Class	NO LAB
F	Nov	13	EXAM NO. 3	
M	Nov	16	POWER IN AC CIRCUITS	
W	Nov	18	AC POWER (Cont.)	DISPLACEMENT - LVDTs
F	Nov	20	3-PHASE POWER	
M	Nov	23	MEASURING FLOW	FLOW MEASUREMENT
W-F	Nov	25-27	Thanksgiving – No Class	
M	Nov	30	SENSORS AND TEMPERATURE MEASUREMENT	
W	Dec	2	SENSORS FOR pH MEASUREMENT	TEMP/PH MEASUREMENT
F	Dec	4	MOISTURE & HUMIDITY MEASUREMENT	
M	Dec	7	EXAMPLE PROBLEMS / REVIEW FOR EXAM NO. 4	
W	Dec	9	EXAM NO. 4	