REVISED DUE TO COVID-19 OUTBREAK

Instructor: Dr. George L. Engel (EB 3043)
Time: ONLINE (New lectures posted on T and R mornings!!!)
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Office Hours: M,W 3:00 PM - 4:30 PM and T, R 2:00 PM - 3:30 PM

Course Description

Small signal analysis, transistor amplifier design, frequency response, feedback system analysis, output stage design, signal generation and waveform shaping circuits. Three hours lecture and one laboratory session per week.

Due to the COVID-19 Outbreak, there will be NO lab meetings for the remainder of the semester. We will only simulate the third and final project!. All lectures will be available as powerpoint presentations. The presentations will include audio commentary provided by the instructor. These lectures are available on SIUE OneDrive.

Grading Policy

Exam # 1 15 %
Exam # 2 15 %
Exam # 3 15 %
Projects 45 %
Homework 10 %

For both undergraduate and graduate students the following grading scale will be used:
A = 90 - 100
B = 80 - 89
C = 70 - 79
D = 60 - 69
F = < 60

**Administrative Issues**

Based on University Class Attendance Policy 119: It is the responsibility of students to ascertain the policies of instructors with regard to absence from class, and to make arrangements satisfactory to instructors with regard to missed course work. Failure to attend the first session of a course may result in the students place in class being assigned to another student.

If you have a documented disability that requires academic accommodations, please go to Disability Support Services (DSS) for coordination of your academic accommodations. DSS is located in the Student Success Center, Room 1270; you may contact them to make an appointment by calling (618) 650-3726 or sending an email to disabilitysupport@siue.edu. Please visit the DSS website located online at www.siue.edu/dss for more information.

Students are expected to be familiar with and follow the Student Academic Code. It is included in the SIUE Policies and Procedures under Section 3C2.2.

**Graduate Credit**

Students taking ECE476 for graduate credit will be required to complete ONE additional problem on each of the three exams. The problem will be worth 10 points. All students taking the course for undergraduate credit will receive full credit for the problem without having to solve the problem. The additional problem will be made more difficult and will bear less resemblance to problems worked in homework. Examples of past exams with "GRADUATE ONLY" exam problems are available on the instructor’s website.

Moreover, for the final project in the class, graduate students will be need to design a circuit with additional functionality. For example, while undergraduates may be required to design a switching regulator, graduate students will need to modify the circuit so that it can be used as a battery charger. The first three design projects in the class will be same for both undergraduate and graduate students.
Required Texts

Microelectronic Circuits, Seventh Edition
Oxford University Press
Adel C. Sedra and Kenneth C. Smith
ISBN Number: 978-0-19-933913-6
Course Outline

T Mar 10 *****    SPRING BREAK    *****
R Mar 12 *****    SPRING BREAK    *****
T Mar 17 *****    SPRING BREAK WEEK 2    *****
R Mar 19 *****    SPRING BREAK WEEK 2    *****

T Mar 24 Sec. 11.1 The General Feedback Structure
    Sec. 11.1.1 Signal-Flow Diagram
    Sec. 11.1.2 The Closed-Loop Gain
    Sec. 11.1.2 The Loop Gain
    Sec. 11.1.4 Summary

R Mar 26 Sec. 11.2 Some Properties of Negative Feedback
    Sec. 11.2.1 Gain Desensitivity
    Sec. 11.2.2 Bandwidth Extension
    Sec. 11.2.3 Interference Reduction
    Sec. 11.2.4 Reduction in Non-linear Distortion

T Mar 31 Sec. 11.3 The Feedback Voltage Amplifier
    Sec. 11.4 Systematic Analysis of Feedback Voltage Amplifiers

R Apr 02 *****    EXAM #2 (Chapters 9 and 10)    *****

T Apr 07 Sec. 11.5 Other Feedback Amplifier Types
    Sec. 11.5.1 Basic Principles
    Sec. 11.5.2 Transconductance Amplifier
    Sec. 11.5.3 Transresistance Amplifier

R Apr 09 Heart Rate Monitor (Part I)
T Apr 14 Heart Rate Monitor (Part II)

R Apr 16 Sec. 11.5.4 Current Amplifier
    Sec 11.7 The Stability Problem
    Sec. 11.9 Stability Using Bode Plots

T Apr 21 Sec. 18.4 Bistable Multivibrators
    Sec 18.4 Generation of Square and Triangle Waveforms Using an Astable

R Apr 23 Sec. 18.7 IC Timers
    Sec. 18.7.1 The 555 Circuit

T Apr 28 Sec. 18.7.2 Implementing a Monostable Using a 555
R Apr 30 Sec. 18.7.3 Implementing an Astable Using a 555