

FLORIDA STATE UNIVERSITY / FLORIDA A&M UNIVERSITY
Department of Electrical and Computer Engineering

Spring 2021
EEL4301

Electronic Circuits and Systems Design

College of Engineering B-210
Mon/Wed, 12:30 PM – 1:45 PM

Instructor: Prof. Jinyeong Moon
CoE B-368
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Schedule: Class
M/W 12:30 PM – 1:45 PM @ CoE B-210
Office Hours
M/W 11:00 AM – 12:00 PM @ Online Zoom

Course Objectives

Upon the completion of this course, the student will be able to:

- (1) Analyze and design an output stage and various classes of power amplifiers.
- (2) Understand, analyze, and design various operational amplifiers and related circuits.
- (3) Understand and analyze biasing and active load circuits.
- (4) Describe and determine the characteristics of differential amplifiers and multistage amplifiers.
- (5) Derive and determine the transfer function, the loop-gain, and the stability criteria of feedback circuits and systems.

Course Topics

- (1) Output Stages and Power Amplifiers
- (2) Ideal Operational Amplifiers and Op-Amp Circuits
- (3) Integrated Circuit Biasing and Active Loads
- (4) Differential and Multistage Amplifiers
- (5) Feedback and Stability

Prerequisite

EEE3300 Electronics

Course Textbook

Microelectronics Circuit Analysis and Design, 4th Edition, Donald Neamen

Grading

The final grade is determined by the overall performance score:

A = 90 ~ 100; B = 80 ~ 89; C = 70 ~ 79; D = 60 ~ 69; F = < 60

The performance score considers:

Attendance and Quiz (10%), Homework (30%), Midterm Exam (30%), and Final Exam (30%).

One missed class will deduct 1% from the performance score.

Homework assignments will be issued throughout the semester. The homework is due before the class on the due date. Late submissions are not accepted.

Policy Statements

- Attendance is mandatory and will impact the final grading.
- First day attendance is mandatory for FSU students, and first week attendance is mandatory for FAMU students. Students not in class during the first day (FSU) or first week (FAMU) should be dropped from the course. This is a Title IV requirement involving federal financial aid. However, a student dropped from the course **may** re-register for it.
- There is no makeup exam/quiz without a certified medical excuse or prior instructor approval. The corresponding exam/quiz score will be automatically zero.
- In the event of an excused absence for exams and quizzes, consult the instructor prior to the exam to discuss proper procedure.
- Electronic devices, including a **cellphone**, should not disrupt the lecture (**no sound, no vibration**).
- There will be no phone conversations and text messaging during class.
- Profanity as well as ethnic, racial, or sexual remarks in my class will not be tolerated and will result in a reduction in your grade.
- Grade dispute must be made within one week after the graded work has been returned to the student. The student will have the burden of proof to show why the student is correct.

Academic Honor Code

Students are bound by their university's Academic Honor Code and are subject to sanctions if they are found in violation of the Code. Possible sanctions include but are not limited to: (1) a failing grade on an exam or assignment; (2) a failing grade in the course; (3) dismissal from the academic program; or (4) dismissal from the university.

Americans with Disabilities Act

Students with disabilities needing academic accommodation should:

- (1) Register with and provide documentation to the appropriate university office.
For FAMU students, this is the Learning Development and Evaluation Center (LEDC).
For FSU students this is the Student Disability Resource Center (SDRC); and
- (2) Bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

Syllabus Change

Except for changes that substantially affect implementation of the grading policy or grading scale, the syllabus is a guide for the course and is subject to change with advance notice.

Tentative Lecture Schedule: EEL4301 - Electronic Circuits and Systems Design (Spring 2021)					
Date	Day	Lecture	Topics	Textbook Chapters	Homework
01/06	Wed	1	Power and Thermal Considerations	Chapter 8	HW #1 out
01/11	Mon	2	Amplifier Classes (Class A, B)	Chapter 8	
01/13	Wed	3	Amplifier Classes (Class AB, C)	Chapter 8	HW #2 out
01/18	Mon		Martin Luther King Jr. Day - No Class		
01/20	Wed	4	Power Amplifier & Output Stage (Class A, AB)	Chapter 8	
01/25	Mon	5	Power Amplifier & Output Stage (Class AB)	Chapter 8	
01/27	Wed	6	Op-Amp & Amplifiers (Inverting, Summing, Non-inv.)	Chapter 9	HW #3 out
02/01	Mon	7	Op-Amp Applications (V/I Convs., Difference Amp.)	Chapter 9	
02/03	Wed	8	Op-Amp Applications (Instru. Amp., Integ., Diff.)	Chapter 9	HW #4 out
02/08	Mon	9	OTA & Op-Amp Designs	Chapter 9	
02/10	Wed	10	Op-Amp Designs	Chapter 9	
02/15	Mon	11	BJT Current Sources	Chapter 10	HW #5 out
02/17	Wed	12	BJT/FET Current Sources	Chapter 10	
02/22	Mon		Midterm Review		
02/24	Wed		Midterm Exam		
03/01	Mon	13	FET Current Sources	Chapter 10	HW #6 out
03/03	Wed	14	Active Loads	Chapter 10	
03/08	Mon	15	Small Signal Analysis of Active Loads	Chapter 10	
03/10	Wed	16	BJT Differential Amplifier	Chapter 11	HW #7 out
03/15	Mon	17	BJT/FET Differential Amplifier	Chapter 11	
03/17	Wed	18	Differential Amplifier with Active Load	Chapter 11	HW #8 out
03/22	Mon	19	Gain and Output Stage of a Differential Amplifier	Chapter 11	
03/24	Wed	20	Frequency Response of a Differential Amplifier	Chapter 11	
03/29	Mon	21	Feedback Basic	Chapter 12	HW #9 out
03/31	Wed	22	Feedback Topologies	Chapter 12	
04/05	Mon	23	Amplifiers with Feedback (Series-Shunt, Shunt-Series)	Chapter 12	HW #10 out
04/07	Wed	24	Loop Gain, Stability, and Margins	Chapter 12	
04/12	Mon	25	Loop Gain, Stability, Margins, and Compensation	Chapter 12	
04/14	Wed	26	Final Exam Review		
04/19 Mon - 04/23 Fri			Final Exam Week		Ver. 12/16/2020