2309 CE102 Course Outline

Subject Code : **CE102**
Subject Title : Analog Circuits
Level : 3
Credits : 5
Teaching : Lecture 63 hours
Activity : Lab 12 hours
Prerequisite : MA101/102: Calculus I/II, PH101/002:Physics I/II, CE001:Electric Circuit Analysis

Class Schedule :

Class	Time		Classroom	Date
D1	MON	12:30-15:20	C507	2023/09/01 - 2023/12/14
D1	WED	12:30-14:20	C506	2023/09/01 - 2023/12/14

Instructor : Dr. Xiaodong Li
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Office hours : Monday 09:30-12:00 Wednesday 14:30-17:30

Tuesday 09:30-12:00 Thursday 15:30-17:30

Course Description

This course aims to provide students a comprehensive understanding of analog electronic circuit and devices. The main content includes the physical models of electronic device and the analysis method of diode, BJT and MOSFET circuits; the principle of amplification and different amplifier circuit using BJT and MOSFET; the principle and analysis method of operational amplifier, and its applications in signal manipulation.

Textbook(s)

Book name：Microelectronic Circuit Analysis and Design
Author/Editor：Donald Neamen

Edition：4
ISBN：9780071289474
Publisher：McGraw-Hill
Date：2010

INTENDED LEARNING OUTCOMES

Upon successful completion of this subject, students will be able to:

1. understand principle of semiconductor, the development history and trend of different semiconductor devices
2. analyze diode-based circuit, and be familiar with the applications of diodes, such as rectifier, clipper/clamping circuit
3. analyze BJT-based signal amplifier using small-signal model
4. analyze MOSFET-based signal amplifier using small-signal model
5. analyze operation amplifier circuits and be familiar with commonly-used mathematical operation with operation amplifier
6. design, build, test and evaluate simple signal processing circuits, like signal amplification, mathematical operation etc.
7. know the working ethics and safety rule in the lab, work with partners cooperatively
8. write technical reports in right format and master professional text-editing techniques using LaTex.

Schedule

Item	Topic	Hours	Teaching Method
1	Semiconductor Materials and Diodes	5	lecture
2	Diode Circuits	10	lecture
3	The Field-Effect Transistor	5	lecture
4	Basic FET Amplifiers	14	lecture
5	The Bipolar Junction Transistor	5	lecture
6	Basic BJT Amplifiers	14	lecture
7	The Ideal Operational Amplifier and applications	10	lecture
8	Diode Circuits	3	Lab
9	BJT-based Common-Emitter Amplifier	3	Lab
10	Operation Modes of MOSFET	3	Lab

11	Arithmetic Operation with Op-Amp	3	Lab

ASSESSMENT APPROACH

Assessment method	Percentage %
1. Lab work	20
2. Mid-term exam I	15
3. Mid-term exam II	15
4. Class participation	10
5. Final exam	40
Total	100 %

Guideline for Letter Grade:

Marks	Grade	GPA
94-100	A+	4
90-93	A	4
83-89	A-	3.7
75-82	B+	3.3
68-74	B	3.0
63-67	B-	2.7
59-62	C+	2.3
56-58	C	2.0
54-55	C-	1.7
52-53	D+	1.3
50-51	D	1.0
Below 50	F	n/a