Faculty of Engineering & Technology

Electronic Circuits

Information :

Course Code :	ELE 364	**Level :**	Undergraduate	**Course Hours :**	4.00- Hours

Department : Department of Electrical Engineering

Instructor Information :

Title	Name	Office hours
Professor	Mohamed Abdelhamid Abualata Ibrahim	
Lecturer	MOSTAFA MOHAMED SALAHELDIN ABDELKHALEK ELEWA	5
Assistant Lecturer	Mohamed Essam Abd El Aziz Abd El Aal	
Assistant Lecturer	SHEROUK SOBHI ABDELSALAM FOUDA	
Teaching Assistant	Hamdy Sherif Hamdy Amin Elshehaby	

Area Of Study :

Understand the principles of circuit design and its applications.
Analyze the performance and implement electronic circuits.
Train the student to perform experiments on electronic circuits using electronic laboratory and software tools for circuit design and simulation.

Description :

Transistor small signal models: ´ - model , Analysis of audio frequency (AF) amplifiers: RC-coupled, high frequency model and frequency response, AF power amplifiers: Class-A, Push-pull operation (Class-A, Class-B, Class AB), Feedback amplifiers (FB): FB concept, stability, general characteristics of negative FB amplifiers, input and output impedances with FB, difference amplifier Operational amplifiers (OPAMPs):, OPAMP specifications and frequency characteristics, OPAMP applications: inverting, non-inverting, adder, subtracter, integrator, differentiator, Oscillators: concept of stability and oscillations, OPAMP oscillators (rectangular, sinusoidal, Wien bridge, phase shift, and tuned circuits). Multivibrators (MVs): bistable MVs, triggering, schmitt trigger, monostable and astable MVs, wave shaping circuits and the 555 timer.

Course outcomes :

a.Knowledge and Understanding: :

1 -	Describe the AF amplifiers and their frequency response.
2 -	List the various power amplifier circuits.
3 -	Recognize the design of the OPAMP amplifier circuits and their applications.
4 -	Recognize the multi-stage amplifiers including differential amplifier circuits.
5 -	Define the feedback circuits and their amplifiers.
6 -	Determine the various applications of oscillators.

b.Intellectual Skills: :	
1 -	Analyze problems of amplifier circuits (OPAMP amplifiers, power amplifiers, multi-stage amplifiers, and feedback amplifiers) for optimized solutions.
2 -	Use professional software tools for design and implementing of electronic circuits.
3 -	Prepare a technical design report on an assignment.
4 -	Design of electronic circuits for engineering applications.
5 -	Evaluate the characteristics and performance of electronic circuits.
c.Professional and Practical Skills: :	
1 -	Apply theories and techniques of mathematics, basic electricity and electronics to solve electronic circuit problem.
2 -	Identify the components and requirements for designing a complete application circuit.
3 -	Use computational facilities and related software tools, measuring instruments, workshops and/or relevant laboratory equipment to design and diagnosis experiments.
4 -	Read thoroughly datasheets and identify appropriate specifications for required device and circuits.
d.General and Transferable Skills: :	
1 -	Collaborate effectively within multidisciplinary team
2 -	Communicate effectively.
3 -	Effectively manage tasks, time, and resources.
4 -	Search for information and engage in life-long self-learning discipline.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Power Amplifiers	12	6	6
OPAMP amplifiers	21	9	12
Differential Amplifiers	12	6	6
Frequency response of the single stage amplifier	9	3	6
Multistage Amplifiers	12	6	6
Feedback Amplifiers	15	9	6
Oscillator and Multivibrator	9	6	3

Teaching And Learning Methodologies :

Interactive Lecturing
Problem solving
Discussion
Experiential Learning

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Final Exam	40.00		
o In Class Quizzes and participation	20.00		

o Lab Experiments & Project	10.00		
o Mid-Term Exams	30.00		

Course Notes :
No course notes are required