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
Associate Professor	Mohamed Hassan Mohamed Elmahlawy	2
Lecturer	AHMED SAEED ABDELSAMEA SAYED	10
Lecturer	MOHAMED MOUSA SAYED EMAM AHMED	3
Assistant Lecturer	Mostafa Mohamed Salaheldin Abdelkhalek	5
Assistant Lecturer	SHEROUK SOBHI ABDELSALAM FOUDA	
Teaching Assistant	Hamdy Sherif Hamdy Amin Elshehaby	

Area Of Study :

The Course aims to provide :
1- Transistor small signal models: π-model , T-model.
2- Analysis of audio frequency (AF) amplifiers: RC-coupled, and frequency response.
3- Power amplifiers: Class-A, Push-pull operation (Class-A, Class-B, Class C).
4- Operational amplifiers (OPAMPs): difference amplifier, OPAMP specifications and frequency characteristics, OPAMP applications.
5- Inverting, non-inverting, adder, subtractor, integrator, differentiator. Feedback amplifiers (FB).
6- FB concept, general characteristics of negative FB amplifiers, input and output impedances
7- Oscillators: concept of stability and oscillations, OPAMP oscillators.
8- Multivibrators (MVs): bistable MVs, monostable and astable MVs.
9- Waveform shaping circuits and the 555 timer.

Course outcomes :

a.Knowledge and Understanding: :

1 -	understand the fundamentals of the Audio and Power transistor Amplifiers .
2 -	Operational amplifiers (OPAMPs): specifications , frequency characteristics, and applications.
3 -	Inverting, non-inverting, adder, integrator, differentiator. and feedback amplifiers (FB).
4 -	OPAMP oscillators
5 -	Multivibrators (MVs): bistable MVs, monostable and astable MVs.
6 -	development of the practical skills and testing of the electronic circuits

b.Intellectual Skills: :

1 -	Ability to apply different alternative solutions.
2 -	Ability to apply different solution alternatives using different approximation models.

3 -	Analysis of the obtained results both individually or as a part of a team

c.Professional and Practical Skills: :

1 -	Testing and measurements of the characteristics of the Transistor and Operational Amplifier circuits..
2 -	Connections and Measurements of the input and output signal levels and waveforms of the transistor and Operational Amplifier Circuits
3 -	Fault detection and repair of the OP Amplifier and transistor circuits.

d.General and Transferable Skills: :

1 -	Ability to write technical reports.
2 -	Ability to work in a self-directed manner.
3 -	Can work coherently as a part of a team.
4 -	Can find innovative solutions

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Transistor small signal models: Ëmodel , T-model. RC-coupled audio frequency (AF) amplifiers.	6	3	3
Power amplifiers: Class-A, Push-pull operation, (Class-A, Class-B, Class C).	12	6	6
Operational amplifiers (OPAMPs) difference amplifier, OPAMP applications.	12	6	6
Inverting, non-inverting, adder, subtractor, integrator, differentiator. Feedback amplifiers (FB).	12	6	6
FB concept, general characteristics of negative FB amplifiers, input and output impedances	6	3	3
Oscillators: concept of stability and oscillations, OPAMP oscillators. Waveform shaping circuits.	18	9	9
Multivibrators (MVs): bistable MVs, monostable and astable MVs.	12	6	6

Teaching And Learning Methodologies :

Lectures
Tutorials
Laboratories

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Attendance ,Lab.	5.00	10	to assess the ability of implementing simple electronic circuits and measure the different characteristics.

Final-term	40.00	15	to assess the comprehensive understanding of the scientific background of the course, to assess the ability of problem solving.
First Mid-Term Exam	25.00	6	to assess the skills of problem solving, understanding of the course topics.
Quizzes and Assignments	5.00	10	
Second Mid-Term Exam	25.00	10	to assess the skills of problem solving, understanding of the course topics.

Course Notes :

No course notes are required

Recommended books :

"Electronic Principles", 7th edition, A. Malvino.
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