EC 339 - Electronics (2)

CREDIT HOURS
3 Hours

CONTACT HOURS (Hours/week)
Lecture: 2; Tutorial: 2; Lab: 2

COURSE COORDINATOR
Prof. Khaled Shahata

TEXT BOOK:
C.J.Savant, M.S.Rooden, G.L.Carpenter, ”Electronic Design”, Addison Wesley
Martin Rodan and Gordon Carpenter, " Electronic Design: from concept to reality"

COURSE DESCRIPTION:
Electronic amplifier theory, power amplifiers, Differential amplifiers, Operational amplifiers filters and Oscillators.

PREREQUISITE:
EC 238

RELATION OF COURSE TO PROGRAM:
Required

COURSE INSTRUCTION OUTCOMES:
The student is able to analyze and design BJT and FET amplifiers, Power amplifiers, operational amplifiers, filters and oscillators.

TOPICS COVERED:

- Revision, Transistor theory, Amplifier circuits, course overview
- Mid frequency-band equivalent circuit of transistor amplifiers. Voltage gain, current gain, input and output impedance.
- Low and High frequency response of transistor amplifiers. Design of transistor amplifiers.
- Multistage amplifiers, overall gain, frequency response, gain-bandwidth product.
- Field Effect transistor amplifiers, DC and mid-band frequency solution.
- Power amplifiers, classes of operation. Efficiency, push-pull power amplifiers.
- Feedback amplifiers.
- Sinusoidal oscillators.
- Square wave oscillators.

- Operational amplifiers, specifications. Analysis of basic Op-Amp circuits (Inverting and non-Inverting amplifiers), applications.
- Op-Amp applications.
- RC active filters.
- Power supplies, switching mode power supply.
- Introduction to IC fabrication.

CONTRIBUTION OF COURSE TO MEET THE REQUIREMSNTS OF CRITERION 5:

Professional Component Content			
Math and Basic Sciences	**Engineering Topics**	**General Education**	**Engineering Design**
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RELATIONSHIP OF COURSE TO STUDENT OUTCOMES:

Student Outcomes		Course Outcomes
a.	An ability to apply knowledge of mathematics, science, and engineering.	✓
b.	An ability to design and conduct experiments, analyze and interpret data.	
c.	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.	✓
d.	An ability to function on multi-disciplinary teams.	
e.	An ability to identify, formulate, and solve engineering problems.	
f.	An understanding of professional and ethical responsibility.	✓
g.	An ability to communicate effectively.	
h.	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
i.	A recognition of the need for, and an ability to engage in life-long learning.	✓
j.	A knowledge of contemporary issues within and outside the electrical engineering profession.	
k.	An ability to use the techniques, skills, and modern engineering tools necessary for electrical engineering practice.	