Zarqa University

Faculty of Engineering Technology

Department: Electrical Engineering
Course title: Electronics II (0904328)

Prerequisite: Electronics I (0904221) & Electrical circuits II (0904234)
Instructor: Dr. Haitham Issa
Lecture's time: 9:30-11:00, Mon, and Wen
Semester: Spring, 2017
Office Hours: 10:00-11:00, and 13:00-14:00 Sunday, Tuesday, and Thursday

Course description:

In this course the students will study amplifier configurations and characteristics modeling of transistor circuits. Frequency analysis of BJT and FET amplifiers. Multistage amplifiers. Frequency response of single-and-multi-stage amplifiers. The differential amplifier. Theory of Op-Amps. Applications of Op-Amps. Power amplifiers.

Aims of the course:

1. Understand amplifier configurations, parameters, and transistor models.
2. Consider the operations and characteristics of BJT amplifier, differential amplifier, multistage amplifiers BJT and MOSFET.
3. Analyze multistage amplifiers.
4. Study frequency response of BJT and FET amplifiers.
5. Study power amplifiers classes (class A, Class B/AB push-pull and Darlington amplifiers).
6. Study the theory of Op-Amp and its applications.

Intended Learning Outcomes (ILOs):

A student who has passed this module should be able to:

1- Determine, and explain the amplifier configurations and characteristics modeling of transistor circuits.
2- Illustrate BJT amplifier DC and AC equivalent circuits, and load lines.
3- Calculate the BJT parameters, input/output resistances, dissipation power (P_D), currents, voltages, and gains.
4- Calculate the frequency responses of BJT and FET.
5- Design BJT biasing circuits, inverting and noninverting operational amplifiers, single stage and multistage amplifiers and power amplifier circuits (push pull and Darlington amplifiers).

Course structures:

Week (s)	C. Hrs	ILOs	Topics	Teaching Procedure	Assessment methods
1-2		1	Review and Deep Understanding of Bipolar Junction Transistors (BJTs).	Lecturing from the text and reference books	HWs
3-4		2 & 3	Transistor Bias Techniques and Circuits.	Lecturing from the text and reference books	HWs
5-6		3	BJT Amplifiers Classes and Differencial Amplifiers.	Lecturing from the text and reference books	HWs & Quizzes 1st Exam April 2, 2017
7-9		3	Power Amplfiers.	Lecturing from the text and reference books	HWs
10-11		5	Operational Amplifiers (Op-Amp).	Lecturing from the text and reference books	HWs 2nd Exam May 14, 2017
12-13		5	Operational Amplifier (Op-Amp) Circuits and Applications	Lecturing from the text and reference books	HWs & Quizzes
14-15		4	Amplifier (BJT & FET) Frequency Responses	Lecturing from the text and reference books	HWs Final Exam

References:

1. "***Electronic Devices***", Thomas Floyd, Pearson Education, Inc., 9th Edition, 2012.
2. "**Basic Electronics and Linear Circuits**", N. N. Bhargava, N. N. Bhargava, S. C. Gupta, and D. C. Kulshreshtha, Tata McGraw-Hill, 2006.

Assessment Methods:

Methods	Grade	Date
Quizzes and HWs	10	Bi-weekly
First Exam	20	End of Week 6
Second Exam	20	End of Week 11
Final Exam	50	After Week 15