

Planning and Quality Assurance Affairs

Form (A)

Course Specifications

General Information

Course name	Electronics (1)
Course number	ITCC1311
Faculty	
Department	
Course type	Major Needs
Course level	1
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1	- Determination of the modes of operation of the PN junction and calculation of the voltages and currents in a diode circuit
2	- Determination of the modes of operation of the BJTs and calculation of the voltages and currents in a BJT dc circuit

Intended Learning Outcomes

Knowledge and Understanding	<ul style="list-style-type: none"> * a1- The basic concept of electronic components and basic laws. The principles of circuit-analysis * a2- The Maximum power-transfer, the impedance concept, magnitude and phase-shift of RLC circuits * a3- The characteristics of transistor, types, basic configuration, biasing and load line * a4- The Field Effect Transistors
Intellectual Skills	<ul style="list-style-type: none"> * b1-Utilize theories, rules, and electronic science * b2-Solve problems in physics using appropriate mathematical tools * b3-Identify the relevant physical principles and make approximations necessary to obtain solutions
Professional Skills	<ul style="list-style-type: none"> * c1- Being able to solve problem sheets related to the material course * c2- Collect and record data and information from libraries and summarize it in suitable forms * c3- The student would be able to apply some experiments related to the course contents
General Skill	<ul style="list-style-type: none"> * d1- Student should be able to access data and information from the Internet related to the course subjects * d2- Student should develop self professional, scientific, and personal attitude towards continuous education * d3- Student should be able to cooperate in teams

Course Contents

- 1 - Electronic components and basic laws. Principles of circuit-analysis
- 2 - Maximum power-transfer, sinusoidal excitation and impedance concept, magnitude and phase-shift of RLC circuits
- 3 - Frequency response of linear circuits, passive filters types and characteristics. Diode-circuits: half and full-wave rectifiers, Zener regulators and limiters
- 4 - Transistor circuits: BJT characteristics, types, basic configuration, biasing and load line
- 5 - Equivalent circuits, voltage gain, input and output impedance, coupling, practical circuits
- 6 - FET circuits: Characteristics, types, basic configuration, switching modes
- 7 - Operational amplifiers: Principles, basic circuits: adder, follower, differentiator, integrator, comparator, Schmitt-circuit, special circuits
- 8 - Display elements: Light-emitting-diodes, liquid-crystal displays, and cathode-ray tubes

Teaching and Learning Methods

- 1 - Lectures
- 2 - Tutorial Exercises
- 3 - Project and/or Assignments

Students Assessment

<u>Assessment Method</u>	<u>TIME</u>	<u>MARKS</u>
Mid-Term Exam I	6th week	20%
Mid-Term Exam II	12th week	20%
Class Work	During the 16 weeks	10%
Final Exam	16th week	50%

Books and References

Course note	Lectures Notes
Essential books	L. Boylestad and L. Nashelsky, Electronic Devices and Circuit Theory, 10th Edition, Prentice Hall, 2009
Recommended books	A. S. Sedra and K. C. Smith, Microelectronics Circuits, 5th Edition, Oxford University Press, 2004

Knowledge and Skills Matrix

Main Course Contents	Study Week	Knowledge and Understanding	Intellectual Skills	Professional Skills	General Skill
Electronic components and basic laws. Principles of circuit-analysis	1	a1	b1		
Maximum power-transfer, sinusoidal excitation and impedance concept, magnitude and phase-shift of RLC circuits	2-3	a2		c1	
Frequency response of linear circuits, passive filters types and characteristics. Diode-circuits: half and full-wave rectifiers, Zener regulators and limiters	4-5	a3	b2		d1
Transistor circuits: BJT characteristics, types, basic configuration, biasing and load line	6-7	a1,a3	b1	c1	
Equivalent circuits, voltage gain, input and output impedance, coupling, practical circuits	8-9	a4	b2	c3	d2-d3
FET circuits: Characteristics, types, basic configuration, switching modes	10-11	a3	b3	c2	d1
Operational amplifiers: Principles, basic circuits: adder, follower, differentiator, integrator, comparator, Schmitt-circuit, special circuits	12-13	a2	b3	c3	d1,d2
Display elements: Light-emitting-diodes, liquid-crystal displays, and cathode-ray tubes	14-15	a1,a3	b1	c3	d2