COME221 – Electronic Circuits I (Fall 2016-2017)

Curricular Area	**Electrical Engineering**
Type of Course	Mandatory – Major
Catalogue Description	Introduction to semiconductor physics, junction diodes: construction, I-V characteristics, circuit models, applications, special purpose diodes: Zener diodes, light-emitting diodes (LED), photo detectors (PD), Bipolar junction transistors (BJT) and field effect transistors (FET): types, physical structures, basic configurations, characteristic curves, circuit models, biasing circuits, small-signal amplifiers, computer aided analysis using SPICE.
Prerequisites by Courses	POWE 210 – Fundamental of Electric Circuits
Prerequisites by Topics	DC and AC Electric circuits.
Instructors	Dr. Ziad Osman zosman@bau.edu.lb Engineering Building – Department of Electrical and Computer Engineering Office: (Phone Ext 3414) Eng. Heba Halabi h.alhalabi@bau.edu.lb Engineering Building – Department of Electrical and Computer Engineering Office: (Phone Ext 3408)
Office Hours	
Load	3 credits; 2 Lecture-sessions/week – 75 min per session
Textbook	• Sedra & Smith, Microelectronic Circuits, Oxford university press,2014
Reference Books	• Jacob Millman & Christos Halkias, Integrated Electronics, McGraw Hill,1972. • Albert Malvino, Electronics Principles, 6th Edition, Career Education, 1998.

Topics	*Subjects covered*	*No. of Weeks*
	Semiconductor Theory	1.5
	PN Junction Diodes	1
	Diode Circuits and Applications	2
	Bipolar Junction Transistor (BJT), Physical Structure and Basic Configuration	1
	BJT Characteristic Curves, Circuit Model, and Biasing Circuits	2
	BJT Small Signal Amplifiers	2
	Field Effect Transistor (FET), Physical Structure and Basic Configuration	1
	FET Characteristic Curves, Circuit Model, and Biasing Circuits	2
	FET Small Signal Amplifiers	3
	Total	15

Learning Outcomes Correlation with	Program Outcomes	Program Objectives
Describe the concept of energy barrier and its implementation in semiconductor theory.	a	1
Explain the difference between the physics of semiconductors and other materials.	a	1
Describe the different types of semiconductors and understand the dependence of its properties on different parameters (doping, temperature,.).	a	1
Describe the PN junction diodes and their characteristics.	a	1
Analyze and design different diode applications (regulators, limiters, clampers,…)	a,c	1
Describe the BJT transistor and its characteristics	a	1
Analyze the BJT circuits as a small signal amplifier	a,c	1
Describe the FET transistor and its characteristics	a	1
Analyze the FET circuits as a small signal amplifier	a,c	1

Learning Outcomes Assessment Tools	Exams	HW s	Lab Reports	Project	Course Survey
Describe the concept of energy barrier and its implementation in semiconductor theory.	☒	☒			☒
Explain the difference between the physics of semiconductors and other materials.	☒	☒			☒
Describe the different types of semiconductors and understand the dependence of its properties on different parameters (doping, temperature,.).	☒	☒			☒
Describe the PN junction diodes and their characteristics.	☒	☒			☒
Analyze and design different diode applications (regulators, limiters, clampers,…)	☒	☒			☒
Describe the BJT transistor and its characteristics	☒	☒			☒
Analyze the BJT circuits as a small signal amplifier	☒	☒			☒
Describe the FET transistor and its characteristics	☒	☒			☒
Analyze the FET circuits as a small signal amplifier	☒	☒			☒

Assessment:

Assessment:	Dates	Weighing
Exam 1	7th week	30%
Exam 2	12th week	30%
Final Exam	To be set later by BAU registrar	40%

Attendance:

As set by BAU regulations, and specified in Student Manual, students who miss more than one-fifth of the sessions of any course in the first ten weeks of the semester will be required to withdraw from the course with a grade of "WF".

Course Coordinator	Dr. Ziad Osman
Date	