Jordan University of Science and Technology

Faculty of Engineering

Electrical Engineering Department

EE220 Introduction To Electronics
Summer Semester 2019-2020

Course Catalog
3 Credit Hours. Semiconductor materials; intrinsic, N-type, and P-type semiconductor; carriers; density of state and Fermi function; Distribution of carriers; conductivity and drift current; Diffusion current; Einstein relationship; PN junction; depletion region characteristics ; forward and reverse biasing; diode I-V characteristics; diode circuits and applications; bipolar junction transistor: theory , DC biasing, and symmetrical swing; field effect transistor: theory, DC biasing, and symmetrical swing.

Text Book	
Title	Microelectronics Circuits Analysis and Design
Author(s)	D. Neamen
Edition	4th Edition
Short Name	Microelectronics Circuits Analysis and Design
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Modular series on Solid State Devices	Semiconductor Fundamentals	R. F. Pierret and G. W. Gerold	2nd Edition	
Modular series on Solid State Devices	The PN Junction Diode	G. W. Gerold and R. F. Pierret	2nd Edition	

Instructor	
Name	**Prof. Omar Qasaimeh**
Office Location	E2L3
Office Hours	
Email	qasaimeh@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Mon, Tue, Wed : 10:00 - 11:30 Room: منصة الكترونية

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
242100	EE210 Circuits (1)	Pre./Con.

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	1. Semiconductor materials	From **Modular series on Solid State Devices**
Week 2	2. intrinsic, N-type, and P-type semiconductor	From **Modular series on Solid State Devices**
Week 3	carriers, density of state and Fermi function, Distribution of carriers	From **Modular series on Solid State Devices**
Week 4	conductivity and drift current, Diffusion current, PN junction	From **Modular series on Solid State Devices**, From **Modular series on Solid State Devices**
Week 5	PN junction, depletion region, forward and reverse biasing; diode I-V characteristics	From **Modular series on Solid State Devices**
Week 6	DC equivalent circuits model	From **Microelectronics Circuits Analysis and Design**
Week 7	Half wave rectifiers, Full wave rectifiers	From **Microelectronics Circuits Analysis and Design**
Week 8	Capacitive load rectifier circuits, Doupler	From **Microelectronics Circuits Analysis and Design**
Week 9	Clipping, clamping and multidiode circuits	From **Microelectronics Circuits Analysis and Design**
Week 10	Zener diode circuits and examples	From **Microelectronics Circuits Analysis and Design**
Week 11	BJT transistor models	From **Microelectronics Circuits Analysis and Design**
Week 12	BJT bisaing and DC analysis	From **Microelectronics Circuits Analysis and Design**
Week 13	Maximum symmetrical swing, DC load line, AC load line, examples of design	From **Microelectronics Circuits Analysis and Design**

Week 14	FET, MOSFET, NMOS, PMOS, DC models	From **Microelectronics Circuits Analysis and Design**
Week 15	DC bias and analysis, JFET	From **Microelectronics Circuits Analysis and Design**
Week 16	DC analysis, DC and AC load lines, examples	From **Microelectronics Circuits Analysis and Design**

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understand semiconductor fundamentals. [25ABET1]	25%	
Understand the theory and statics of PN junction diode [15ABET1]	15%	
Understand small signal and large signal models of diode and ability to analyze diode circuits [35ABET1]	35%	
Understand theory, DC models, and biasing of bipolar junction transistors [15ABET1]	15%	
Understand theory, DC models, and biasing of field effect transistors [10ABET1]	10%	

Relationship to Program Student Outcomes (Out of 100%)						
ABET1	ABET2	ABET3	ABET4	ABET5	ABET6	ABET7
100						

Evaluation	
Assessment Tool	**Weight**
First	30%
Second	20%
Final	50%

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