



**Hashemite University**  
**College of Engineering**  
**Department of Electrical Engineering**  
**EE 240- Electronics1 (3 Credit Hours/Dept. Compulsory)**

Instructor		Grading info		Section /Class Info		
Dr. Hadi al-ithawi		Test 1	25%		Days	Sun/Mon/Tue/Wed/Thurs
Email: drhadi@hu.edu.jo		Test 2	25%		Time	5:00-6:15
		Quiz (Oral)	10%			
		Final	40%		Location	H.B 104
Office:	Eng. 3071					
Office hours:						

Course	
Course Number:	1104094240
Prerequisite:	Electrical Circuits 1 (110409201), covering Units and definitions, Dependent and independent sources, Ohm's and Kirchoffe's laws, and division rulesj, Nodal and Mesh analysis, Linearity and superposition, Thevenin and Norton theorems, RL, RC and RLC circuits.
Textbook:	"Microelectronics: circuit analysis and design" by Donald Neamen, 4th edition.
Course Description:	Introduction ot semiconductor materials, pn-junction diode, DC analysis and models, Zener diodes, Schottky diodes, diode circuits: rectifiers, regulators, clippers, clampers, and multiple diode circuits; BJT: DC analysis, biasing, configurations, applications, FET and MOSFET: DC analysis, configurations and applications.
Specific Outcomes of Instruction (Course Learning Outcomes):	<ol style="list-style-type: none"> <li>1. Realize the importance of Semiconductor Materials in electronic circuits. (e)</li> <li>2. Understand the operation and modeling of a pn-junction diode. (e)</li> <li>3. Learn how to design rectifiers, clippers, clampers, regulators and zener diodes, and distinguish between those circuits. (a, e,c)</li> <li>4. Solve and break down different configurations of multiple-diode circuits. (e, c)</li> <li>5. Know the BJT's characteristics and semiconductor structure. (e)</li> <li>6. Conduct DC analysis for different BJT applications, as well as multistage BJT circuits. (a, c, e)</li> <li>7. Recognize the MOSFET's characteristics and comprehend its operation. (a, e)</li> <li>8. Perform DC analysis on MOSFET circuits, and differentiate between some of their applications. (a, c,e)</li> </ol>
Important material	Lecture notes, References and Internet resources.

References:
- "Electronic Devices and Circuits", by Theodore F. Bogart, Jeffrey S. Beasley and Guillermo Reco, 6 <sup>th</sup> edition, Pearson, 203.
- "Electronic Devices: Circuits and Systems", by C. J. Savant, Martin S. Roden, and Gordon L. Carpenter, 2 Sub edition, Benjamin-Cummings Pub Co.

Major Topics Covered and Schedule in Weeks:		
Topic	# Weeks	# Contact hours*
Introduction to Semiconductor Materials	1	6
pn-junction diode and modeling	0.5	3
Learn how to design rectifiers, clippers and campers, regulators and Zener diodes.	1	6
The ability to analyze multiple diode circuits	1	6
BJT's characteristics and operation	0.5	3
BJT's DC analysis, applications and multistage circuits	1	6
MOSFET's characteristics and operation	1	6
MOSFET DC analysis and applications	1	6
<b>Total</b>	<b>7</b>	<b>42</b>

Course Policy
- Makeup exams will be only held if a student provides a valid excuse, otherwise he/she will receive 0/100.
- Cheating and plagiarism are completely prohibited.
- If a student misses more than 15% of he/she will automatically fail the class.
- Students are not allowed to enter classroom after class starts.

**Student Outcomes (SO) Addressed by the Course:**

#	<i>Outcome Description</i>	<i>Contribution</i>
<b><i>General Engineering Student Outcomes</i></b>		
(a)	An ability to apply knowledge of mathematics, science, and engineering	<b><i>M</i></b>
(b)	An ability to design and conduct experiments, as well as to 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	<b><i>M</i></b>
(d)	An ability to function on multidisciplinary teams	
(e)	An ability to identify, formulate, and solve engineering problems	<b><i>H</i></b>
(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	
(k)	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	
<b>H=High, M= Medium, L=Low</b>		