



**Jordan University of Science and Technology**  
**Faculty of Science & Arts**  
**Physics Department**

PHY231 Electronics (1)
First Semester 2017-2018

<b>Course Catalog</b>
3 Credit Hours. This course covers the following topics: DC Circuits, AC Circuits, p-n junction diodes, diodes in dc circuits, diodes in ac circuits, junction transistors, transistors in dc circuits, transistors in ac circuits (voltage amplifiers), Frequency effect, Operational Amplifiers (Differential Amplifier).

<b>Text Book</b>	
<b>Title</b>	1. Electronic Principles
<b>Author(s)</b>	A. P. Malvino
<b>Edition</b>	6th Edition
<b>Short Name</b>	Electronic Principles
<b>Other Information</b>	

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
Physics	2. Physics for Scientists and Engineers	P. A. Tipler	2nd Edition	
Principles of Electronics	Principles of Electronics: Analog and Digital	Lloyd R. Fortney	4th Edition	

<b>Instructor</b>	
Name	Dr. Ahmad Omari
Office Location	-
Office Hours	Sun : 12:30 - 13:30 Sun : 14:30 - 15:30 Mon : 12:30 - 14:30 Tue : 11:30 - 12:30 Wed : 11:30 - 12:30

Email	sema@just.edu.jo
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Class Schedule & Room
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Section 1:  
 Lecture Time: Sun, Tue, Thu : 13:30 - 14:30  
 Room: M1304

Prerequisites
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Line Number	Course Name	Prerequisite Type
921020	PHY102 General Physics (2)	Prerequisite / Study

Tentative List of Topics Covered
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Weeks	Topic	References
Weeks 1, 2	DC circuits, Ohm's law, Kirchhoff's laws, Thevenin's theorem and Norton's theorem	From <b>Electronic Principles</b>
Weeks 3, 4	To understand and masters the ac circuit analysis using phases in RCL-circuits in addition to the resistance, admittance and impedance.	From <b>Physics</b>
Weeks 5, 6, 7	Atomic structure of materials and energy levels (semiconductors in particular), extrinsic and intrinsic materials, pn-junction diodes, biasing diodes, approximations, dc load line, rectifiers, filters, clippers and clampers and voltage multipliers.	<b>Chapter: 2, 3, 4</b> From <b>Electronic Principles</b>
Week 8	Zener Diode	<b>Chapter 5</b> From <b>Electronic Principles</b>
Weeks 8, 9, 10, 11	Bipolar Junction Transistor: Transistor theory, Common Emitter Base Biasing CEBBT, I-V Characteristics, dc load line, Transistor Approximations. Other types of biasing transistors: (CEEBT, Switch, TSCET, VDT, Feedback biasing. More Applications	<b>Chapte: 6, 7, 8</b> From <b>Electronic Principles</b>
Weeks 12, 13	AC models, voltage amplifiers, power amplifier*	<b>Chapte: 9, 10</b> From <b>Electronic Principles</b>
Week 14	Frequency response of an amplifiers, Bands frequencies, Decibel power gain and Decibel voltage gain.	<b>Chapter 16.1, 2, 3</b> From <b>Electronic Principles</b>
Week 15	Differential Amplifier with dc and ac analysis. Operational Amplifier.	<b>Chapter: 17, 13</b> From <b>Electronic Principles</b>

Mapping of Course Objectives to Program Student Outcomes <sup>1</sup>	Assessment method
To understand and masters the dc circuit analysis using Ohm's law, Kirchoff's laws, Thevenin's theorem and Norton's theorem. [1(a), 1(h)]	First Exam
2. To understand and masters the ac circuit analysis using phasors in RCL-circuits in addition to the resistance, admittance and impedance. [1(i)]	First Exam
To understand the diode theory and its role in dc and ac circuits and real applications. (rectifiers, transformers, filters, clippers and clampers and voltage multiplier, Zener diode and voltage regulators). [1(c), 1(f)]	First Exam
To understand the transistor theory and its role in dc and ac circuits and real applications. (CEBBT, CEEBT, Switch, TSCET, VDT, Feedback biasing,?, AC models, voltage amplifiers, power amplifier). [1(a), 1(h)]	
To understand the frequency response of an amplifiers including bands of frequency, Decibel power gain and Decibel voltage gain. [1(b), 1(f)]	
To understand the Differential Amplifier and its dc and ac analysis. Operational Amplifier. [1(a), 1(e)]	

Relationship to Program Student Outcomes (Out of 100%)										
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
30	2.50	10		5	12.50		25	10		

Evaluation	
Assessment Tool	Weight
First Exam	30%

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