



مركز الاعتماد  
و ضمان الجودة  
ACCREDITATION & QUALITY ASSURANCE CENTER



**The University of Jordan**

**Accreditation & Quality Assurance Center**

## **Course Syllabus**

**Course Name:**  
**Electronics**

1	Course title	Electronics
2	Course number	0302231
3	Credit hours (theory, practical)	3 hours
	Contact hours (theory, practical)	1.5 hours twice week
4	Prerequisites/corequisites	Physics 2 and lab 112
5	Program title	Physics
6	Program code	
7	Awarding institution	The University of Jordan
8	Faculty	Science
9	Department	Physics
10	Level of course	2 <sup>nd</sup> , 3 <sup>rd</sup> , and 4 <sup>th</sup> year students
11	Year of study and semester (s)	2 <sup>nd</sup> semester 2016/2017
12	Final Qualification	
13	Other department (s) involved in teaching the course	
14	Language of Instruction	Arabic +English
15	Date of production/revision	May 2017

#### 16. Course Coordinator:

*Office numbers, office hours, phone numbers, and email addresses should be listed.*

Dr. Bashar Lahlouh

Department of Physics

Office: 206

Phone #:00962-6-5355000 ext:22043

E-mail: bashar\_lahlouh@ju.edu.jo

#### 17. Other instructors:

*Office numbers, office hours, phone numbers, and email addresses should be listed.*

#### 18. Course Description:

This course is designed to provide the students with the basic concepts of electronics and electronic circuits. The course starts with an introduction to the band theory of semiconductors. This theory is used to introduce the concept of pn-junction and its basic properties. Diodes and their applications are then tackled through rectifiers, clippers and clampers. The Zener diode is also studied as a DC-voltage regulator. Bipolar Junction Transistors (BJT) are then introduced. The characteristic curve of a BJT and its biasing circuits are thoroughly discussed. Linear BJT amplifiers are then detailed and studied as the main application of transistors. Differential amplifier is then discussed as the introduction point for operational amplifiers (op-amp). The concept of the integrated circuit (IC) is briefly discussed and op-

amps are introduced. The open loop gain and impedance are then discussed. Negative feedback circuits are then studied as the one method to control the closed loop gain and impedance. The basic op-amp circuits are then studied. This includes comparators, summing amplifier, integrator and differentiator. If time permits, Field Effect Transistors (FET) are discussed as a voltage controlled, low power transistors.

### 19. Course aims and outcomes:

#### A- Aims:

**B- Intended Learning Outcomes (ILOs):** Upon successful completion of this course students will be able to ...

1) Define what is a pn-junction

2) Identify pn-junctions as diodes and transistors.

3) Be able to identify and analyze the different circuits of the basic pn-devices.

4) Understand the characteristic curve of basic pn-devices (Diodes and transistors)

5) Develop a proper understanding of op-amps and their applications.

6) Design simple electronics circuits.

### 20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Introduction	1,2,3	Dr. Bashar Lahlouh	1,2,3	In class discussions, and short exam	Electronic devices, Floyd
Diode Applications	4,5	Dr. Bashar Lahlouh	1,2,3	In class discussions, and short exam	Electronic devices, Floyd
Special purpose diodes	6	Dr. Bashar Lahlouh	2,3,4	In class discussions, and short exam	Electronic devices, Floyd
BJT's	7,8	Dr. Bashar Lahlouh	3,4	In class discussions, and short exam	Electronic devices, Floyd
BJT Biasing	9,10	Dr. Bashar Lahlouh	3,4	In class discussions, and short exam	Electronic devices, Floyd
BJT Amplifiers	11,12,13	Dr. Bashar Lahlouh	3,4	In class discussions, and short exam	Electronic devices, Floyd
Op-amps	14,15	Dr. Bashar Lahlouh	3,4,5	In class discussions, and short exam	Electronic devices, Floyd
Final Exam	16	Dr. Bashar Lahlouh	4,5,6	In class discussions, and short exam	Electronic devices, Floyd

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**21. Teaching Methods and Assignments:**

Development of ILOs is promoted through the following teaching and learning methods:

**22. Evaluation Methods and Course Requirements:**

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

**23. Course Policies:**

A- Attendance policies:

B- Absences from exams and handing in assignments on time:

C- Health and safety procedures:

D- Honesty policy regarding cheating, plagiarism, misbehavior:

E- Grading policy:

F- Available university services that support achievement in the course:

**24. Required equipment:**

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**25. References:**

<p>A- Required book (s), assigned reading and audio-visuals:</p>          <p>B- Recommended books, materials, and media:</p>
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**26. Additional information:**

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Name of Course Coordinator: -----Signature: ----- Date: -----

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- Signature: -----

Copy to:  
Head of Department  
Assistant Dean for Quality Assurance  
Course File