مركز الاعتماد وضمان الجودة
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Course Syllabus

1	**Course title**	Electronics
2	**Course number**	0302231
3	**Credit hours**	3
	Contact hours (theory, practical)	3 theory
4	**Prerequisites/corequisites**	Physics 2 and Lab 112
5	**Program title**	Physics
6	**Program code**	
7	**Awarding institution**	The university of Jordan
8	**School**	Science
9	**Department**	Physics
10	**Course level**	2nd year
11	**Year of study and semester(s)**	2nd semester
12	**Other department(s) involved in teaching the course**	
13	**Main teaching language**	
14	**Delivery method**	☒Face to face learning ☐Blended ☐Fully online
15	**Online platforms(s)**	☒Moodle ☒Microsoft Teams ☐Skype ☐Zoom ☐Others……
16	**Issuing/Revision Date**	3/2024

17 Course Coordinator:

Name: Bashar Lahlouh	Contact hours: 10:30-11:30 (STT), 11:30 – 1:00 (M,W)
Office number: 206	Phone number: 22043
Email: bashar_lahlouh@ju.edu.jo	

18 Other instructors:

Name:

Office number:

Phone number:

Email:

Contact hours:

Name:

Office number:

Phone number:

Email:

Contact hours:

19 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 it basic properties. Diodes and their applications is 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 amplifiers are 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 voltage controlled, low power transistors.

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20 Course aims and outcomes:

A- Aims:

B- Students Learning Outcomes (SLOs):

Currently used Students Learning Outcomes (SLOs):

SLO (1) Master professionally a broad set of knowledge concerning the fundamentals in the basic areas of physics: Classical Mechanics, Electrostatics and Magnetism, Quantum Mechanics, Thermal Physics, Optics, Theory of Special Relativity, Mathematical Physics, Electronics.

SLO (2) Apply knowledge of mathematics and fundamental concepts in the basic areas of physics to identify and solve physics related problems.

SLO (3) Utilize computers and available software in both data collections and data analysis.

SLO (4) Utilize standard laboratory equipment, modern instrumentation, and classical techniques to design and conduct experiments as well as to analyze and interpret data.

SLO (5) Develop a recognition of the need and ability to engage in life-long learning.

SLO (6) Demonstrate ability to use techniques, skills, and modern scientific tools necessary for professional practice.

SLO (7) Communicate clearly and effectively in both written and oral forms.

SLO (8) Apply proficiently team-work skills and employ team-based learning strategies.

SLO (9) Apply professional and ethical responsibility to society.

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Suggested Course SLO's:

Upon completing this course, students are expected to:

1) Relate the theoretical part learned in the electronics course with the lab and identify the different electronics components.
2) Identify and use the different measuring tools in the lab and to use bread boards and electronic components to build simple circuits.
3) Handle large amount of data using proper techniques and software packages.
4) Professional experiment reporting, and proper referencing.
5) Ability to work and communicate with teammates and classmates during the lab sessions.
6) Proper discussion and referencing of the experimental results.

Program SLOs / Course SLOs	SLO (1)	SLO (2)	SLO (3)	SLO (4)	SLO (5)	SLO (6)	SLO (7)	SLO (8)	SLO (9)
1. Relate the theoretical part learned in the electronics course with the lab and identify the different electronics components.	✓	✓							
2. Identify and use the different measuring tools in the lab and to use bread boards and electronic components to build simple circuits.			✓	✓					
3. Handle large amount of data using proper techniques and software packages.			✓	✓					
4. Professional experiment reporting, and scientific data analysis.			✓	✓					
5. Ability to work and communicate with teammates and classmates during the lab sessions.							✓	✓	

6. Proper discussion and referencing of the experimental results.							✓		✓

21. 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

22 Evaluation Methods:

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

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
Midterm Exam	30%	Introduction, Ch1,Ch2	1,2,3	Week7	Paper-Based
Second Exam	20%	Ch3, CH4,CH5, CH6	2,3,4,5	Week 12	Paper-Based
Final Exam	50%	All Material	1,2,3,4,5	Week 16	Paper-Based

23 Course Requirements

(e.g: students should have a computer, internet connection, webcam, account on a specific software/platform…etc):

24 Course Policies:

A- Attendance policies: Students cannot miss more than of 15% of classes throughout the semester.

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

Only students with acceptable excuses are eligible for the makeup exam.

C- Health and safety procedures:

D- Honesty policy regarding cheating, plagiarism, misbehavior:

All students are expected to abide by the common rules of honesty. Any violations are dealt with according the University of Jordan regulations.

E- Grading policy:

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

25 References:

A- Required book(s), assigned reading and audio-visuals:

Electronic Devices**,** by Thomas L. Floyd, 7th or any later edition (8, 9, or10).

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B- Recommended books, materials, and media:

Electronic Circuits and Applications, by Senturia and Wedlock.

Microelectronics Circuit Analysis and Design, D. Neaman.

Electronic Circuit Analysis, by R. A. Colcalasser, D. A. Neamen, C.F. Hawkinns.

Physics for Scientists and Engineers, By Serway (any Edition)

26 Additional information:

Name of Course Coordinator: Bashar Lahlouh _ Signature: ---------- Date: ----------3/2024-----
Head of Curriculum Committee/Department: ---------- Signature: ----------
Head of Department: ---------- Signature: ----------
Head of Curriculum Committee/Faculty: ---------- Signature: ----------
Dean: ---------- Signature: ----------