Form: Course Syllabus	Form Number	EXC-01-02-02A
	Issue Number and Date	2/3/24/2022/2963 05/12/2022
	Number and Date of Revision or Modification	2023/10/15
	Deans Council Approval Decision Number	265/2024/24/3/2
	The Date of the Deans Council Approval Decision	2024/1/23
	Number of Pages	06

1.	Course Title	Electronics
2.	Course Number	0302231
3.	Credit Hours (Theory, Practical)	3 Theory
	Contact Hours (Theory, Practical)	3Theory
4.	Prerequisites/ Corequisites	Physics 2 and lab 112
5.	Program Title	Physics
6.	Program Code	
7.	School/ Center	Science
8.	Department	Physics
9.	Course Level	2nd year
10.	Year of Study and Semester (s)	2024/2025
11.	Program Degree	BSc.
12.	Other Department(s) Involved in Teaching the Course	
13.	Learning Language	
14.	Learning Types	☑Face to face learning ☐Blended ☐Fully online
15.	Online Platforms(s)	☐Moodle ☐Microsoft Teams
16	Issuing Date	May 2025
17.	Revision Date	May 2025

18. Course Coordinator:

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19. Other Instructors:

Name:
Office number:
Phone number:
Email:
Contact hours:
Name:
Office number:
Phone number:
Email:
Contact hours:

20. 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.

21. Program Intended Learning Outcomes: (To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

Students graduating with a bachelor's degree in physics are expected to be able to:

SO1: Identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of Mathematics and Science and/or technical topics to areas relevant to the discipline.

SO2: Formulate or design a system, process, procedure or program to meet desired needs

SO3: Develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions

SO4: Communicate effectively with a range of audiences in oral or written forms and exhibit ethical and professional values.

SO5: Reflect the impact of technical and/or scientific solutions in economic, environmental, and societal contexts.

SO6: Function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

PILO's	*National Qualifications Framework Descriptors*		
	Competency (C)	Skills (B)	Knowledge (A)
1.	☒	☐	☐
2.	☐	☒	☐
3.	☒	☐	☐
4.	☐	☒	☐
5.	☐	☐	☒
6.	☐	☒	☐

* Choose only one descriptor for each learning outcome of the program, whether knowledge, skill, or competency.

22. Course Intended Learning Outcomes: (Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

1) Define what a pn-junction is.

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.

Course ILOs #	The learning levels to be achieved						Competencies
	Remember	Understand	Apply	Analyse	Evaluate	Create	
1.	X	X					

2.		**X**		**X**			
3.				**X**			
4.		**X**		**X**			
5.		X		X			
6.					X	X	

23. The matrix linking the intended learning outcomes of the course -CLO's with the intended learning outcomes of the program -PILOs:

PILO's * / CLO's	1	2	3	4	5	6	Descriptors**		
							A	B	C
1	X		X						
2	X	X	X						
3	X	X	X						
4			X						
5	X								
6			X						

***Linking each course learning outcome (CLO) to only one program outcome (PLO) as specified in the course matrix.**

****Descriptors are determined according to the program learning outcome (PLO) that was chosen and according to what was specified in the program learning outcomes matrix in clause (21).**

24. Topic Outline and Schedule:

Week	Lecture	Topic	ILO/s Linked to the Topic	Learning Types (Face to Face/ Blended/ Fully Online)	Platform Used	Synchronous / Asynchronous Lecturing	Evaluation Methods	Learning Resources
1	1.1							
	1.2							
	1.3							
2	2.1							
	2.2							
	2.3							
3	3.1							
	3.2							
	3.3							
4	4.1							
	4.2							
	4.3							
5	5.1							
	5.2							
	5.3							
6	6.1							
	6.2							
	6.3							
7	7.1							
	7.2							
	7.3							
8	8.1							
	8.2							
	8.3							
9	9.1							
	9.2							
	9.3							
10	10.1							
	10.2							
	10.3							
11	11.1							
	11.2							

	11.3							
12	12.1							
	12.2							
	12.3							
13	13.1							
	13.2							
	13.3							
14	14.1							
	14.2							
	14.3							
15	15.1							
	15.2							
	15.3							

25. Evaluation Methods:

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

Evaluation Activity	***Mark wt.**	**CILO's**					
		1	**2**	**3**	**4**	**5**	**6**
First Exam	30%						
Second Exam –If any	20%						
Final Exam	50%						
**Class work							
Projects/reports							
Research working papers							
Field visits							
Practical and clinical							
Performance Completion file							
Presentation/ exhibition							
Any other approved works							
Total 100%							

*** According to the instructions for granting a Bachelor's degree.**

****According to the principles of organizing semester work, tests, examinations, and grades for the bachelor's degree.**

Mid-term exam specifications table*

No. of questions/ cognitive level						No. of questions per CLO	Total exam mark	Total no. of questions	CILO/ Weight	CILO no.
Create **%10**	Evaluate **%10**	analyse **%10**	Apply %20	Understand **%20**	Remember %30					
1	1	1	4	2	1	10	100	100	10%	1

Final exam specifications table

No. of questions/ cognitive level						No. of questions per CLO	Total exam mark	Total no. of questions	CILO Weight	CILO no.
Create **%10**	Evaluate **%10**	analyse **%10**	Apply %20	Understand **%20**	Remember %30					
										1
										2
										3
										4
										5

26. Course Requirements:

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

27. 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.

28. References:

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

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

B- Recommended books, materials, and media:

Electronic Circuits and Applications, by Senturia and Wedlock.

Circuit Devices and Systems, by Ralph Smith.

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

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

29. Additional information:

Name of the Instructor or the Course Coordinator: ……Bashar Lahlouh ……	Signature: ……..……	Date: May 2025…
Name of the Head of Quality Assurance Committee/ Department ……	Signature: ……..……	Date: ……..……
Name of the Head of Department ……	Signature: ……..……	Date: ……..……

Name of the Head of Quality Assurance Committee/ School or Center	Signature:	Date:
…….	……..……	……..……
Name of the Dean or the Director	Signature:	Date:
…….	……..……	……..……