Faculty: Faculty of Science	
Department: Physics	**Program: Bachelor's Program**
Semester: First semester	**Academic year: 2023/2024**

Course Plan

First: Course Information

Course Name	**Electronics (I)**			***Course NO: 0302296***	
Credit Hours	***3 hours***	***Theoretical***	***3***	***Practical***	***0***
Level in JNQF	***7***				
***Prerequisite:* 0300122**	***SectionNumber:1***			***Lecture Time:***	
Type Of Course:	☐ ***Obligatory Faculty Requirement*** ☐ ***Elective University Requirement*** ☐ ***Obligatory University Requirement*** ☐ ***Faculty Requirement*** ☐ ***Course Elective Specialty Requirement*** ■ ***Obligatory Specialization requirement***				
Type Of Learning :	☐ ***Face-to-Face Learning*** ■ ***Blended Learning(2 Face-to-Face + 1Asynchronous)*** ☐ ***Online Learning (2 Synchronous+1 Asynchronous)***				

Second: Instructor's Information

Course coordinator:		
Instructor:		
Name: :	***Office Number:***	***Email:***
Office Hours:		

Third: Course Description

Fundamental Concepts, Diodes and Application, Bipolar Junction Transistor, Small Signal Bipolar Amplifier, Field-Effect Transistors, Operational Amplifier, Operational Amplifier Applications.

Fourth: Course Aims

1) To gain a deep understanding of physics and operation of semiconductor devices.
2) To learn how to select the semiconductor components for different analog circuits applying component specifications.
3) To learning how the construct operational circuits using different electronic devices.
4) To learning how the analog electronics work. This covers input/output signal analysis using different test equipment and approaches.
5) To learn how to conduct troubleshooting for analog circuits using different equipment.

Fifth: Learning Source

Designated Book:	***Electronic Devices***	***Ninth Edition***
Author: Floyd	***Print: Pearson Education, Inc***	***Year: 2012***
Additional Sources: ***Website:***	Digital Electronics, Anil K. Maini, 2007 John Wiley & Sons, Ltd Electronic Devices and Circuit Theory, Boylested and Nashelsky, Eleventh Edition, 2013, Pearson Education, Inc.	
Teaching Type:	■ ***Classroom*** □ ***Laboratory*** □ ***Workshop*** ■ **MS Teams** ■ **Moodle**	

Sixth: Learning Outcomes

Level descriptor according to (JNQF)	*CILOs Code*	*Course learning output*	*Associated Program Outcome Code*	*Assessment method*** *Choose at least two methods*	*Scores out of 100* State the total score identified for each CILO	*Minimum acceptable Score/percentage (%)* *The percentage should not be less than 50%* ***
Knowledge	**K1	**Basic knowledge:** Use the principles of semiconductor physics for different systems (n-type/p-type, electron/hole current, PN junction and biasing	*PK1	Quiz Assignment Mid Exam Final	10	10%
	K2	**Basic Factual Knowledge:** Diode circuit analysis, diode models, clipper and clamper circuits and special diodes (Zener, LED)	PK2	Quiz Assignment Mid Exam Final	45	45%
	K3	**Concepts and Theories:** Use electronic lab, graphical and algebraic tools to analyze the analog circuits	PK3	Quiz Assignment Mid Exam Final	10	10%
Skills	***S1	**Problem solving skills:** Students solve problems related to analog electronics. Students should be involved in several related projects on some real world applications, such as signal analysis tooling and microprocessor systems.	PS1	Quiz Assignment Mid Exam Final	10	10%
	S2	**Modeling and Design:** Using the circuit maker simulation to design and modeling some real electronics circuits	PS2	Assignment	5	5%
	S3	**Application of Methods and Tools:** Use the special techniques to solve different electronic	PS3	Quiz Assignment	5	5%

		issues related to the analog circuits.		Mid Exam Final		
	S4	**Specific cognitions skill:** How to draw analog circuits	PS4	Quiz Assignment Mid Exam Final	5	5%
Competencies	****C1	**Analytic skills:** Assist the technical factors that affect the operation of different semiconductor devices.	PC1	Quiz Assignment Mid Exam Final	5	5%
	C2	**Strategic thinking**: Formulate plans designed to achieve maximum useful of the special techniques that the student uses to solve the electronic devices.	PC2	Quiz Assignment Mid Exam Final	5	5%

Seventh: Course Structure

Lecture Date	Teaching Outcome	Topics	Teaching *Procedures	Teaching ***Methods	References* **
15/10/2023	PK1,PK2,; PS1	Review of course topics and assessments	Face to Face	Lecturing Discussion Whiteboard Power point	
17/10/2023	PK1,PK2,PS1,	Introduction to Electronics	Face to Face	Lecturing Discussion Whiteboard Power point	1.1-1.4
19/10/2023	PK1,PK2,PS1,PS3,PS4;PS 5;PC1,PC2	The PN Junction	Asynchronous	Videos Homework	1.5
22/10/2023	PK1,PK2,PS1,PS3,PS4;PS 5;	Diode operation	Face to Face	Lecturing Discussion Whiteboard	2.1
24/10/2023	PK1,PK2,PS1,PS3,	Diode Models	Face to Face	Lecturing Discussion Whiteboard	2.3
26/10/2023	PK1,PK2,PS1,PS3,PS4;PS 5	Half-Wave rectifiers	Asynchronous	Videos Quiz	2.4
29/10/2023	PK1,PK2,PS1,PS3,PS4;PS 5	Full-Wave rectifiers	Face to Face	Lecturing Discussion Whiteboard Power point	2.5
31/10/2023	PS1,PS3;PC1,PC2	Power supply Filters and Regulators	Face to Face	Lecturing Discussion Whiteboard Power point	2.6-2.7
2/11/2023	PK1,PK2,PS1,PS3,PS4;PS 5	Voltage Multipliers	Asynchronous	Videos Self reading	2.8-2.10
5/11/2023	PK1,PK2,PS1,PS3,PS4;PS 5;PC1,PC2	The Zener Diode	Face to Face	Lecturing Discussion Whiteboard Power point	3.1
7/11/2023	PK1,PK2,PS1,PS3,PS4;PS 5	The Zener Diode	Face to Face	Lecturing Discussion Whiteboard Power point	3.2
9/11/2023	PK1,PK2,PS1,PS2,PS5	Zener Diode problems	Asynchronous	Videos Quiz	3.1-3.2
12/11/2023	PK1,PK2,PS1,PS2P,S4;PS 5;PC1,PC2	Bipolar Junction Transistor	Face to Face	Lecturing Discussion Whiteboard Power point	4.1
14/11/2023	PK1,PK2,PS1,PS3,PS5;PC 1,	Basic BJT Operation	Face to Face	Lecturing Discussion Whiteboard Power point	4.2

16/11/2023	PK1,PK2,PS1,PS3,PS4;PS5	BJT Characteristic and Parameters	Asynchronous	Videos Homework	4.3
19/11/2023	PK1,PK2,PS1,PS3,PS4;PS5;PC1,PC2	BJT as an amplifier	Face to Face	Lecturing Discussion Whiteboard Mathematica simulation Power point	4.4
21/11/2023	PK1,PK2,PS1,PS3,PS4;PS5;	(BJT as, Switch	Face to Face	Lecturing Discussion Whiteboard Power point	4.5
23/11/2023	PK1,PK2,PS1,PS3,PS4;PS5;PC1,PC2	Amplifier Operation	Asynchronous	Videos Homework	6.1
26/11/2023	PK1,PK2,PS1,PS3,PS4;PS5;	Transistor AC Models	Face to Face	Lecturing Discussion Whiteboard Power point	6.2
28/11/2023	PK1,PK2,PS1,PS3,PS4;	Transistor AC Models	Face to Face	Lecturing Discussion Whiteboard Power point	6.2
30/11/2023	PK1,PK2,PS1,PS3,PS4;PS5	Transistor AC Models	Asynchronous	Videos Self reading	6.2
3/12/2023		Mid Exam	Face to Face		
5/12/2023	PK1,PK2,PS1,PS3,PS4;PS5;PC1,PC2	Common-Emitter Amplifier	Face to Face	Lecturing Discussion Whiteboard Power point	6.3
7/12/2023	PK1,PK2,PS1,PS3,PS4;SP5;PC1,PC2	Common-Collector Amplifier	Asynchronous	Videos Homework	6.4
10/12/2023	PK1,PK2,PS1,PS3,PS4;PS5;PC1,PC2	Common-Baser Amplifier	Face to Face	Lecturing Discussion Whiteboard Power point	6.5
12/12/2023	PK1,PK2,PS1,PS3,PS4;PS5;PC1,PC2	Junction Field-Effect Transistor	Face to Face	Lecturing Discussion Whiteboard Power point	8.1
14/12/2023	PK1,PK2,PS1,PS3,PS4;PS5	JFET characteristic and parameters	Asynchronous	Videos Self Reading	8.2

17/12/2023	PS1,PS2,PS4;PS52;PC1,PC2	JFET biasing The common-Source Amplifier	Face to Face	Lecturing Discussion Whiteboard Power point	8.3
19/12/2023	PK1,PK2,PS1,PS3,PS4;PS5;PC1,PC2	The Ohmic region	Face to Face	Lecturing Discussion Whiteboard Power point	8.4
21/12/2023	PK1,PK2,PS1,PS3,PS4;PS5;PC1,PC2	The Ohmic region	Asynchronous	Videos Self Reading	18.4
24/12/2023	PK1,PK2,PS1,PS3,PS4;PS5;PC1P,C2	Introduction to operational amplifier	Face to Face	Lecturing Discussion Whiteboard Power point	12.1
26/12/2023	PK1,PK2,PS1,PS3,PS4;PS5;PC1,PC2	Op-Amplifier Input modes and parameters	Face to Face	Lecturing Discussion Whiteboard Power point	12.2
28/12/2023	PK1,PK2,PS1,PS3,PS4;PS5;PC1,PC2	Negative feed back	Asynchronous	Videos Homework	12.3
31/12/2023	PK1,PK2,PS1,PS3,PS4;PS5;PC1,PC2	Op-Amplifier with Negative feed back	Face to Face	Lecturing Discussion Whiteboard Power point	12.4
2/1/2024	PK1,PK2,PS1,PS3,	Instrumentation Amplifier	Face to Face	Lecturing Discussion Whiteboard Power point	14.1
4/1/2024	PS2,PS3,PS5;PC1PC2	Isolation Amplifier	Asynchronous	Videos Self reading	14.2
7/1/2024	PK1,PK2,PS1,PS2,	Op-Amplifier with Negative feed back	Face to Face	Lecturing Discussion Whiteboard Power point	Digital electronics page 3
9/1/2024	PK1,PK2,PS1,PS3,	Op-Amplifier with Negative feed back	Face to Face	Lecturing Discussion Whiteboard Power point	Digital electronics page 5
11/1/2024	PK1,PK2,PS1,PS3,PS4;PS5	Op-Amplifier with Negative feed back	Asynchronous	Videos Quiz	Digital electronics page 69-85
14/1/2024	PK1,PK2;PC1,PC2	Isolation Amplifier	Face to Face	Lecturing Discussion Whiteboard Power point	Digital electronics page 69-85
16/1/2024	PK1,PK2;PC1,PC2	Overall revision	Face to Face	Lecturing Discussion Whiteboard	

18/1/2024	PK1,PK2;PC1,PC2	Overall revision	Asynchronous	Videos	

* Learning procedures: (Face-to-Face, synchronous, asynchronous). * * Teaching methods: (Lecture, video…..). ** * Reference: (Pages of the book, recorded lecture, video….)..(

Eighth: Assessment methods

Methods	Fully Electronic Education	Integrated Teaching	Face to Face Teaching	Specific Course Output to be measured *State the score identified for each CILO for each method of assessment out of 100 **If any CILO will not be assessed in the course, mark NA.								
				K1	K2	K3	S1	S2	S3	S4	C1	C2
Mid-term Exam			30	**4**	**15**	**4**	**4**	**1**	**1**	**1**	**0**	**0**
Final Exam			50	**2**	**26**	**2**	**3**	**3**	**2**	**2**	**5**	**5**
Quizzes			10	**2**	**2**	**2**	**2**	**0**	**2**	**0**	**0**	**0**
Assignments			10	**2**	**2**	**2**	**1**	**1**	**0**	**2**	**0**	**0**
Total out of 100			100	**10**	**45**	**10**	**10**	**5**	**5**	**5**	**5**	**5**

Ninth: Course Polices

- All course policies are applied on all teaching patterns (online, blended, and face-to-face Learning) as follows:
  a. Punctuality.
  b. Participation and interaction.
  c. Attendance and exams.
- Academic integrity: (cheating and plagiarism are prohibited).

Approval.	Name	Date	Signature
Head of Department	Dr. Riad Masharfe		
Faculty Dean	Dr. Aliaa Burqan		