Course Unit Title	Basic Electronics
Course Unit Code	EE208
Type of Course Unit	Compulsory
Level of Course Unit	2nd year BSc program
National Credits	3
Number of ECTS Credits Allocated	6
Theoretical (hour/week)	3
Practice (hour/week)	-
Laboratory (hour/week)	2
Year of Study	2
Semester when the course unit is delivered	4
Course Coordinator	Assist. Prof. Dr. Kamil Dimililer
Name of Lecturer (s)	Assist. Prof. Dr. Kamil Dimililer
Name of Assistant (s)	Khaled Ahmad
Mode of Delivery	Face to Face, Laboratory.
Language of Instruction	English
Prerequisites	EE207 (Circuit Theory)
Recommended Optional Programme Components	-

Course description:

This course introduces the characteristics and applications of semiconductor devices and circuits. Emphasis is placed on analysis, selection, biasing, and applications.

Objectives of the Course:

- To provide a general background of semiconductors to the students.
- To provide physical and electrical properties of basic electronic devices; diodes, transistors, operational amplifiers
- To provide the analysis of basic diode, transistor and operational amplifier circuits

Learning Outcomes

At the end of the course the student should be able to	Assessment

1	explain the properties of intrinsic and doped semiconductors	1
2	explain physical behavior and regions of operation of semiconductor diodes	1, 2
3	explain physical behavior of and regions of operation transistors	1, 2
4	explain physical behavior of and regions of operation operational amplifiers	1, 2
5	conduct DC analysis of basic diode circuits	1, 2, 5
6	conduct DC analysis of basic transistor circuits	1, 2, 5
7	conduct DC analysis of basic operational amplifier circuits	1, 2, 5
Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work		
Course's Contribution to Program		
		CL
1	Apply knowledge of mathematics, natural science with relevant to life science and multidisciplinary context of engineering science.	5
2	Analyze, design and conduct experiments, as well as to analyze and interpret data.	4
3	Design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.	4
4	Function on multidisciplinary teams.	4
5	Control in design work, by using simulation, modelling and tests and integration in a problem solving oriented way.	4
6	Display an understanding of professional and ethical responsibility.	3
7	Communicate effectively aware of the non-technical effects of engineering.	2
8	Search technical literature and other information sources.	1
9	Recognize of the need for, and an ability to engage in life-long learning.	1
10	Exhibit a knowledge of contemporary issues.	2
11	Use the techniques, skills and modern engineering tools necessary for engineering practice to develop marketable products for the global market.	4

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Topics	Exams
1	Conduction, semiconductors, carriers.	
2	p-type and n-type doping, drift and diffusion mechanisms.	
3	Physical structure and behavior of the pn junction.	
4	Ideal diode, practical diode, electrical behavior and current-voltage curve. Diode models.	
5	DC analysis of diode circuits. Body resistance and parasitic capacitors	
6	Diode applications (e.g. rectifiers).	
7	Zener diode and regulation. Other diode types.	
8		Midterm
9	Physical structure and behavior of the bipolar-junction transistor (BJT).	
10	BJT operation regions, electrical model (Ebers-Moll) and characteristics	
11	DC biasing of BJT circuits.	
12	Basic applications of transistors.	
13	Physical structure and behavior of field effect transistors (JFET, MOSFET). Operation regions, characteristics and DC biasing of FETs	
14	Operational Amplifiers and their applications	
15		Final

Recommended Sources

Textbook: R. Boylestad & L. Nashelsky, “Electronic Devices and Circuit Theory”, 10th edition, Prentice Hall, 2008.

Supplementary Course Material: A. Sedra & K.C. Smith, “Microelectronic Circuits”, 6th edition, Oxford University Press, 2010.

Assessment

Attendance	5%	Less than 25% class attendance results in NA grade
Assignments	10%	

Laboratory	15%	
Midterm Exam	30%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

- Attendance to the course is mandatory.
- Late assignments will not be accepted unless an agreement is reached with the lecturer.
- Students may use calculators during the exam.
- Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	16	3	48
Labs and Tutorials	9	2	18
Assignment	5	2	10
Project/Presentation/Report	1	8	8
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	15	15
Final Examination	1	20	20
Self-Study	14	4	56
Total Workload			175
Total Workload/30(h)			5.83
ECTS Credit of the Course			6