



**MUTAH UNIVERSITY**  
**Faculty of Engineering**  
**Department of Electrical Engineering**  
**Course Syllabus**



**Study Plan 2021: Power and Control Track**

Course Code	Course Name	Credits	Contact Hours
0401230	Electronic Circuits and Devices	3	3 T

**INSTRUCTOR/COORDINATOR**

<b>Name</b>	Dr. Ziyad Al Tarawneh
<b>Email</b>	zdtarawneh@mutah.edu.jo
<b>Office Hours</b>	11:00-12:00 (Sun, Tues, Thur)

**TEXTBOOK**

<b>Title</b>	Electronic Devices and Circuit Theory
<b>Author/Year/Edition</b>	Robert Boylestad, 11th edition
<b>Other Supplemental Materials</b>	
<b>Title</b>	Principles of Electronic Circuits,
<b>Author/Year/Edition</b>	by: Stanley G. Burns, Second Edition

**SPECIFIC COURSE INFORMATION**

**A. Brief Description of the Content of the Course (Catalog Description)**

This course aims to provide students with information about: Basic of Semiconductor materials and PN junction, Diode: Principle, Operation and Characteristics, Diode types, Diode applications: Rectifiers, Clampers, and Clippers. The operation, structure, characteristics, and biasing configurations of: BJT, JFET, and MOSFET. Analysis techniques and design principles of amplifier circuits and Operational Amplifier.

**B. Pre-requisites (P) or Co-requisites (C)**

Electric Circuits 2 (0401212) (P)

**C. Course Type (Required or Elective)**

Required

**SPECIFIC GOALS**

### A. Course Learning Outcomes (CLOs)

By the end of this course, the student should be able to:

**CLO 1: Understand** semiconductor fundamentals [1]

**CLO 2: Understand** the structure and the operation of the electronic devices like diodes, and Transistors BJT and FET [1].

**CLO 3: Analyze and Design** electronic circuits as rectifier circuit, clamper, and clipper circuits [2].

**CLO 4: Understand** theory, DC models, and biasing of bipolar junction transistors [1].

**CLO 5: Understand the** theory, DC models, and biasing of field effect transistors. [1].

**CLO6: Analyze and Design** amplifier circuits and Operational Amplifiers. [2].

### B. Student Learning Outcomes (SLOs) Addressed by the Course

1	2	3	4	5	6	7
✓	✓					

### BRIEF LIST OF TOPICS TO BE COVERED

List of Topics	No. of Weeks	Contact Hours
Semiconductor Materials	1	3
Doping, The P-type and N-type	2	6
The PN junction ,The Diode, : Principle, Operation and Characteristics, Diode types	2	6
Diode applications : Rectifiers ,Clampers, Clippers	2	6
Bipolar Junction Transistors	1	3
BJT biasing	1	3
Field Effect Transistors	1	3
FET biasing	1	3
Analysis techniques and design principles of amplifier circuits and Operational Amplifiers.	3	9
<b>Total</b>	<b>14</b>	<b>42</b>

### EVALUATION

Assessment Tool	Due Date	Weight (%)
Mid Exam	According to the university calendar	30
Course Work (Homeworks, Quizzes, Projects, ...etc.)	One week after being assigned	20

Final Exam	According to the university calendar	50
------------	--------------------------------------	----

<b>ABET's Students Learning Outcomes (Criterion # 3)</b>		
<b>Relationship to program outcomes</b>		
<b>ABET 1-7</b>	<b>Engineering Student Outcomes</b>	
1	√	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2	√	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3		an ability to communicate effectively with a range of audiences.
4		an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5		an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6		an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7		an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.