



**BENHA UNIVERSITY**



**FACULTY OF ENGINEERING AT SHOUBRA**

**Model No.12**  
**Course Specifications (2014-2015)**  
**Electronic Engineering**

**University:** Benha university

**Faculty:** Shoubra Faculty of Engineering

**Department offering the program:** Mechanical Engineering Department

**Department offering the course:** Electrical Engineering Department

**1- Course Data**

**Course Code:** EPE291 **Course Title:** Electronics engineering

**Study Year:** Second Year

**Specialization:** Production and Mechanical Engineering Design

**Teaching Hours:** Lecture : 4      Tutorial/ Practical : 2

**2- Course Aim**

For students undertaking this course, the aims are to:

1. Identify the elements of electrical circuits, Series and parallel electrical circuits, Network theorems, Capacitors and inductors in DC circuits, AC circuits.
2. Explain the concepts of semiconductor basics, Diode applications, Bipolar junction transistors, Operational Amplifiers and Digital circuits.

**3- Intended Learning Outcomes of Course (ILOS)**

**a- Knowledge and Understanding**

On completing this course, students acquiring and understanding of:

- a.1) The electrical circuit's elements as resistance, capacitor, inductors and transformers. (A.1)
- a.2) The series and parallel circuits and Kirchhoff's current and voltage law. (A.13)
- a.3) The semiconductors, energy bands and the PN junction. (A.2)
- a.4) The bipolar junction transistors and its construction. (A.8)

**b- Intellectual Skills**

At the end of this course, the students will be able to:

- b.1) Assess the differences between N-type semiconductor and P-type semiconductor. (B.5)
- b.2) Compare between the total resistance and power of series and parallel circuits. (B.3)
- b.3) Analyze the performance of the half-wave rectifier and the full-wave rectifier. (B.14)

**c- Professional Skills**

On completing this course, the students are expected to be able to:

- c.1) Use ohm's law and Kirchhoff's law to solve electric circuits. (C.6)
- c.2) Sketch schematic diagram for the half-wave rectifier, the full-wave rectifier and the bipolar junction transistor construction. (C.9)
- c.3) Use the different electronic components as amplifiers, capacitors and diode in several applications. (C5)

**d- General Skills**

At the end of this course, the students will be able to:

- d.1) Collaborate effectively within multidisciplinary team. (D1)
- d.2) Communicate effectively (D3)



**4- Course Contents**

No.	Topics
1	Introduction to electronic Engineering
2	Electrical circuits elements
3	Series and parallel circuits
4	Combination of Series Parallel Circuit
5	Network theorems
6	Network analysis
7	Introduction to Alternating current and voltage
8	Semiconductor basics.
9	Diode applications.
10	Bipolar junction transistors
11	properties of Bipolar junction transistors
12	Operational Amplifiers
13	Digital circuits

**5- Teaching and Learning Methods**

- 5.1- Lectures
- 5.2- Class activity
- 5.3- Assignments / homework

**6- Teaching and Learning Methods of Disables**

Nothing

**7- Student Assessment**

**a- Student Assessment Methods**

1	Seven assignments to assess knowledge and intellectual skills.
2	Three quizzes to assess knowledge, intellectual and professional skills.
3	Mid-term exam to assess knowledge, intellectual, professional and general skills.
4	Oral Exam
5	Final exam to assess knowledge, intellectual, professional and general skills.

**b- Assessment Schedule**

No.	Assessment	Week
1	Assignments	2, 3, 4, 6, 9, 11,13
2	Quizzes	5, 7, 10
3	Mid-term exam	8
4	Oral	14
5	Final exam	15

**c- Weighting of Assessments**

Assessment	Weight
Mid Term Examination	10 %
Final Term Examination	60 %
Oral Examination	20 %
Practical Examination	0 %
Semester work	10 %
Other types of assessment	0 %
Total	100 %



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## **8- List of References**

**a- Course Notes** prepared by instructor.

### **b- Books**

- 1- Grob's Basic Electronics, tenth edition, Schultz, May 3, 2006
- 2- Electronic devices and circuit theory, tenth edition, Robert Boylestad , 2005
- 3- Basic Electronics Solid State, tenth edition, Theraja, Published 2010 by S. Chand & Company Ltd.

**Course Coordinator:** Dr. Hossam Eldeen Mahmoud Ahmed

**Head of Department:** Prof. Dr. Osama Ezzat Abdelatif



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**FACULTY OF ENGINEERING AT SHOUBRA**

**Model No.11A**  
**Course Specifications: Electronic Engineering**

**University:** Benha university

**Faculty:** Shoubra Faculty of Engineering

**Department offering the program:** Mechanical Engineering Department

**Department offering the course:** Electrical Engineering Department

**Matrix of Knowledge and Skills of the course**

No.	Topics	week	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Introduction to electronic Engineering	1	a1	b2	c1	d1
2	Electrical circuits elements	2	a1	b2	c1	d1
3	Series and parallel circuits	3	a1,a2	b2	c1,c3	d1,d2
4	Combination of Series parallel Circuit	4	a2		c1	
5	Network theorems	5	a2		c1	
6	Network analysis	6	a2	b2		
7	Introduction to Alternating current and voltage	7		b2	c1	d1
8	Semiconductor basics.	9	a3	b1	c3	d1
9	Diode applications.	10	a3,a4	b1,b3	c2,c3	d2
10	Bipolar junction transistors	11	a4		c2	
11	properties of Bipolar junction transistors	12	a4		c2	
12	Operational Amplifiers	13		b3	c3	d1
13	Digital circuits	14	a4	b3	c1,c2,c3	d2

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**Matrix of course aims and ILO's**

**Course Title:** Electronics Engineering

**Code:** EPE291      **Lecture:** 4      **Tutorial/ Practical:** 2      **Total:** 6

**Program on which the course is given:** B.Sc. Mechanical Production Engineering

**Major or minor element of program:** Major.

**Department offering the program:** Mechanical Engineering Department

**Department offering the course:** Electrical Engineering Department

**Academic year / level:** 2014/2015      Second Year / Second semester

**Date of specifications approval:** 2014

<b>Course aims</b>	<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>
1-Identify the elements of electrical circuits, Series and parallel electrical circuits, Network theorems, Capacitors and inductors in DC circuits, AC circuits.	a1 a3	b1 b3	c3	d1 d2
2-Explain the concepts of semiconductor basics, Diode applications, Bipolar junction transistors, Operational Amplifiers and Digital circuits.	a2 a4	b2	c1 c2	d2

**Course Coordinator:** Dr. Hossam Eldeen Mahmoud Ahmed

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