



Faculty of Engineering
at Shoubra

Model No.12

Course Specifications : Electronics (1)

University : Benha university

Faculty : Faculty of Engineering at Shoubra

Department : Electrical Engineering Department

1- Course Data

Course Code: **ECE 121**

Course Title: **Electronics (1)**

Study Year: **First Year**

Teaching Hours:

Lecture : **4**

Tutorial : **3**

2- Course Aim

For students undertaking this course, the aims are to:

- 2.1. Demonstrate special types of diodes and recognize different applications of uni-junction devices.
- 2.2. List the applications of transistors and the theory of operation. Learn more about light devices, detectors and led systems.
- 2.3. Demonstrate wave shaping circuits. Design power supply.

3- Intended Learning Outcomes of Course (ILOs)

a- Knowledge and Understanding

On completing this course, students will be able to:

- a1. Illustrate elementary science underlying diode and transistor circuits. **"a15"**
- a2. Mention basics of design and analyzing diode and transistor circuits. **"a18"**
- a3. Describe principles of analyzing and design of diode and transistor circuits. **"a19"**
- a4. Mention Methods of LEDs and photodiodes application **"a26"**
- a5. Define usage of optical elements such as LEDs **"a27"**
- a6. Define opto-coupler in communication systems. **"a30"**.

b- Intellectual Skills

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

- b1. Select appropriate solutions for electronic circuit design based on analytical thinking. **"b3"**
- b2. Combine, exchange, and assess different applications of unijunction and transistor devices from a range of references . **"b5"**
- b3. Assess and evaluate the characteristics and performance of diodes, transistors, and their circuits. **"b6"**
- b4. Solve electronic circuit design problems, often on the basis of limited and possibly contradicting information **"b8"**
- b5. Analyze results of numerical transistor models. **"b12"**
- b6. Develop innovative solutions for the practical problems using transistor circuits. **"b14"**

c- Professional Skills

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

- c1. Apply knowledge of mathematics, science, information technology, design, business context and engineering practice to solve diode and transistors problems “c1”
- c2. Professionally merge engineering knowledge and understanding to improve design of transistor amplifiers. “c2”
- c3. Create and re-design transistor amplifiers. “c3”
- c4. Use computational facilities and techniques, Ammeter , Voltmeter , Ohmmeter , workshops and oscilloscope to design experiments and collect, analyze and interpret results. “c5”
- c5. Apply safe circuit implementation and observe the appropriate steps to manage risks. “c8”
- c6. Use appropriate tools “Voltmeter and Oscilloscope” to measure system performance. “c19”

d- General Skills

At the end of this course and during his work in two teams in designing and implementing power supply circuit and transistor project, the students will be able to:

- d1. Collaborate effectively within multidisciplinary team. “d1”
- d2. Work in stressful environment and within restrictions. “d2”
- d3. Communicate effectively. “d3”
- d4. Effectively manage time, and resources. “d6”
- d5. Finding information and engage in life-long self learning “d7”
- d6. Develop skills related to creative and critical thinking as well as problem solving. “d12”

4- Course Content

	Topics	No. of hours
1	Special diodes devices	12
2	Diode applications and wave shaping circuits	16
3	Transistor operation theory and applications	12
4	Light devices	4
5	Uni-junction devices and power supply design	4

5- Teaching and Learning Methods

1. Modified lectures
2. Practical training
3. Class activity
4. Project work
5. Tutorial

6- Teaching and Learning Methods of Disables

1. Lack of projectors in Lectures and tutorial rooms

7- Student Assessment

a- Student Assessment Methods

1. Assignments
2. Quizzes
3. Midterm Exam
4. Reports
5. Design Project
6. Oral Exam
7. Final Exam

b- Assessment Schedule

	Assessment	Weeks
1	Assignments	2,5
2	Quizzes	3,9
3	Midterm Exam	8
4	Reports	6
5	Design Project	4
6	Oral Exam	14
7	Final Exam	15

c- Weighting of Assessments

	Assessment	Weight
1	Assignments	45 of 175 25.72 %
2	Quizzes	
3	Midterm Exam	
4	Reports	
5	Design Project	
6	Oral Exam	30 of 175 17.14 %
7	Final Exam	100 of 175 57.14 %

8- List of References

1. Electronic Devices and Circuit Theory, 11th Edition. Robert Boylestad and Louis Nashelsky
2. Electronic Devices 9th Edition. Thomas L. Floyd
3. Microelectronic circuits 6th Edition. Adel Sedra and Kenneth Smith
4. Electronic Principles 7th Edition. Albert Malvino and David Bates



Faculty of Engineering
at Shoubra

Model No.11A

Course Specifications : Electronics (1)

University : Benha university

Faculty : Faculty of Engineering at Shoubra

Department : Electrical Engineering Department

Matrix of Knowledge and Skills of the course

		Weeks	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Special diodes devices	1,2,3	a1, a2,a4,a5,a6	b5	c1	
2	Diode applications and wave shaping circuits	4,5,6,7	a1, a2	b1,b2,b6	c3,c4,c5,c6	
3	Midterm Exam	8	a1	b1		
4	Transistor operation theory and applications	9,10,11	a1, a2, a3	b1, b3,b4,b5	c1,c2,c3,c4	
5	Uni-junction devices and power supply design	12	a1, a2, a3	b2, b3,b4,b6	c2,c4,c5,c6	
6	Light devices	13	a1, a2	b4	c1	
7	Oral Exam	14	a1	b2, b3		d1, d2, d3, d4, d5, d6
8	Final Exam	15	a1	b2, b3,b4		

Matrix of Course Content and ILO's

Course Title: Electronics 1

Code: ECE121

Lecture: 4 **Tutorials:** 3

Practical: - **Total:** 7

Program on which the course is given: B.Sc. Electrical Engineering (Communications)

Major or minor element of program: Major

Department offering the program: Electrical Engineering Department

Department offering the course: Electrical Engineering Department

Academic year / level:

First Year / Second Semester 2014-2015

Date of specifications approval: 20/6/2010

Course Content	a1	a2	a3	a4	a5	a6	b1	b2	b3	b4	b5	b6	c1	c2	c3	c4	c5	c6	d1	d2	d3	d4	d5	d6
Special diodes devices	✓	✓		✓	✓	✓					✓		✓											
Diode applications and wave shaping circuits	✓	✓					✓	✓				✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Transistor operation theory and applications	✓	✓	✓				✓		✓	✓	✓		✓	✓	✓	✓								
Uni-junction devices and power supply design	✓	✓	✓					✓	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Light devices	✓	✓								✓			✓											

Course coordinator: Assoc. Prof. Mohamed Tarekelewa

Course instructor: Ass. Prof. Ehsan Abbas / Ass. Prof. AbdallahHammad

Head of department: Prof. Dr. Sayed Abo-Elsood Ward

Matrix of Course Aims and ILO's

Course Title: Electronics 1 **Code:** ECE121
Lecture: 4 **Tutorials:** 3 **Practical:** - **Total:** 7
Program on which the course is given: B.Sc. Electrical Engineering (Communications)
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Department offering the program: Electrical Engineering Department
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Course Aims	a1	a2	a3	b1	b2	b3	b4	b5	b6	c1	c2	c3	c4	c5	c6	d1	d2	d3	d4	d5	d6
2.1	✓	✓						✓		✓											
2.2	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
2.3	✓	✓		✓	✓				✓			✓	✓	✓	✓						

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