Faculty of Engineering at shoubra

Model No.12
Course Specifications : Electronics 2
2014 - 2015

University : Benha university

Faculty : Faculty of Engineering at Shoubra

Department : Electrical Engineering Department

1- Course Data

Course Code : ECE 222 Course Title : Electronics 2 Study Year : Second Year
Specialization :
Teaching Hours:
Lecture : 4 Tutorial : 3 Practical :

2- Course Aim

For students undertaking this course, the aims are to:

2.1- Demonstrate the fabrication of integrated circuits.
2.2- Describe switching devices and some opto-electronic devices
2.3-Discuss the characteristics and operation of JFET and MOSFET

3- Intended Learning Outcomes of Course (ILOS)

a- Knowledge and Understanding

On completing this course, students will be able to:
a1-Describe Principles of analyzing and design of switching devices, some opt-electronic devices and JFET and MOSFET.[a19]
a2–Discuss methods of fabrication of different electronic components including pn junction, bipolar junction transistor and field effect transistor . [a28]

b- Intellectual Skills

At the end of this course, the students will be able to:
b1- Think in a creative way in designing structure of different electronic components including pn junction, bipolar junction transistor and field effect transistor . [b4]
b2- Assess and evaluate the characteristics and performance of JFET and MOSFET.[b6]

c- Professional Skills

On completing this course, the students are expected to be able to:
c1– Identify appropriate specifications for JFET and MOSFET [c18]

d- General Skills

At the end of this course, the students will be able to:
d1- Refer to relevant literatures.[d9]
d2- Write technical reports and presentation. [d10]
d3- Develop skills related to creative and critical thinking as well as problem solving.[d12]

4- Course Contents

No.	Topics	No of Hours
1	Wafer preparation	4
2	Epitaxial-oxidation	4
3	Electrode deposition- Diffusion	4
4	Device isolation	4

5	Characterization methods	4
6	Switching devices	4
7	Opt Electronic Devices	4
8	Biasing Circuits-FET construction	4
9	Amplifier Configurations	4
10	MOSFET	4
11	Biasing Circuits	4
12	Amplifier circuits and applications	4

5- Teaching and Learning Methods

5.1-Modified Lectures
5.2- Practical training / laboratory
5.3- Assignments / homework

6- Teaching and Learning Methods of Disables

6.1- Nothing.

7- Student Assessment

a- Student Assessment Methods

1	Assignments to assess knowledge and intellectual skills
2	Quiz to assess knowledge and intellectual skills
3	Mid-term exam to assess knowledge and intellectual skills
4	Oral exam to assess knowledge, intellectual, professional and general skills
5	Final exam to assess knowledge and intellectual skills

b- Assessment Schedule

No.	Assessment	Week
1	Assessment 1 on	4,12
2	Quizzes on	3,11
3	Mid-term exam on	8
4	Oral Exam on	14
5	Final exam on	15

c- Weighting of Assessments

Assessment	Weight
Mid-term Examination	16 %
Final Term Examination	57 %
Oral Examination	17 %
Practical Examination	0 %
Semester work	10 %
Other types of assessment	0 %
Total	100 %

8- List of References

a- Course Notes

1- JFET and MOSFET devices, Dr. Hanna Raafat

b- Books

1- Mauro Zambuto , " Semiconductor Devices",1989

Shoubra
Faculty of
Engineering

Model No.11A
Course Specifications : Electronics 2

University : Benha university

Faculty : Faculty of Engineering at Shoubra

Department : Electrical Engineering Department

Matrix of Knowledge and Skills of the course

No.	Topics	week	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Wafer preparation	1	a2	b1	c1	d1,d3
2	Epitaxial-oxidation	2	a2	b1	c1	d1,d3
3	Electrode deposition- Diffusion	3	a2	b1	c1	d1,d3
4	Device isolation	4	a2	b1	c1	d1,d2, d3
5	Characterization methods	5	a2	b1	c1	d1,d2, d3
6	Switching devices	6	a1	b1	c1	d1, d2, d3
7	Opto Electronic Devices	7	a1	b1	c1	d1, d2, d3
8	Midterm exam	8	a1,a2	b1		
9	Biasing Circuits-FET construction	9	a1	b1,b2	c1	d1,d3
10	Amplifier Configurations	10	a1	b1,b2	c1	d1,d2,d3
11	MOSFET	11	a1	b1,b2	c1	d1,d3
12	Biasing Circuits	12	a1	b1,b2	c1	d1,d3
13	Amplifier circuits and applications	13	a1	b1,b2	c1	d1,d2, d3
14	Oral exam	14	a1,a2	b1,b2	c1	
15	Final exam	15	a1,a2	b1,b2		

Matrix of course content and ILO's

Course Title: Electronics 2 **Code**: ECE222
Lecture: 4 **Tutorial**: 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: **Second** Year / **Second** Semester 2014/2015
Date of specifications approval: 20/6/2010

Course content	**a1**	**a2**	**b1**	**b2**	**c1**	**d1**	**d2**	**d3**
Wafer preparation		✓	✓		✓	✓		✓
Epitaxial-oxidation		✓	✓		✓	✓		✓
Electrode deposition- Diffusion		✓	✓		✓	✓		✓
Device isolation		✓	✓		✓	✓	✓	✓
Characterization methods		✓	✓		✓	✓	✓	✓
Switching devices	✓		✓		✓	✓	✓	✓
Opto Electronic Devices	✓		✓		✓	✓	✓	✓
Biasing Circuits-FET construction	✓		✓	✓	✓	✓		✓
Amplifier Configurations	✓		✓	✓	✓	✓	✓	✓
MOSFET	✓		✓	✓	✓	✓		✓
Biasing Circuits	✓		✓	✓	✓	✓		✓
Amplifier circuits and applications	✓		✓	✓	✓	✓	✓	✓

Matrix of course aims and ILO's

Course Title: Electronics 2 **Code**: ECE222
Lecture: 4 **Tutorial**: 3 **Practical**: - **Total:**7
Program on which the course is given: B.Sc. Electrical Engineering (Communications)
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Date of specifications approval: 20/6/2010

Course aims	**a1**	**a2**	**b1**	**b2**	**c1**	**d1**	**d2**	**d3**
Demonstrate the fabrication of integrated circuits.		✓	✓		✓	✓	✓	✓
Describe switching devices and some opt-electronic devices.	✓		✓		✓	✓	✓	✓
Discuss the characteristics and operation of JFET and MOSFET.	✓		✓	✓	✓	✓	✓	✓

Course Instructor:
Assoc. Prof. Dr. Mohamed Tarek Elewa / Dr.HanaaRaafat

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