Course Specifications: :Electronics 1 ECE261

1. Basic Information

Program Tile	Biomedical Engineering
Department offering the Program	Biomedical Engineering
Department Responsible for the Course	ECE
Course Title	Electronics 1
Course Code	ECE261
Year/ Level	Level 200
Credit Hours	3
Specialization	Major
Requirements	ECE161
Authorization data of course specification	

Teaching Hours	Credit	Lectures	Tutorial	Practical
	3	2	2	-

2. Course Aims:

No.	Aims
1	Design analog electronic circuits from scratch, and simulate it.
6	Acquire technical awareness to implement all the phases of the development life cycle of medical electronic systems.

3. Intended Learning Outcomes (ILOs):

A. Knowledge and Understanding:

No.	Knowledge and Understanding
A4	Apply engineering principles in the fields of electronic circuit design and analysis.
A14	Apply design methods for biomedical instrumentation

B. Intellectual Skills

No.	Intellectual Skills
B5	Assess the characteristics and performance of basic electronic components like Diodes, BJts and FETs.

C. Professional Skills

No.	Professional Skills
C5	Use measuring instruments, and laboratory equipment to test electronic components and design some basic electronic circuits
C7	Apply numerical methods in electronic circuits

D. General Skills

No.	General Skills
D1	Work as a team

4. Course Contents:

No.	Topics	Weeks
1	Structure and Physical operation of diodes.	1
2	Analysis of diode circuits.	2-3

3	Rectifier circuits.	4-5
4	Limiting, clamping circuits and special diodes.	6-7
5	Structure and Physical operation of BJTs.	9
6	Small signal model.	10-11
7	BJTS as an amplifier and a switch.	12-13
8	Structure and Physical operation of FETs.	14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Lectures
2	Case Studies
3	Discussion Sessions

6 Teaching and Learning Methods for Disabled Students:

No.	Teaching Method	Reason
1	Extra discussion sessions	To answer their questions

7. Student Evaluation:

7.1 StudentEvaluation Methods:

No.	Evaluation Method	ILOs
1	Mid Term Examination	A4, A14 - B5
2	Semester work	A4,A14 -B5 - C5,C7 - 4.1
3	Final Term Examination	A4, A14 - B5

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Mid Term Examination	8
2	Semester work	Every week
3	Final Term Examination	15

7.3 Weighting of Evaluations:

No.	Evaluation Method	Weights
1	Mid Term Examination	15%
2	Semester work	35%
3	Final Term Examination	50%
Total		100%

8. List of References

No.	Reference List
1	Sedra, Adel S., and Kenneth Carless Smith. *Microelectronic circuits*. 7th edition Oxford university press, 2014.
2	Floyd, Thomas L., and David M. Buchla. *electronics fundamentals*. 8thedition Prentice Hall, 2009.
3	Jaeger, Richard C., and Travis N. Blalock. *Microelectronic circuit design*. New York: McGraw-Hill, 2010.

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board

3	Data Show System
4	Sound System
5	Wireless Internet

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	Aims	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
1	Structure and Physical operation of diodes.	4	A4	B5	C5	
2	Analysis of diode circuits.	4	A4			
3	Rectifier circuits.	4	A4	B5	C5	
4	Limiting, clamping circuits and special diodes.	4,6	A14		C5	D1
5	Structure and Physical operation of BJTs.	4,6	A4	B5		D1
6	Small signal model.	4,6	A4		C7	
7	BJTS as an amplifier and a switch.	4	A14		C5	D1
8	Structure and Physical operation of FETs.	4	A14	B5	C7	

Course Coordinator: Prof.Dr.
Head of Department: Assoc. Prof. HossamEldeen Salah
Date of Approval;