Course Specification of Fundamental to Electronics

Faculty: Faculty of Medicine and Health Sciences
Department: Health Sciences
Program: Bachelor in Radiologic Technology & Medical Imaging

I. General information about the course instructor :

Name	Dr. Mohamed Alswidi	Office Hours (2 Hours Weekly)					
Location & phone number	Department of Electronics Engineering – (5113)	Sat	Sun	Mon	Tue	Wed	Thu
E-mail	m.alswaidi@ust.edu	√					

II. General information about the course:

1.	Course Title :	Fundamental to Electronics				
2.	Course Code and Number :	BMI216				
3.	Credit Hours :	Credit Hours				Total
		Theoretical	Seminar/Tutorial	Practical	Training	
		1	-	1	-	2
4.	Study Level and Semester:	2nd Year/ 1st Semester				
5.	Pre-requisites:	None				
6.	Co-requisites:	None				
7.	Program in which the course is offered:	Bachelor in Radiologic Technology & Medical Imaging				
8.	Teaching Language:	English				
9.	Instruction location:	University of Science and Technology, Sana'a, Yemen				

III. Course Description

This course is considered as an introduction to the basics of the electricity and electronics. It provides students with the concepts of theory of operation of electricity and electronics basics. In addition, it enables the students to understand the basic requirements of operation of the general purpose electronics/electrical machines and/or special equipment such as those used in radiology.
This course includes the units and electrical quantities, Ohm's law, DC circuits, AC circuits, semiconductors, rectifiers, bipolar transistor, IC chips.The course depends on the lectures, homework, assignment, practical lab work, assignments and other activities to teach these course materials. The assessment strategies include presentation, assignment evaluation and written and practical exams.

APPROVED

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عميد الكلية:
د. عبدالله المخلافي

رئيس القسم:
د. عبدالحبيب القباطي

المراجع :
د/ عبدالله طاهر

الموصف :
د. محمد السويدي

IV. Course Aims: This course aimed to

1. Introduce student to the basic components of electricity and electronics.
2. Provide student with a basic background in the theory of operation of electrical/electronic equipment.
3. Prepare students to understand the technical characteristics of medical equipment.
4. Provide student with the practical sense of radiologic equipment operating.

V. Course Intended Learning Outcomes (CILOs) :

1. Recognize the basic elements of electrical and electronic circuits and their collaboration
2. Describe the concepts of operation for electrical/ electronic devices.
3. Compose the basic diagram that serve the simple electrical/electronic circuitry.
4. Illustrate the simplest electrical/electronic circuit design in radiologic equipment.
5. Use a suitable tools to measure different electrical quantities.
6. Demonstrate the ability to provide a safety in radiologic equipment operating.
7. Perform specific tasks in assignment groups.
8. Prepare correctly high quality graphical and tabular presentations based on the data taken from analytical and/or experimental careers.

VI. Course Contents

Theoretical Aspect:

No.	Course Topics/Units	Sub-topics	Week due	Contact Hours
1	Units and electrical quantities	Charge, voltage, current, resistance, electrical circuit	1st	2
2	Ohm's law	Ohm's law applications	2nd	2
		Power and energy in electrical circuits	3rd	2
3	Resistive DC circuits	Series circuits	4th	2
		Parallel circuits	5th	2
4	Capacitors and inductors	Principle of operation-Voltage transformer	6th	2
5	AC circuits	Series RLC circuits	7th	2
		Parallel RLC circuits	8th	2

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6	**Midterm Exam**		9th	2
7	Rectifiers and their applications	Forward and revers biasing	10th	2
		Half and full rectifiers	11th	2
8	Bipolar transistor	Principle of operation	12th	2
		Transistor circuits	13th – 14th	4
9	Integrated chips	Operational amplifiers	15th	2
10	**Final Written Exam**		16th	2
Total number of weeks and hours			**16**	**32**

Second: Practical Aspects. :			
No.	**Practical/Tutorial/Clinical topics**	**Week due**	**Contact Hours**
1.	Introduction to electronic/electrical Lab	2nd	2
2.	Measurement of basic electrical quantities using multimeter	3rd	2
3.	Ohm's law practical realization	4th	2
4.	Series and parallel connection of the resistive circuits	5th	2
5.	Capacitance and inductance test	6th	2
6.	Measurement of AC parameters	7th	2
7.	Half and full wave rectifier	8th	2
8.	Basic transistor circuits	9th	2
9.	Review	10th	2
10.	Practical Final Exam	11th	2
Total number of weeks and hours		**10**	**20**

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