|  |  |  |
| --- | --- | --- |
|  | **Mutah University** **Detailed Syllabus Form** | Description: C:\Users\lamasat.lamasat-PC\Pictures\Picture1.png |

**First :** Course Information**:**

|  |  |
| --- | --- |
| * Course Number: 0302232
 | * Course Title: Electronics
 |
| * Credit Hours: 3
 | * College: Science
 |
| * Pre-requisite: General Physics 2
 | * Department: Physics
 |
| * Instructor: Dr. Moayad Al-Sabayleh
 | * Semester & Academic Year: First Semester 2016/2017
 |
| * The time of the lecture: 1– 2
 | * Office Hours: Sunday 10-12 and Tuesday 10-12
 |

**Second :** General Course Description

  **To give students a basic knowledge to understand the physics of electronic devices and the electronic circuits analysis and to introduce them to its different technological applications; as well as to teach them the mathematical tools used in their analysis.**

**Third :** Course Objectives

**After completing the Basic Electronics program, students will be able to:**

* **Describe the scientific principles that apply to the basic flow of electricity and explain the function of various materials used as conducting, semiconducting, and insulating devices in the construction of standard electrical/electronic circuits.**
* **Identify the basic tools and test equipment used to construct, troubleshoot, and maintain standard electronic circuits and systems.**
* **Explain the construction and application of standard circuit configurations and identify the component types and connections used to build functioning electronic circuits.**
* **Describe the appearance and general operating principles of multiple electronic components and electrical devices such as capacitors, resistors, inductors, semiconductors, integrated circuits (ICs), generators, motors, and transformers.**
* **Identify and describe the applied electronics principles used to develop circuitry and circuit-systems used for radio, television, fiber optic, laser, computer, and microprocessor devices.**

 **Fourth:** Expected Learning Outcomes

* **Demonstrate a sound understanding of the physical work of different electronic devices behavior of oscillating systems and to understand how to use them in different electronic circuits.**
* **Develop the mathematical formalism that describes the physical characteristics of semiconducting devices and electronic circuit analysis;**
* **Use that mathematical formulism to become proficient in the solution of analytical and numerical problems in electronic systems;**
* **Recognize a whole host of examples of electronic elements and electronic circuits across a wide and diverse range of technological domains.**

**Fifth :** Course Plan Distribution & Learning Resources

|  |  |  |
| --- | --- | --- |
| **Learning Resources**  | **Topics to be Covered** | **Week****No.** |
|  | Ohm's Law, IV Characteristic and Voltage Sources  |  |
|  | Resistors, Delta Star Transformation and AVO meter  |  |
|  | Capacitors, Inductors, LCR Circuits and Transformers |  |
|  | Superposition, Kirchhoff's Methods and Oscilloscope  |  |
|  | Norton, Thevenin and Millman Theorems  |  |
|  | Semiconducting Crystals and P-type Semiconductors |  |
|  | N-type Semiconductors and PN Junction |  |
|  | Load Line, Light Emitting and Photo Diodes |  |
|  | Zener, Tunnel and Varactor Diodes  |  |
|  | Half, Full Wave Rectifiers and Ripple Voltage |  |
|  | Clipper, Clamper and Signal Shaping Circuits |  |
|  | Bipolar Transistors, Transistor Biasing and Transistor Load Line |  |
|  | Junction and MOS Field Effect Transistors |  |
|  | CMOS Field Effect Transistors |  |
|  | Transistor Circuit Design and Transistor Circuit Calculation |  |
|  | Transistor Amplifiers  |  |

**Sixth :** Teaching Strategies and Methods

|  |  |
| --- | --- |
| **Teaching Strategies and Methods** | No  |
| **Demonstrating the basic information and principles through lectures** **and the achieved applications.** | **1** |
| **Discussing phenomena with illustrating pictures and diagrams Solve some example during the lecture.** | **2** |
| **Lecturing method: Blackboard Power point e-learning.** | **3** |
| **Open discussions, Group work, Homework assignments and Small** **Projects.** | **4** |
| **Encourage the student to look for the information in different** **References and interactive learning.** | **5** |

**Seventh :** Methods of Assessment

|  |  |  |  |
| --- | --- | --- | --- |
| **Proportion of Final Evaluation** | **Evaluation Methods of**  | **Week & Date** | **No.** |
| **20%** | **First Exam** |  | **1.** |
| **20%** | **Second Exam** |  | **2.** |
| **10%** | **Home Work** |  | **3.** |
| **50%** | **Final Exam** |  | **4.** |
| **(100%)** |  | **Total** |

**Eighth :** Required Textbooks

**- Primary Textbook:**

* **Electronic Devices by Thomas L. Floyd (Prentice Hall, 2012).**

 **-** **Secondary References**

* **Basic Electronics by B. L. Theraja (S. Chand & Company LTD, 2010).**

**Ninth :** General Instructions

|  |  |
| --- | --- |
| **Additional Notes, Office hours, Incomplete Exams, Reports, Papers, …etc** | **No**  |
|  | **1** |
|  | **2** |
|  | **3** |
|  | **4** |
|  | **5** |