# Templates NO (10)

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| **University** | Helwan |
| **Faculty** | Computers and Information  |
| **Department** | Information systems |

#### **Course Specifications**

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| **1- Course Data** |
| **Code: IT 111** | **Course Name: Electronics – 1**  | **Level: One** |
| **Specialization:**Information Systems | **No of Learning Units:** Lecture (2) Practical (1) Tutorial (1)**Prerequisites**:  |  |

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| **2- Course Objective:** | The course presents to the students the knowledge and concepts of: 1. Theories and mechanism of operation of principle semiconductor devices with emphasis on physical concepts
2. Analysis and design of electronic circuits and subsystems.
3. Using electronic devices in a functional circuit.
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| **3- Intended Learning Outcomes (ILOs)** |
| 1. **Knowledge and Understanding:**
 | On successful completion of this course the student will be able to:a1- Explain the physics behind electronic devices operation. (a13)a2- Explain the operating principles of fundamental electronic devices. (a12)a3- Describe the basic electronic circuits. (a15)a4- Describe the basic applications of electronic circuits. (a14) a5- Discuss main fabrication processes.(a24) |
| 1. **Intellectual Skills:**
 | On successful completion of this course the student will be able to:b1- Develop analytical models for electronic engineering problems. (b18).b2- Develop an optimized solutions for electronic engineering problems.(b20)  b3- Use the electronic components models to design electronic circuits. (b17) |
| 1. **Professional and Practical Skills:**
 | On successful completion of this course the student will be able to:c1- assemble electronic components in a functional circuit for certain application.(c15) c2- Identify appropriate specifications for electronic devices for certain applications.(c17) c3- Prepare and present technical reports. (c12) |
| 1. **General and Transferab**
2. **le Skills:**
 | On successful completion of this course the student will be able to:d1- collaborate effectively within multidisciplinary team. (d1)d2-search for information and engage in life-long self-learning discipline.(d7)d3- work in stressful environment and within constraints.(d2). |
| **4- Course Content:** | **Week 1 : Introduction:** **Why study electronic devices.** **Course objectives****Week** **2 : Basics of semiconductor concepts****Week 3 : Basics of P-N junction physics****Week 4 : P-N junction diode : c/c’s and applications****Week 5 :** **Rectifiers****Week 6 : Some other types of diodes** **(LEDs, photo diodes *and Zener diodes)*****Week 7 : Quiz, Midterm****Week 8 : Voltage regulators****Week 9 : Bipolar junction transistors (BJTs)**  **(physics-c/c’s**)**Week 10 : Bipolar junction transistor as an amplifier****Week 11 : Bipolar junction transistor as a switch****Week 12 : Filed Effect Transistor (FET)** **(physics-c/c’s**)**Week 13 : JEFT and MOSFET applications****Week 14 : Timers****Week 15 : Final Exam.** |
| **5- Learning and Teaching Methods:** | 5.1- Lectures5.2- Section (problem solving)5.3- Laboratory classes (practical training) |
| **6- Learning and Teaching Methods for students with limited skills:** | Academic advising |
| **7- Students Evaluation:** |
| 1. **Used Methods**
 | 1 **Quizes** 2 **Midterm Exam** 3 **Practical exam** 4 **Oral exam**5 **Reports** 6 **Final exam**  |
| 1. **Schedule**
 | Assessment 1 Quiz week(s) 4,11Assessment 2 Mid Term Exam week 7 Assessment 3 Practical Exam week 14 Assessment 4 lab Exam week13 Assessment 5 Reports every lab |
| 1. **Grades Distribution**
 | Final written exam: 50 marks Semester Work: 50 marks (20 for midterm exam+ 20 for Assignments+ 10 for lab exam)Total:100 marks |
| **List of Books and References:** |
| 1. **Notes:**
 | * Taken by the student inside classroom.
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| 1. **Mandatory Books:**
 | Sedra/Smith , "Microelectronic circuits", Oxford, 2004 |
| 1. **Suggested Books:**
 | Thomas L.Floyd : "Electronic devices", Prentice-Hall Inc., 1996.  |
| 1. **Periodicals & Websites**
 | No |

**Course Professor: DR. Essam shafei**

**Course Coordinator: DR. Essam shafei**

**Chairman of the Scientific Department: Assoc.Prof. Mona Nasr**