# 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. |
| **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- Lectures  5.2- 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) 4,11  Assessment 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. |
| 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**