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| **جامعة فلسطين التقنية – خضوري**  **دائرة الجودة والنوعية**  **طولكرم- ص.ب 7**  **هاتف: 2677923/09- 2671026/09 فاكس: 2677922/09**  **بريد إلكتروني:** [**quality@ptuk.edu.ps**](mailto:quality@ptuk.edu.ps) | Untitled | **Palestine Technical University -Kadoorie**  **Quality Department**  **Tulkarm-P.O. Box: 7**  **Tel: 09/2761026 – 09/l2677923**  **Fax: 09/2677922**  **Email: quality@ptuk.edu.ps** |

**Course Specification Template**

**1. General information about Instructor:**

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| --- | --- | --- | --- | --- |
| **Name** | **Dr. Diaa Salman** | | | |
| **Phone** | **Internal** |  | **Day:** |  |
| **External** |  |  |  |
| **Mobile** |  | | **Class Time:** |  |
| **Instructor's E-mail** | [**Diyasalman70@gmail.com**](mailto:Diyasalman70@gmail.com) | | **Class Room:** | **H-102** |
|  | | **Office Hours:** | **After the Lab Session** |

**2. General information about the Course**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Requirements** |  | | | | | |
| **1** | Course Title | **Microcontroller Laboratory** | | | | | |
| **2** | Course code & Number | **12120306** | | | | | |
| **3** | Credit hours | Theo. (CH): | | | Practical (CH): **2** | | |
| **4** | Faculty | **Engineering faculty** | | | | | |
| **5** | Department / Division that offers the course: | **Automation Engineering Department** | | | | | |
| **6** | Course type | Compulsory | | | Elective | | |
| Uni. | Fac. | Dep. | Uni. | Fac. | Dep. |
| **7** | Level and Semester | **3ed year : all semesters** | | | | | |
| **8** | Prerequisite(s) – If any | **Microcontroller** | | | | | |
| **9** | Co-requisite(s) – if any |  | | | | | |
| **10** | Program/programs for it/them the course is offered | **Electrical,Communication,Meachtronics,Automation** | | | | | |
| **11** | Instruction Medium: | English | | | Arabic | | |

**3. Course description:**

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| Study of microcontroller architecture, I/O input /output, timers, interrupt structures, analog-to-digital converters, capture compare and PWM modules. Testing and evaluation of microprocessor based systems. Design and development of complete microprocessor based digital systems (project). |

**4. General Course Objectives**

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| **On successful completion of this course the student will be able to achieve the following objectives:**   * Write PIC C language programs for PIC family microcontrollers for various applications. * Use software for developing and debugging PIC C language programs. * Use input\output . * Use library from PIC C program such as LCD...etc. * Use function and if statement ,for and while loop. * Use timers of microcontrollers for various types of time measurements. * Write interrupt service routines for microcontrollers. * Use capture and compare PWM features of the microcontrollers. * Use analog to digital converter to measure external analog signals. |

**5. Intended Learning Outcomes/ILO’s (please specify the learning outcomes of the course as outlined below):**

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| 1. **Knowledge and understanding**   Knowledge and understanding of Microcontroller and it’s tools   1. **Intellectual/Cognitive skills**   Ability to design any Microcontroller system using any Microcontroller   1. **Subject specialization and practical skills**   Practical skills in connect Microcontroller with any interface  **General and transferable skills**  Communicate effectively in the class through example and assignment |

**6. Topics covered and Calendar:**

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| --- | --- | --- |
| **Number** | **Experiment** | **Number of weeks** |
|  | Introduction to the pic c microcontroller | 1 |
|  | Input ,output ,IF statement instruction, For and While loop | 1 |
|  | Lcd instruction | 2 |
|  | Application on input/output and lcd | 2 |
|  | ADC ( Analogue to digital converters) | 3 |
|  | Function instruction | 3 |
|  | Application on function (7-seg and keypad) | 5 |
|  | PWM | 5 |
|  | Interrupts | 6 |
|  | Serial port | 6 |
|  | Final Project | 7 |

**7. Student assessment methods based on ILO,s**

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| --- | --- | --- | --- | --- |
| No | Assessment method | Week | Mark | Percentage to overall mark |
|  | Assignments |  | **30** | **30%** |
|  | Mid-Term Exam |  | **20** | **20%** |
|  | Project |  | **20** | **20%** |
|  | Final Exam |  | **30** | **30%** |

**8. References and other resources**

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| 1. **Recommended Textbook(s): two maximum** 2. **Microprocessors and Microcontrollers N. Senthil Kumar** 3. **PIC Microcontroller and Embedded Systems: Using Assembly and C for PIC18, Book by Danny Causey, Muhammad Ali Mazidi, and Rolin D. McKinla** |

**Name & signature of Head of department/ program leader**

Name: …………………………… signature: …………………………Date: ……………….

**Name & signature of Quality rep. in your faculty**

Name: …………………………… signature: …………………………Date: ……………….

**Course Tutor’s name and signature**

Name: …………………………… signature: …………………………Date: ……………….