**Minoufiya University,**

**Faculty of Engineering,**

**Electrical Eng. Dept.,**

**Post Graduate Studies and Research.**

**Minoufiya University**

Faculty of Engineering

**Course Specification**

***Title: Microprocessor Applications in Electrical Power and Machine Systems***

***Code Symbol: ELE 526***

***Department offering the course: Electrical Eng. Dept***

***Date of specification approval: / /2012***

***A- COURSE IDENTIFICATION AND INFORMATION:***

***B - Professional Information***

***B.1 Course Aims:***

This course aims to explore digital computer software and hardware, to study Computer

organization, design and architecture. Also, learn students programming of Input- output ports

and practice them on its hardware connections.

***B.2 Course Objectives***

**1. Demonstration of the knowledge and understanding of how the data is converted and**

**digitalized.**

**2. Learn methods of real time data processing and peripheral**

**3. Deal with inputs and output operations, addressable switches and data storage.**

**4. Microprocessor implementation in motor position and speed control**

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| Field | Programme ILOs that the coursecontribute in achieving | Course ILOs |
| Knowledge&Understanding | A4. Understand the moral andlegal principles of professionalpractice in electrical engineering. | a4.1) Illustrate professional situationsand how to deal with them |
| Intellectual Skills | B5. Make career decisions in thelight    of    available    electricalengineering information. | b5.1) Scope the light on the 8085architecture and memory interfacing,interfacing I/O devices, Instructionset, Addressing Modes, Assemblylanguage programming, counters andtime delays, interrupts,timing diagram, Microprocessorapplications. |
| Professional andPractical skills | C1.    Apply    the    professionalelectrical                     engineeringtechnologies    in the field    ofspecialization. | c1.1) Identify serial and parallel I/O(8251 and 8255), ProgrammableController, ADC/DAC interfacing. |
| General andTransferrable skills | D1. Effective communication ofall kinds and sharing ideas withdifferent relevant teams. | d1-1) Effective communication andcollaborative learning affordsstudents enormous to solvemicroprocessor problems. |
| D3. Self-assessment to identifypersonal learning needs. | d3-1) Use different ways ofidentifying their own learning needslike ordinary investigations. |
| D4. Use of different sources forinformation knowledge | d4-1) Use internet sites and refer tomicroprocessor aplicationshandbooks |

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| Field | Academic Reference Standards For Electrical EngineeringPostgraduates (ARSEP-ELE) |
| Knowledge &Understanding | IntellectualSkills | Professionaland PracticalSkills | General andTransferrableSkills |
| Programme AcademicStandards that the coursecontribute in achieving | A4 | B5 | C1 | D1, D3, D4 |

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| TopicNo. | General Topics | Weeks |
| 1st | Digital computer software and hardware | 1-2 |
| 2nd | Computer organization, design and architecture | 3-5 |
| 3rd | Microprocessor, microcontrollers and embedded systems | 6-8 |
| 4th | Input- output port programming | 9-10 |
| 5th | Hardware connections | 11 |



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***B.3  Relationship between the course and the programme***

***B.4 Course Intended Learning Outcomes (ILOs)***

***B.5  Course Topics.***

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| --- | --- | --- | --- | --- |
| ***Week******No.*** | ***Sub. Topics*** | ***Total******Hours*** | ***Contact hrs*** | ***Course ILOs******Covered (By******No.)*** |
| **Lec.** | **Tut.** | **Lab.** |
| *Week-**1* | Digital computer software | 3 | 3 | - | - | a4-1, b5-1, c1-1 |
| *Week-**2* | Digital computer hardware | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |
| *Week-**3* | Computer organization. | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |
| *Week-**4* | Computer design | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |
| *Week-**5* | Computer architecture | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |
| *Week-**6* | Microprocessor and programming | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |
| *Week-**7* | Microcontrollers systems | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |
| *Week-**8* | Embedded systems | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |
| *Week-**9* | Input port programming | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |
| *Week-**10* | Output port programming | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |
| *Week-**11* | Hardware connections | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |
| *Week-**12* | ADC, DAC and sensor interfacing | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |
| *Week-**13* | ADC, DAC and sensor interfacingaplications | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |
| *Week-**14* | Motor     control     applications     usingmicroprocessor | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |
| *Week-**15* | Stepper motor interfacing | 3 | 3 | - | - | a4-1, b5-1, c1-1,d1-1, d3-1, d4-1 |

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| **Course Intended****learning outcomes****(ILOs)** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Knowledge &****understanding** | **a1-1** | **x** | **x** | **x** | **x** | **x** | **x** |  |  |  |  |  |  |  |

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| 6rd | ADC, DAC and sensor interfacing | 12-13 |
| 7th | Motor control and stepper motor interfacing | 14-15 |



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***B.6 Course Topics/hours/ILOS***

**Selflearning**

**Presentation**

**andMovies**

**Cooperative**

**Discovering**

**Discussion**

**Modelling**

**Sitevisits**

**Problem**

**solving**

**Brain**

**storming**

**Tutorial**

**Projects**

**Lecture**

**Playing**

**B.7*Teaching and Learning Method:***

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Intellectual****Skills** | **b1-1** | **x** | **x** | **x** | **x** | **x** | **x** |  |  | **x** |  |  | **x** |  |
| **Professional****and Practical****Skills** | **c1-1** | **x** |  | **x** | **x** | **x** | **x** | **x** |  | **x** |  |  | **x** |  |
| **General and****Transferrable****Skills** | **d1-1** | **x** |  | **x** | **x** | **x** | **x** | **x** |  | **x** | **x** |  | **x** |  |
| **d3-1** | **x** |  | **x** | **x** | **x** | **x** | **x** |  | **x** | **x** |  | **x** |  |
| **d4-1** | **x** |  | **x** | **x** | **x** | **x** | **x** |  | **x** | **x** |  |  |  |

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| **Assessment Method** | **Mark** | **Percentage** |
| **Final Examination (*written*)** | **100** | **100%** |
| **Total** | **100** | **100%** |



**B. 8*Assessments:***

***B.9 Facilities required for teaching and learning:***

***Weighting of assessments:***

**A. Library Usage:** Students should be encouraged to use library technical resources in the

preparation of reports.

***B.10 List of references:***

1- F. Halsall and P. F. Lister, ’Microprocessor Fundamentals’, UCL Press

1993.

2- A. P. Godse, ’Advanced Microprocessor and Microcontroller’, Technical

Publications Pune, 2004.

3- Muhammad Ali Mazidi, “The 8086 IBM PC and computable computers,

Assembly, Design and Interfacing”, 4 th ed. 2003, Pearson.

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**Course Coordinators:** **Head of Department**

**Prof. Dr. Ibrahim Morsi** **Prof. Dr. Gamal Morsi**

**Prof. Dr.Atiya el spaiee**

**Dr. Hala .S El-Sayed**

**Date:**