1. **Basic Information:**

|  |  |
| --- | --- |
| **Program Title** | Civil Engineering |
| **Department Offering the Program** | Civil Engineering |
| **Department Responsible for the Course** | Basic Science and Engineering |
| **Course Title** | Electrical Engineering Fundamentals |
| **Course Code** | ENG 208 |
| **Year/Level** | Level 2 |
| **Specialization** | Major |
| **Authorization Date of Course Specification** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Teaching hours** | **Lectures** | **Tutorial** | **Practical** |
| 3 | 2 | **-** |

1. **Course Aims:**

|  |  |
| --- | --- |
| **No.** | **Aims** |
| 1 | Apply knowledge of mathematics, science and engineering concepts to the solution of Electrical engineering problems. |

**3-Intended Learning Outcomes (ILO’S):**

1. **Knowledge and understanding:**

|  |  |
| --- | --- |
| **No.** | **Knowledge and understanding** |
| A5 | Recognize methodologies of solving engineering problems, data collection problems and interpretation by knowing the basic and different choice for solving different to calculate current, voltage, power for the problem network. |

1. **Intellectual Skills:**

|  |  |
| --- | --- |
| **No.** | **Intellectual Skills** |
| B2 | Select the appropriate solutions for electrical problems and system design to solve and analysis the electric circuits network |

**C. Professional Skills:**

|  |  |
| --- | --- |
| **No.** | **Professional Skills** |
| C1 | Apply knowledge of mathematics, science, information technology, design, and engineering practice to solve electric engineering problems |

**D. General Skills:**

|  |  |
| --- | --- |
| **No.** | **General Skills** |
| D9 | Refer to relevant literatures in electric fields. |

**4. Course Contents:**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Topics** | **Lectures** | **Tutorial** |
| **1** | **Direct Current** | **3** | **2** |
| **2** | **Theory of electric circuits** | **3** | **2** |
| **3** | **Delta and Star connections** | **3** | **2** |
| **4** | **Sine A.C and D.C circuits** | **6** | **4** |
| **5** | **Time vectors diagram** | **3** | **2** |
| **6** | **Electric power and power factor in A.C circuits** | **6** | **4** |
| **7** | **3-Phase current - Electric machines - D.C machines** | **6** | **4** |
| **8** | **Transformers** | **3** | **2** |
| **9** | **Induction and synchronous machines** | **6** | **4** |
| **10** | **Methodologies** | **3** | **2** |
| **Total** | | **42** | **28** |

**5. Teaching and learning methods:**

|  |  |
| --- | --- |
| **No.** | **Teaching Methods** |
| 1 | Lectures |
| 2 | Discussion sessions |
| 3 | Information collection from different sources |
| 4 | Research assignment |
| 5 | Practical training/lab |

**6. Teaching and learning methods for disable students:**

|  |  |  |
| --- | --- | --- |
| **No.** | **Teaching Methods** | **Reason** |
| 1 | Presentation of the course in digital material | Better access any time |
| 2 | Web communication with students | Better communication with certain cases |
| 3 | Asking small groups to do assignments; each composed of low, medium and high performance students. | Knowledge and skills transfer among different levels of students |

**7. Student evaluation:**

**7.1 Student evaluation method**:

|  |  |  |
| --- | --- | --- |
| **No.** | **Evaluation Method** | **ILO’s** |
| 1 | Midterm examination | A5.B2 |
| 2 | Semester work (sheets & quiz) | C1,D9 |
| 4 | Final term examination | A5,.B2 |

**7.2 Evaluation Schedule:**

|  |  |  |
| --- | --- | --- |
| **No.** | **Evaluation Method** | **Weeks** |
| 1 | Midterm examination | 08th |
| 2 | Semester work | 14th |
| 3 | Final term examination | 15th |

**7.3 weighting of Evaluation:**

|  |  |  |
| --- | --- | --- |
| **No.** | **evaluation method** | **Weights** |
| 1 | Mid-term examination | 20% |
| 2 | final examination | 60% |
| 3 | Semester work | 20% |
|  | Total | 100% |

**8. List of References:**

|  |  |
| --- | --- |
| **No.** | **Reference List** |
| 1 | Fundamentals of Electric Circuits, K.alexander and Sadiku(4th edition ,2007).Prentice Hall. |
| 2 | Electrical Engineering, sedra, (9th edition ,2006),Pearson international edition. |

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

|  |  |  |
| --- | --- | --- |
| **No.** | **Facility** |  |
| 1 | Lecture classroom |  |
| 2 | Presenter |  |
| 3 | White board |  |
| 4 | Data show system |  |
| 5 | Wireless internet |  |
| 6 | Sound system |  |

**10. Matrix of knowledge and skills of the course:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Topic** | **Aims** | **Knowledge and understanding** | **Intellectual Skills** | **Professional Skills** | **General Skills** |
| **1** | **Direct Current** | **1** | **A5** | **B2** | **C1** | **D9** |
| **2** | **Theory of electric circuits** | **1** | **A5** | **B2** |  |  |
| **3** | **Delta and Star connections** | **1** | **A5** | **B2** |  |  |
| **4** | **Sine A.C and D.C circuits** | **1** | **A5** | **B2** |  |  |
| **5** | **Time vectors diagram** | **1** | **A5** |  |  | **D9** |
| **6** | **Electric power and power factor in A.C circuits** | **1** | **A5** |  |  |  |
| **7** | **3-Phase current - Electric machines - D.C machines** | **1** | **A5** |  |  |  |
| **8** | **Transformers** | **1** | **A5** |  |  | **D9** |
| **9** | **Induction and synchronous machines** | **1** | **A5** |  |  |  |
| **10** | **Fractional power machines** | **1** | **A5** |  |  |  |

**Course Coordinator:** Dr. Hossam Abdelfatah

**Head of Department:** Dr.Huissam Hussein

**Date of Approval:** jan.2017