**Minoufiya University,**

**Faculty of Engineering,**

**Electrical Eng. Dept.,**

**Post Graduate Studies and Research.**

**Course Specification**

**Minoufiya University**

Faculty of Engineering



***Title: Electrical Networks***

***Code Symbol: ELE 507***

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

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

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

***B - Professional Information***

***B.1 Course Aims:***

The aims of this course are to provide the student, with the basic knowledge and skills of how to

operate the distribution power systems. This course will also provide students with the ability to

select between the shunt and series capacitors and design the underground cables. The skill of

grounding the power system is also provided.

***B.2 Course Objectives***

1. Studying the performance of ungrounded neutral system.

2. Studying different methods of power system grounding.

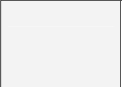
3. Studying the operation of distribution systems.

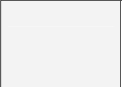
4. Studying the electrical and mechanical characteristics of underground cables.

5. Comparison between shunt and series capacitors.

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| Field | Programme ILOs that the course  contribute in achieving | Course ILOs |
| Knowledge&  Understanding | A1. Integrate    theories, fundamentals  and                  knowledge of electrical  power in practice. | a1-1) Recognize the characteristics of  cables.  a1-2)    Recognize    the    ungrounded  neutral system.  a1-3) Explain the importance of  neutral earthing. |
| A4. Understand the moral and legal  principles of professional practice in  engineering. | a4-1) Recognize the methods used in  cable installation.  a4-2) Identify the system operating  problems with underground cables.  a4-3)       Identify       the       problems  associated with series capacitors.  a4-4) Identify the system operating  problems with ungrounded neutral. |
| Intellectual skills | B2.    Solve     electrical     engineering  problems in the area of electrical  power specialization. | b2-1) Solve problems related    to  distribution systems.  b2-2) Solve problems related    to  underground cables. |
| B4. Assess the risks in professional  engineering practice. | b4-1) Study the tolerable limits of  body currents.  b4-2) Study the tolerable step and  touch voltages. |
| Professional and  Practical Skills | C2. Write professional engineering  reports. | c2-1)      Use     of     power      system  handbooks to write some technical  reports.  c2-2) Use of the internet to write  some technical reports. |
| General and  Transferrable  Skills | D4. Use of different sources for  information knowledge. | d4-1) Searching for handbooks using  the library.  d4-2) Use of the internet. |

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| Topic  No. | General Topics | Weeks |
| 1st | Load forecasting | 1-2 |
| 2nd | Power system earthing | 3-7 |
| 3rd | Distribution systems | 8-10 |
| 4th | Underground cables | 11-13 |
| 5th | Shunt and series capacitors | 14-15 |



Standards that the course

contribute in achieving

***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* | Basic definitions. | 3 | 3 | - | - | a1-2, a1-3, d4-1,  d4-2 |
| *Week-*  *2* | Loads forecasting | 3 | 3 | - | - | a1-2, a1-3,  b4-1, d4-1 |
| *Week-*  *3* | Tolerable step and touch voltage &  Tolerable limits of body currents | 3 | 3 | - | - | a1-2, a1-3,  b4-2 |
| *Week-*  *4* | Ungrounded neutral systems. | 3 | 3 | - | - | a1-2, a1-3,  a4-4, d4-1 |
| *Week-*  *5* | Solid grounding and resistance  grounding. | 3 | 3 | - | - | a1-3, d4-1 |
| *Week-*  *6* | Reactance grounding and arc  suppression coil grounding. | 3 | 3 | - | - | a1-3, d4-1 |
| *Week-*  *7* | Earthing transformer. | 3 | 3 | - | - | a1-3, d4-1 |
| *Week-*  *8* | Comparison between different types  of distribution systems. | 3 | 3 | - | - | b2-1, c2.1, c2.2 |
| *Week-*  *9* | Performance of A.C. distributor with  unity power factor loads. | 3 | 3 | - | - | b2-1 |
| *Week-*  *10* | Performance of A.C. distributor with  uniformly distributor load | 3 | 3 | - | - | b2-1 |
| *Week-*  *11* | Parameters of single core cables. | 3 | 3 | - | - | a1-1, b2-2 |
| *Week-*  *12* | Dielectric loss and grading of cables. | 3 | 3 | - | - | a1-1, b2-2 |
| *Week-*  *13* | Cable Installation and system  operating problems with underground  cables. | 3 | 3 | - | - | a1-1, d4-1, a4.2 |
| *Week-*  *14* | Shunt and series capacitors. | 3 | 3 | - | - | a4-3, d4-1 |
| *Week-*  *15* | Problems associated with series  capacitors. | 3 | 3 | - | - | a4-3 |

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| **Course Intended**  **learning outcomes**  **(ILOs)** | |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Knowledge &**  **understanding** | a1-1 | **x** |  | **x** |  |  |  |  |  | **x** |  |  |  |  |
| a1-2 | **x** |  | **x** |  |  |  |  |  | **x** |  |  |  |  |

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**Selflearning**

**Presentation**

**andMovies**

**Cooperative**

**Discovering**

**Discussion**

**Modelling**

**Sitevisits**

**Problem**

**solving**

**Brain**

**storming**

**Tutorial**

**Projects**

**Lecture**

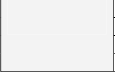
**Playing**

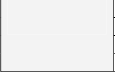
***B.6  Course Topics/hours/ILOS***

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

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | a1-3 | **x** |  | **x** |  |  |  |  |  |  |  |  |  |  |
| a4-1 | **x** |  | **x** |  |  |  |  |  |  |  |  |  |  |
| a4-2 | **x** |  | **x** |  |  |  |  |  |  |  |  |  |  |
| a4-3 | **x** |  | **x** |  |  |  |  |  |  |  |  |  |  |
| **Intellectual**  **Skills** | b2-1 | **x** |  | **x** |  | **x** |  |  |  |  |  |  | **x** |  |
| b2-2 | **x** |  | **x** |  | **x** |  |  |  |  |  |  | **x** |  |
| b4-1 | **x** |  | **x** |  |  |  |  |  |  |  |  |  |  |
| b4-2 | **x** |  | **x** |  |  |  |  |  |  |  |  |  |  |
| **Professional**  **and practical**  **Skills** | c2-1 | **x** |  | **x** |  |  |  |  |  |  |  |  |  |  |
| c2-2 | **x** |  | **x** |  |  |  |  |  |  |  |  |  |  |
| **General and**  **Transferrable**  **Skills** | d4-1 |  |  | **x** |  |  |  |  | **x** |  | **x** | **x** |  |  |
| d4-2 |  |  | **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. The Library:** Students should be encouraged to use library technical resources in the

preparation of the professional reports.

**B. The Internet:** Student should be encouraged to use the internet in the preparation of the

professional reports.

***B.10 List of references:***

1- I. J. Nagrath and D. P. Kothari, ”Modern Power System Analysis”, Book, India, 1989.

2- B. R. Gupta. ”Power System Analysis and Design”, Book, India, 1993.

3- I. J. Nagrath and D. P. Kothari, “Power System Engineering”, Book, India, 1994.

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

**Prof. Dr. Abdel-Mohsen Kinawy** **Prof. Dr. Gamal Morsi**

**Dr. Taher Abdelfatah**

**Dr. Shaimaa R. Spea**

**Date:**

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