**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 coursecontribute in achieving | Course ILOs |
| Knowledge&Understanding | A1. Integrate    theories, fundamentalsand                  knowledge of electricalpower in practice. | a1-1) Recognize the characteristics ofcables.a1-2)    Recognize    the    ungroundedneutral system.a1-3) Explain the importance ofneutral earthing. |
| A4. Understand the moral and legalprinciples of professional practice inengineering. | a4-1) Recognize the methods used incable installation.a4-2) Identify the system operatingproblems with underground cables.a4-3)       Identify       the       problemsassociated with series capacitors.a4-4) Identify the system operatingproblems with ungrounded neutral. |
| Intellectual skills | B2.    Solve     electrical     engineeringproblems in the area of electricalpower specialization. | b2-1) Solve problems related    todistribution systems.b2-2) Solve problems related    tounderground cables. |
| B4. Assess the risks in professionalengineering practice. | b4-1) Study the tolerable limits ofbody currents.b4-2) Study the tolerable step andtouch voltages. |
| Professional andPractical Skills | C2. Write professional engineeringreports. | c2-1)      Use     of     power      systemhandbooks to write some technicalreports.c2-2) Use of the internet to writesome technical reports. |
| General andTransferrableSkills | D4. Use of different sources forinformation knowledge. | d4-1) Searching for handbooks usingthe library.d4-2) Use of the internet. |

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| TopicNo. | 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 resistancegrounding. | 3 | 3 | - | - | a1-3, d4-1 |
| *Week-**6* | Reactance grounding and arcsuppression coil grounding. | 3 | 3 | - | - | a1-3, d4-1 |
| *Week-**7* | Earthing transformer. | 3 | 3 | - | - | a1-3, d4-1 |
| *Week-**8* | Comparison between different typesof distribution systems. | 3 | 3 | - | - | b2-1, c2.1, c2.2 |
| *Week-**9* | Performance of A.C. distributor withunity power factor loads. | 3 | 3 | - | - | b2-1 |
| *Week-**10* | Performance of A.C. distributor withuniformly 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 systemoperating problems with undergroundcables. | 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 seriescapacitors. | 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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