

Faculty of Engineering & Technology

Transmission and Distribution of Electrical Energy

Information :

| Course Code : | EPR 421 | Level | : | Undergraduate | Course Hours : | 3.00- Hours |
|---------------|---------|-------|---|---------------|----------------|-------------|
| | | | | | | |

Department : Specialization of Electrical Power Engineering

Instructor Information :

| Title | Name | Office hours |
|--------------------|--------------------------------------|--------------|
| Lecturer | Mohamed Rizk Mohamed Elsayed Hamouda | |
| Assistant Lecturer | Ahmed Moreab Hussien Mohamed | |
| Teaching Assistant | Abeer Tharwat Said Awad | 2 |

Area Of Study :

ADevelop the students of knowledge about transmission and distribution systems
AHelp the students understand the electrical properties of transmission lines
AE nable the students analyze problems related to transmission lines
ADevelop the students of understanding about the relation between the electrical quantities at the sending end and the

receiving end of the transmission line

Description :

Representation of power systems, Types of transmission systems, Parameters of transmission lines: resistance, inductance and capacitance, Modeling of transmission lines: approximate and exact models, Performance of transmission lines: powers at sending and receiving ends, efficiency, voltage regulation, Distribution systems: layouts of distribution systems - voltage drop and power.

Course outcomes :

| a.Knowledge and Understanding: : | | | |
|----------------------------------|--|--|--|
| 1 - | Identify the different types of transmission systems | | |
| 2 - | Identify the electrical characteristics of transmission lines | | |
| 3 - | List the models that can be used for transmission lines | | |
| 4 - | State the relation between the electrical quantities at the sending and receiving ends of a transmission line | | |
| 5 - | State the main components of distribution networks | | |
| b.Intellectu | al Skills: : | | |
| 1 - | Select the suitable transmission system on an economical basis | | |
| 2 - | Classify the different types of transmission lines | | |
| 3 - | Apply circuits and electromagnetic fields related theories to find the electric parameters of transmission lines | | |
| 4 - | Analyze the performance of transmission networks | | |
| 5 - | Compute the power loss and voltage drop in distribution networks | | |



c.Professional and Practical Skills: :

1 - Prepare technical reports related to transmission systems.

d.General and Transferable Skills: :

1 - Effectively manage tasks, time, and resources.

Course Topic And Contents :

| Торіс | No. of hours | Lecture | Tutorial / Practical |
|--|--------------|---------|----------------------|
| Introduction | 5 | 3 | 2 |
| Types of transmission systems | 5 | 3 | 2 |
| Parameters of transmission lines | 10 | 6 | 4 |
| Modeling of transmission lines | 25 | 16 | 9 |
| Performance & design of transmission lines | 20 | 12 | 8 |
| Distribution systems | 10 | 6 | 4 |

<u>Teaching And Learning Methodologies :</u> Interactive lectures

| Problem-based Learning |
|------------------------|
| Report writing |

| Course Assessment : | | | | |
|-----------------------|-------------------|---------|-------------|--|
| Methods of assessment | Relative weight % | Week No | Assess What | |
| Assignments | 10.00 | | | |
| Final exam | 40.00 | | | |
| Mid- Exam I | 15.00 | | | |
| Mid- Exam II | 15.00 | | | |
| Participation | 10.00 | | | |
| Quizzes | 10.00 | | | |

Recommended books :

1. William D. Stevenson, ‰lements Of Power System Analysis H4th Edition, Mc Graw Hill India, 2014 (Text Book) 2. J. Duncan Glover, Mulukutla S. Sarma and Thomas Overbye, ‰ower Systems Analysis and Design, 5th Edition HÃ CL Engineering, 2012

3. Colin Bayliss and Brian Hardy, 7 mansmission and Distribution Electrical Engineering, Fourth Edition-ENewnes, 2012

4. John Grainger, William Stevenson Jr. Rower System Analysis-EMcGraw-Hill Education, 1994.