



Department of Electrical Engineering,
School of Engineering,
University of Management and Technology

Course Outline

Course code: EE 422 Course title: Power System Distribution Semester: Spring 2016

Program	BSEE
Credit Hours	3
Duration	One semester
Prerequisites	EE 317 Power System Fundamentals
Resource Person	Nauman Ahmad
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Date.....

Learning Objectives:

This course deals with the distribution and utilization of Electrical Power. It will familiarize students with power distribution systems both in suburban and rural areas. Students will learn about load calculation, home and industrial wiring techniques and safety mechanisms.

Student Learning Outcomes:

Upon completion of this course, students will understand:

- Distribution system structure
- A.C. and D.C. distribution system
- Design of distributor for A.C. distribution system
- Distribution Equipments
- Load calculation
- Utilization of electrical power in,
 - Electric heating
 - Electric welding
 - Illumination
- Wiring Techniques and diagrams.
- Safety Regulation of different types of Electric Equipments.

Learning Methodology:

Lecture, interactive, participative, and Computer Simulations.

Grade Evaluation Criteria

Following is the criteria for the distribution of marks to evaluate final grade in a semester

Marks Evaluation	Marks in percentage
Quizzes and Assignments	25
Mid Term	25
Final exam	50
Total	100

Recommended Text Books:

[1] Principles of Power System by **V.K. Mehta and Rohit Mehta**, 4th Revised Edition

Reference Book:

[1] Electrical Power Distribution and Transmission by **Lucas M. Faulkenberry and Walter Coffey**

[2] Utilization of Electric Power & Electric Traction by **G.C. Garg**, 8th Edition

[3] Electric Power Distribution by **A S Pabla**, 5th Edition

[4] Transmission and Distribution: Electrical Engineering(3rd Edition) by **Colin Dayliss, Brian Hardy**

[5] A course in Electrical Power by **J.B. Gupta**

[6] Electric Power Transmission and Distribution by **S. Sivanagaraju & S. Satyanarayana**.

Course Schedule

Lecture	Topics	Textbook (TB) /Reference (Ref) Readings
Week 1	INTRODUCTION TO POWER SYSTEM	Lecture slides
Week 2	Overview of Distribution System: Distribution system, Classification of distribution system, A.C. and D.C. distribution, Overhead versus Underground system, Connection schemes of distribution system, Requirements and design consideration of distribution system	Ch#12 of TB ^[1]
Week 3	D.C. Distribution: Types of D.C. distributors, D.C. distribution calculation, D.C. distributor fed at one end with concentrated loading, D.C. distributor fed at one end with uniform loading	Ch#13 [13.1-13.6] of TB ^[1]
Week 4	D.C. Distribution: D.C. distributor fed at both ends with concentrated loading, D.C. distributor fed at both ends uniform loading, Ring distributor, Comparison between 2 and 3 wire DC distributions.	Ch#13 [13.7-13.15]of TB ^[1]
Week 5	A.C. Distribution: A.C. distribution calculation, Methods of solving A.C. distribution problems, 3-Phase unbalanced loads, Four-wire star connected unbalanced loads	Ch#14 of TB ^[1]
Week 6	Over View of Distribution Transformers: Need for distribution transformers and their types, Transformer equivalent circuit, Three phase balanced source, Analysis of Wye connected circuits, Analysis of Delta connected circuits, Delta to Wye transformation, Per phase analysis, Concepts of three phase power in AC circuits	Ch#14 of TB ^[1]
Week 7	Power Factor Correction.	Ch#04: RB ^[1]
Week 8	Distribution Equipment: Circuit breakers and their types, Reclosers, sectionalizers, Fuses, Lightning protection, Protective relay introduction, Disconnect switches, Metering equipment	Ch#05: RB ^[1]

Week 9	Underground Cables: Underground cables, Construction of cables, Insulation material for cables, Classification of cables, Cables for three phase services	Ch#011 [11.1-11.5] of TB ^[1]
Week 10	Neutral Grounding: Grounding or Earthing, Equipment grounding, System Grounding, Un-grounded neutral system, Neutral grounding, Advantages of neutral grounding, Methods of neutral grounding, Grounding techniques, Voltage transformer Earthing, Grounding transformer	Ch#26 of TB ^[1]
Week 11	Illumination.	Lecture Slides
Week 12	Electric heating.	Lecture Slides
Week 13	Electric welding.	Lecture Slides
Week 14	Wiring techniques and diagrams.	Lecture Slides
Week 15	Electromechanical batteries, working and their applications.	Lecture Slides
Week 16	Types of hazards, Safety Mechanism in Electric Equipments, Leakage current, Safety Regulation of different types of Electric Equipments	Lecture Slides