ELECTRICAL POWER DISTRIBUTION SYSTEM

PEC- II: EPS

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
BPSB06	**Elective**	3	-	-	3	30	70	100

Contact Classes: 45	**Tutorial Classes: Nil**	**Practical Classes: Nil**	**Total Classes: 45**

I. COURSEOVERVIEW:

Electric power distribution system plays an important role in the efficient operation of a modern industrial plant. Such a system includes high voltage circuit breakers, switchgear, transformers, motor control centers, electric motors, variable speed drive sheds' trouble-free electrical system is essential for an interruption-free plant operation. This course will cover all aspects of power distribution, including system planning, equipment selection and application, system grounding, protection and conformity with electrical code requirements, etc.

II.COURSE OBJECTIVES:

This course should enable the students to:

I.   Explain the application of SCADA in power distribution systems.
II.   Understand distribution automation.

III. COURSEOUTCOMES:

After successful completion of the course, students will be able to:		
CO 1	**Understand** the importance of load forecasting in Distribution systemto meet the future electrical load demands	Understand
CO 2	**Apply** different types of power factor correction methods to increase the efficiency of the distribution system	Apply
CO 3	**Analyze** communication systems, remote metering, automatic meter for collecting the data that's needed for billing purposes	Analyze
CO 4	**Make use of** SCADA in distribution automation to maintain efficiency, process data for smarter decisions	Understand
CO 5	**Examine** placement of optimal switching devicesfor monitoring and to increase the efficiency of the distribution system	Evaluate
CO 6	**Apply** AI techniques in electrical distribution system to enhance efficiency, reliability, and quality of electric service.	Apply

IV.SYLLABUS

UNIT-I	DISTRIBUTION OF POWER	Classes: 09

Distribution of power, management, power loads, load forecasting short-term and long-term, power system loading, technological forecasting

UNIT-II	ADVANTAGES OF DISTRIBUTION MANAGEMENT SYSTEM	Classes:10

Advantages of distribution management system (D.M.S.): Distribution Automation, definition, restoration, reconfiguration of distribution network, different methods and constraints, power factor correction.

UNIT-III	INTERCONNECTION OF DISTRIBUTION	Classes: 08

Interconnection of distribution, control, communication systems, remote metering, automatic meter reading and its implementation; SCADA: Introduction, block diagram, SCADA applied to distribution automation.

Common Functions of SCADA: Advantages of distribution automation through SCADA.

UNIT-IV	OPTIMAL SWITCHING DEVICE PLACEMENT	Classes: 09

Calculation of optimum number of switches, capacitors, optimum switching device placement in radial, distributionsystems,sectionalizingswitches,types,benefits,bellman‟soptimalityprinciple,remoteterminalUNITs, energy efficiency in electrical distribution,monitoring

UNIT-V	MAINTENANCE OF AUTOMATED DISTRIBUTION SYSTEMS	Classes: 09

Maintenance of automated distribution systems, difficulties in implementing distribution, automation in actual practice, urban, rural distribution, energy management, AI techniques applied to distribution automation.

Text Books:

1. AS Pabla, "Electric Power Distribution", Tata McGraw Hill Publishing Co. Ltd., 4th Edition,2012.
2. MK Khedkar, GM Dhole, "A Text Book of Electrical power Distribution Automation", University Science Press, New Delhi, 2nd Edition,2010.

Reference Books:

1. Anthony J Panseni, "Electrical Distribution Engineering", CRC Press, 2nd Edition,2010.
2. James Momoh, "Electric Power Distribution, automation, protection & control", CRC Press 2ndEdition, 2006.

Web References:

1. https://www.nptelvideos.in/2012/11/distribution-automation.html
2. https://www.powersystem.org/distribution-automation
3. https://www.sciencedirect.com

E-Text Books:

1. https://www.schneider-electric.us/documents/customers/utility/br-distribution-feeder-automation.pdf
2. https://www.pdfs.semanticscholar.org/099e/bffd3b296af4aa0ef7b7777721f178be6b28.pdf