

PIPM 7008	DISTRIBUTION AUTOMATION AND SMART GRID	L	T	P	C
Version 1.0		3	0	0	3
Pre-requisites/Exposure	Science Graduate				
Co-requisites	Good Command in MS Word and MS Powerpoint, Electrical				

Course Objectives

1. A basic introduction to Smart Grid.
2. An understanding of the relevance of it in global perspective..
3. Technology needed.
4. Reforms and restructuring in Indian power sector.
5. Knowledge about intelligent and Strategic issues related to growth & development of Indian Power Business.

Course Outcomes

On completion of this course, the students will be able to

- CO1: Understand issues, opportunities & challenges in Smart grid
CO2: Develop skills required for smart grid planning & formulation of regulations.
CO3: Understand Power distribution sector framework in India and its comparison globally.
CO4: Learn processes for execution and control of regulation in power distribution business in India.
CO5: Appreciate and evaluate the power sector in India for betterment i.e. recommendation for amendments if any

Catalog Description

The purpose of this course is to introduce to students of fundamental understanding of the Indian Power distribution Sector as well as its functioning – both in public and private sector. The course will help the students to understand the power business processes along with its relativeness with other countries.

Course Content

Unit I:

7.5 lecture hours

Introduction to distribution sector in India, Development of the modern distribution systems

Unit II:

6 lecture hours

Types of distribution market, Regulation for distribution sector, modeling of distribution level components

Unit III:

9 lecture hours

Electricity Act 2003, Electricity Policy 2005, Tariff Policy 2006 + Other Policies, Energy Conservation Act 2001, IPDS and R-APDRP, New initiatives in Rural Electrification, Supply & New Business, FRP and other Systems

Unit IV:

9 lecture hours

Distribution level power flow, voltage control devices, substation design and automation, volt-var optimization

Unit V: 4.5 lecture hours

Energy Storage And Electric Vehicles, Demand Response, Automated Switching And Reconfiguration, Introduction To Micro-Grids, Smart Grid

Text Books and Journals

1. Power Sector, Technology, Regulation & Functioning

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Presentation/Assignment/Projects etc	ESE
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)**Program Outcomes**

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Programme Outcomes
CO1	Understand issues, opportunities & challenges in Smart grid	PO: 1,2,6,8,9,12,13
CO2	Develop skills required for smart grid planning & formulation of regulations.	PO: 3,2,5,10,12,7
CO3	Understand Power distribution sector framework in India and its comparison globally.	PO:5,8,9,13,1,2
CO4	Learn processes for execution and control of regulation in power distribution business in India.	PO: 2,6,9,11,1,4
CO5	Appreciate and evaluate the power sector in India for betterment i.e. recommendation for amendments if any	PO: 1,4,8,12,10,11,13


Course Outcomes	CO1	CO2	CO3	CO4	CO5
PO1	3	3	3	2	1
PO2	3	3	3	2	3
PO3	3	3	3	2	3
PO4	3	3	2	3	2
PO5	2	1	3	2	3
PO6	3	2	3	3	2
PO7	3	3	2	2	3
PO8	2	3	3	3	3
PSO 9	1	2	3	2	2
PSO 10	3	3	3	3	2

PSO 11	2	2	2	3	3
PSO 12	3	3	3	2	3
PSO 13	3	2	3	3	2

Course Code	Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO9	PSO10	PSO11	PSO12	PSO13
PIPM 7008	DISTRIBUTION AUTOMATION AND SMART GRID	3	2	3	2	3	3	3	2	2	3	3	3	3
			Students will be able to develop and evaluate alternate managerial choices and identify optimal solutions.	Students will demonstrate effective application capabilities of their conceptual understanding of power generation, transmission and distribution.	Students will be able to exhibit effective decision-making skills, employing analytical and critical thinking ability.	Students will demonstrate effective oral and written communication skills in the professional context.	Students will be able to work effectively in teams and demonstrate team-working capabilities.	Students will exhibit leadership and networking skills.	Students will demonstrate sensitivity towards ethical and moral issues and have ability to address them in the context of power management.	Students will demonstrate employability traits in line with the needs of changing dynamics of the power industry.	Students will demonstrate strong conceptual knowledge in fuel management, power generation, transmission, distribution, trading, energy management, financing and regulation, and sustainable development.	Students will demonstrate effective understanding of functioning of power sector.	Students will demonstrate analytical skills in identification and resolution of issues pertaining to fuel management, power generation, transmission, distribution, trading, energy management, financing and regulation, and sustainable development.	Students will exhibit the ability to integrate technical, economic, social and regulatory frameworks for power sector planning and resource management.
														Students will exhibit deployable skills pertinent to the power sector.

1=weakly mapped
2= moderately mapped
3=strongly mapped

Model Question Paper

Name: Enrolment No:			
Course: DISTRIBUTION AUTOMATION AND SMART GRID Programme: MBA PM Semester: Even Time: 03 hrs. Max. Marks:100			
Instructions: Section A (each carrying 2 marks); Attempt all questions from Section B (each carrying 5 marks). Any Two Questions from Section C (carrying 15 marks). Case Study Section D (30 Marks)			
Section A () Define the following			
1	Explain power system as per section 2 of the Electricity Act 2003.	[2]	CO1
2	What is the full form of RfP, NIT & RfQ?	[2]	CO5
3	Define open access and cross subsidy.	[2]	CO2
4	Explain “Distribution and supply” concept in Indian Power Sector?	[2]	CO2
5	What is current generation and transmission capacity in India?	[2]	CO3
6	What do you mean by Reactive power? How it is compensated?	[2]	CO1
7	Name power secretary of Govt. of India and state of Uttrakhand.	[2]	CO2
8	What is fuel charge component for a thermal plant?	[2]	CO4
9	Give full form of FSA and ATE.	[2]	CO4
10	What is ABT? Explain UI charge.	[2]	CO2
SECTION B (Attempt all Questions)			
11	What are changes made in the bidding-criteria of the UMPP recently? Name two new UMPP for which RfQ has been issued.	[5]	CO4
12	Explain salient features of the EC Act 2001.	[5]	CO2
13.	Describe power system with a neat diagram from generation to the consumer’s-end.	[5]	CO5
	What is World Bank’s prescription for power reforms in the developing countries?	[5]	CO1
SECTION C (Attempt any Two Questions)			
14.	Write in short amendments proposed in the Electricity Act 2003.	[15]	CO4
15.	Explain salient features of “Approach-paper for tariff 2014-19”.	[15]	CO4
16	What are main features of new Land-Acquisition Bill passed by parliament recently?	[15]	CO5
SECTION D (Case Study)			

	<p style="text-align: center;">Case Study</p> <p>Write in short 18 parts and 185 sections of the Electricity Act 2003</p>	[30]	CO3
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