Maharaja Agrasen Institute of Technology

(Approved by AICTE & Affiliated to GGSIP University, New Delhi)
PSP area, Plot No.-1 Sector-22, Rohini, New Delhi – 110085
Ph.No. : 011-27582095 , 65151162/63 , 65162001
Website: www.mait.ac.in

Department of Electrical & Electronics Engineering

EHV AC & HVDC Transmission (ETEE-405)

ACADEMIC PLAN FOR SEMESTER-VII 2022

S.No.	TOPICS TO BE COVERED	Total No. of Lectures (42)	CO
	UNIT-I (EHV AC Transmission System)		
1	Introduction to EHV AC Transmission Systems, Fundamental Design Aspects, and Power Carrying Capabilities of EHV AC Transmission Lines.	2	CO1
2	Analysis of EHV AC Transmission Lines: Nominal and Equivalent Circuits.	2	
3	Problems Related to Long Lines: Corona Loss, Audible Noise Generation, Characteristic Corona Pulses, RI Effect, and Ferro-Resonance.	2	
4	Principles of Half-Wave Transmission in EHV AC Systems.	2	
5	Review and Practical Applications of EHV AC Transmission Systems Concepts.	2	
	UNIT-II (Reactive Power Management in EHV AC System:)		
7	Introduction to Reactive Power Management in EHV AC Systems and Associated Problems.	2	CO2
8	Reactive Power Devices, Operation, and Control in EHV AC Systems, Series, and Shunt Compensation.	2	
9	Equipment and Scheme Details with Analysis in EHV AC Systems, Application of FACTS Technology.	2	
10	Characteristics and Generation of High Voltage in Extra High Voltage Testing.	3	
11	Measurement of High Voltage by Sphere Gaps and Potential Dividers in Extra High Voltage Testing.	2	
	After Mid Term		
	UNIT-III (HVDC Transmission)		
13	Introduction to HVDC and Comparison with EHV AC Systems.	2	CO3
14	Types of HVDC Schemes, Equipment, Ratings, and Construction.	2	
15	Power Converter Circuits in HVDC Systems and 12-Pulse Converters.	2	
16	Design Aspects and Characteristics of HVDC Systems.	2	
17	Simple Design Problems and Applications of HVDC Technology.	2	

UNIT-IV(System Control:)			
18	Introduction to Types of DC Link and Principles of DC Link Control.	2	CO4
19	Converter Control Characteristics, Firing Angle Control, and Current & Excitation Angle Control.	3	
20	Power Control, Starting and Stopping of DC Link Systems.	2	
21	Harmonic Filters in HVDC - Current and Voltage Filters, Different Filter Types.	2	
22	Fundamental Aspects of HVDC Circuit Breaking, Introduction to MTDC Systems - Types, Control, and Applications.	2	

Course Outcomes

CO.405.1	Understand the fundamental design aspects of EHVAC transmission lines and various problems related to it.
CO.405.2	Develop an in-depth knowledge of reactive power management in power system and its characteristics.
CO.405.3	Examine in the basics of HVDC systems and their comparison with EHVAC systems.
CO.405.4	Perceive the importance of system control and DC link control and classify the various types of filters.