National Institute of Technology Meghalaya

An Institute of National Importance

CURRICULUM

Programme	**Bachelor of Technology in Electrical and Electronics Engineering**	Year of Regulation	**2019 – 20**
Department	**Electrical Engineering**	Semester	**V**

Course Code	Course Name	Credit Structure				Marks Distribution			
		L	T	P	C	INT	MID	END	Total
EE 317	**EHVAC & HVDC Power Transmission**	**3**	**0**	**0**	**3**	**50**	**50**	**100**	**200**

Course Objectives		Course Outcomes		
	To understand the High Voltage power transmission system		CO1	**Able to understand the usage of EHVAC and HVDC transmission systems**
	To analyse the EHVAC power transmission system		CO2	**Able to analyse EHVAC transmission system**
	To analyse the HVDC power transmission system		CO3	**Able to analyse HVDC transmission system**
			CO4	**Able to design EHVAC & HVDC system**
			CO5	
			CO6	

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CO1	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**1**
2	CO2	**3**	**3**	**2**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**2**
3	CO3	**3**	**3**	**2**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**2**
4	CO4	**3**	**2**	**3**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**2**
5	CO5															
6	CO6															

SYLLABUS

No.	Content	Hours	COs
I	**Introduction** High Voltage power Transmission system, EHVAC Transmission, HVDC transmission, Interconnected networks.	**06**	**CO1**
II	**EHVAC Power Transmission System**	**10**	**CO1**

	Line and ground parameters, Corona, Radio interference, Real and reactive power flow, reactive power compensation, FACTS, short circuit level & real power transfer capacity; Power – frequency voltage control, Overvoltage and Insulation coordination		**CO2**
III	**HVDC Power Transmission System** HVDC converters, Control and its characteristics, Harmonics and its mitigation, Protection issues in HVDC system, Overvoltage and Insulation coordination.	**10**	**CO1** **CO3**
IV	**Design of EHVAC and HVDC** Design of Transmission line, tower, insulator and substation, power cables; Design based on steady state limits and transient over voltages.	**10**	**CO2** **CO3** **CO4**
Total Hours		**36**	

Essential Readings

1. S. Rao, 'EHV-AC, HVDC Transmission and Distribution Engineering', Khanna Publishers, 3rd Edition, 2012.
2. S. K. Sharma, "EHV-AC, HVDC Transmission and Distribution Engineering", S. K. Kataria & Sons, 2nd Edition, 2016

Supplementary Readings

1. Rakosh Das Begamudre, 'Extra High Voltage AC Transmission Engineering', New Age International Publishers, 3rd Edition, 2009.
2. Padiyar K.R., 'HVDC Transmission Systems', New Age International Publishers, 2nd Revised Edition, 2012.
3. S. Kamakshaiah & V. Kamaraju, "HVDC Transmission", McGraw Hill Education, 1st edition, 12th reprint, 2018.