	National Institute of Technology Meghalaya An Institute of National Importance	**CURRICULUM**

Programme	**Bachelor of Technology in Electrical and Electronics Engineering**	Year of Regulation	**2019-2020**
Department	**Electrical Engineering**	Semester	**IV**

Course Code	Course Name	Credit Structure				Marks Distribution			
		L	T	P	C	INT	MID	END	Total
EE 272	**Electrical Technology**	**2**	**0**	**0**	**2**	**50**	**50**	**100**	**200**

Course Objectives	**To know electrical system and its different components**	Course Outcomes	CO1	**Ability to understand the concepts of electric power, load, voltage levels and different components of electrical system.**
	To develop skills to solve problems related to electrical systems and its components.		CO2	**Knowledge of different types of electric power generation and distribution systems. Ability to understand and solve problems related to power factor correction and electric power tariff**
	To have an overview of renewable sources, applications of power electronics, electric drives and traction.		CO3	**Understand the operation of DC machines, induction machines, synchronous machines and transformers with circuit diagrams and requisite equations. Understand the losses and calculate their efficiency. Ability to apply them to solve numerical problems.**
			CO4	**Knowledge of renewable energy, HVDC transmission systems and applications of inverters and converters in electrical systems. Familiarisation with electric drives and traction systems.**
			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**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**3**	**1**	**0**
2	CO2	**3**	**3**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**
3	CO3	**3**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**3**	**0**
4	CO4	**2**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**
5	CO5															
6	CO6															

SYLLABUS

No.	Content	Hours	COs
I	**Introduction to electrical system**: Concept of electrical power and energy; Voltage profile: AC & DC; Voltage level: Generation, transmission and distribution; Types of electrical load; Components of electrical system.	**02**	**CO1**
II	**Electrical Power System:** Generation of Electrical Power, Types of Conventional Power generation plants; Transmission and Distribution system, Single phase & Three phase system; Power factor correction; Electric Power Tariff System.	**07**	**CO2**
III	**Electrical Machines:** DC machine, Induction machine, Synchronous machine: Motor & generator principle, construction and types, principle of operation, equivalent circuit, EMF and torque equation, Losses and efficiency. Transformer: Construction and types, equivalent circuits, principle of operation, losses and efficiency, Voltage regulation. Applications of electrical machine.	**12**	**CO3**
IV	**Advances in Electrical Systems:** Non-conventional source of energy: Solar, Wind, Tidal, Geothermal; HVDC transmission system; Applications of inverters and converters; Concept of electrical drives and traction system.	**03**	**CO4**
Total Hours		**24**	

Essential Readings

1. D. P. Kothari and I.J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 3rd Edition, 2009.
2. B.L. Theraja & A.K. Theraja, "A Textbook of Electrical Technology – Vol. III", S. Chand & Co. Ltd., 23rd Edition, 2005
3. V.K. Mehta & Rohit Mehta, "Principles of Power System", S. Chand & Co. Ltd., 3rd Edition, 2005.
4. N.K. Bansal, M. Kleeman & M. Meliss, "Renewable energy sources and conversion Technology" Tata McGraw Hill, 1990
5. C.L. Wadhwa, "Generation, Distribution and Utilisation of Electrical Energy", New Age International Ltd., 3rd Edition, 2015