	National Institute of Technology Meghalaya An Institute of National Importance	CURRICULUM
Programme	**Bachelor of Technology**	Year of Regulation: **2018**
Department	**Electrical Engineering**	Semester: **I/II**

Course Code	Course Name	Credit Structure				Marks Distribution			
		L	T	P	C	INT	MID	END	Total
EE 101	**Basic Electrical Engineering**	**2**	**0**	**0**	**2**	**50**	**50**	**100**	**200**

Course Objectives		Course Outcomes		
	To understand basic circuit theorems and laws		CO1	Acquire knowledge of circuit theorems, understand and apply circuit theorems to DC circuits
			CO2	Understand the laws of electricity and magnetism and apply them in simple circuits
			CO3	Analyze single phase AC circuits for voltage and circuit and calculate complex power
	To develop the skills to analyze the basic DC/AC system		CO4	Understand polyphase systems and solve problems of simple polyphase system
			CO5	Acquire knowledge of different types of electric machines and measurement instruments

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**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
2	CO2	**3**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
3	CO3	**3**	**2**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
4	CO4	**3**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
5	CO5	**3**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
6	CO6	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			

SYLLABUS

No.	Content	Hours	COs
I	**Analysis of DC circuits** Mesh, node, branch, Ohm's law, series and parallel circuit, basic devices: resistors, capacitors, inductors, dependent and independent sources, Kirchhoff's Laws, Mesh and Node Analysis, Star-Delta conversion, Superposition theorem, Source conversion, Thevenin theorem, Norton theorem, Maximum power transfer theorem	**06**	**CO1**
II	**Electromagnetic Induction & Magnetic Circuit** Magnetic field, Right hand rule, Left hand rule, Electromechanical laws, relation between electricity and magnetism, production of emfs (ac & dc), Faraday's law of electromagnetic induction, direction of induced emf, Lenz law, dynamically and statically induced emfs, self-inductances, and mutual inductances, coefficient of coupling, Inductance in series and parallel, energy stored in a magnetic field.	**06**	**CO2**
III	**A.C Fundamentals and R.L.C circuits** Phasors, Complex quantities, Application of complex algebra to A.C circuit, series and parallel RL, RC, RLC circuit, concept of impedance triangle, complex power: active, reactive and apparent power, power triangle, admittance triangle, series-parallel circuit.	**05**	**CO3**
IV	**Polyphase Networks** Balanced two phase and three phase systems, Balanced Star-Delta connections, phase and line currents and voltages and their relations, Measurement of three phase power	**04**	**CO4**
V	**Measuring Instruments** MC, MI and DM type instruments, energy meter. **Elementary Overview of Electrical Machines:** Principle, Construction and Types of different rotating electrical machines, transformers.	**03**	**CO5**
	Total Hours	**24**	

Essential Readings

1.A. Hussain, Fundamental of Electrical Engineering, Dhanpat Rai & Co. Ltd., 3rd edition, 2007.

2. V.N Mittle, Basic Electrical Engineering, Tata McGraw Hill, 2nd edition 2017.

3 A. Chakroborty, S. Nath and C.K. Chanda, "Basic Electrical Engineering", McGraw Hill Education Pvt. Ltd., 1st Edition, 2009.

4. M.S. Sukhija and T.K. Nagsarkar, "Basic Electrical and Electronics Engineering", Oxford University Press, 1st Edition, 2014.

Supplementary Readings

1. H. Cotton, "Electrical Technology", Pitman Publication, 7th edition 2005.

2. Hughes, "Electrical Technology", Longman, 10th edition 2010.

3. John Bird, Electrical Circuit Theory and Technology, Routledge, Taylor & Francis Group, 4th edition 2010.

4. W.H. Hayt, J.E. Kemmerley, Engineering circuit analysis, Int. St. Ed. McGraw Hill, 8th edition 2013.