



# MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

Deemed to be University

(Declared under Distinct Category by Ministry of Education, Government of India)

NAAC ACCREDITED WITH A++ GRADE

## Multiple Mode Teaching Learning Pattern

Name of Course with Code: Basic Electrical & Electronics Engineering (20251105)			Class: B. Tech. I Year (ET)	Session: July – December 2025
S. No.	Unit	Content to be Covered	Teaching Session	Mode
1.	Unit 1	Motivation for Introduction to D.C. circuits analysis	1	Offline & Open discussions
2.		Introduction to Voltage and Current sources	2	Offline & activity based learning
3.		Dependent and independent source, Source conversion	3	Offline & Open discussions
4.		Kirchhoff's Law, Numerical based on KVL, KCL	4-5	Offline & Experiment with problem solving in group based learning
5.		Network theorems: Superposition theorem,	6	Offline & demonstration based learning
6.		Thevenin's theorem & Norton's theorem and their applications.	7	Offline & Open discussions
7.	Unit 2	Introduction to Single-phase AC Circuits	8	Offline & Open discussions
8.		Generation of sinusoidal AC voltage	9	Offline & Open discussions
9.		Average value, R.M.S. value, Form factor and Peak factor of AC quantity	10	Offline & problem solving based learning
10.		Concept of Phasor	11	Offline & problem solving based learning
11.		Analysis of R-L, R-C, R-L-C Series circuit,	12,13	Offline & problem solving based learning
12.		Analysis of R-L, R-C, R-L-C Parallel circuit,	14	Offline & problem solving based learning
13.		Power and importance of Power factor, Resonance in AC circuits.	15,16	Offline & Open discussions
14.	Unit 3	Magnetic Circuits and Electromagnetism, Transformers:	17	Offline & Open discussions
15.		Construction, principle, types, losses & efficiency,	18	Offline & Open discussions
16.		OC & SC test DC Machines	19	Offline & Open discussions
17.		Motor and Generator working Principles, Characteristics,	20	Offline & demonstration based learning
18.		Introduction to Induction Motors and Synchronous Machines.	21-22	Offline & Open discussions

19.	Unit 4	Introduction to Digital Electronics, Devices & Circuits	23	Offline & Open discussions
20.		Number Systems,	24	Offline & problem solving based learning
21.		Logic Gates and Truth Tables, Diodes,	25-26	Offline & Experiment with problem solving in group and Project based learning
22.		Transistors (BJT, FET, MOSFET),	27	Offline & Open discussions
23.		Multiplexers, De-multiplexers,	28	Offline & demonstration based learning
24.		Flip-Flops, Counters.	29	Offline & demonstration based learning
25.	Unit 5	Overview of Emerging Trends and Applications	30	Offline & Open discussions
26.		Smart Grids and Smart Meters	31	Offline & activity based learning
27.		Application of Motors in Industrial Automation	32	Online & Open discussions
28.		Electric Vehicles and Renewable Systems	33	Offline & Open discussions
29.		Sensors	34	Offline & activity based learning
30.		Basic IoT Applications	35	Offline & Onsite/field based learning
31.		Summary & Discussion	36	Offline & Open discussions

Online	Offline						
	Black Board Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experimentation	Activity based Learning	Onsite/field based learning
2.78%	41.66.87%	11.11%	2.78%	11.11%	11.11%	22.22%	2.78%



D. K. Parsediya