

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR (M.P.)
A Govt. Added UGC Autonomous and NAAC Accredited Institute, Affiliated to R.G.P.V, Bhopal

DEPARTMENT OF ELECTRONICS ENGINEERING

Multiple Mode Teaching Learning Pattern

Name of Course with Code: Engineering Materials (140212)		Class: B. Tech. I Year	Session: Jan-June 2023	
S. No.	Unit	Content to be Covered	Teaching Session	Mode
1.	Unit 1	Classification of Engineering Materials	1	Offline & Open discussions
2.		Crystal Structure of The Material	2	Offline & activity based learning
3.		Levels of materials	3	Offline & Open discussions
4.		Structure-Property Relationships in Materials	4	Offline & Experiment with problem solving in group based learning
5.	Unit 2	Conducting, Dielectric & Insulating materials	5-6	Offline & problem solving based learning
6.		Conducting Material-	7-8	Offline & problem solving based learning
7.		Properties of Conductors	9	Offline & problem solving based learning
8.		Characteristics of Good Conductor Material	10	Online & demonstration based learning
9.		Definition and classification of Dielectric and insulating material.	11	Offline & problem solving based learning
10.		Superconductor	12	Offline & problem solving based learning
11.	Unit 3	Semiconductors	13	Offline & Experiment with problem solving in group based learning
12.		Introduction to Semi-Conductors and their Properties	14	Offline & Experiment with problem solving in group based learning
13.		Effect of Temperature on Semiconductors	15	Online & demonstration based learning
14.		Mechanism of Conduction in Electrons and Holes	16	Online & demonstration based learning
15.		Carrier Generation & Recombination	17-18	Online & demonstration based learning.
16.		Intrinsic Semiconductors & its Atomic Model	19	Offline & Demonstration based.

17.		Extrinsic Semiconductor Material & its Atomic Model	20-21	Offline & Experiment with problem solving in group based learning.
18.		Type of Impurity	22	Offline & Demonstration based.
19.		Pentavalent and Trivalent Impurities	23	Offline & Demonstration based.
20.		Majority & Minority Charge Carriers	24	Offline & Demonstration based.
21.		Mobile Charge Carrier & Immobile Ions.	25	Offline & Demonstration based.
22.		Mass-Action Law	26	Offline & Demonstration based.
23.		Unit 4	Atomic Structure	27
24.	Bohr's Theory of Hydrogen Atom		28	Online & demonstration based learning
25.	Excitation and Ionization of Atoms		29	Offline & Onsite/Field based learning
26.	Valence Band. Conduction Band and Forbidden Energy Gap		30	Online & demonstration based learning
27.	Energy Band for Insulators,		31	Offline & activity based learning
28.	Semiconductors and Conductors,		32	Online & demonstration based learning
29.	Fermi Dirac Distribution Function.		33	Online & demonstration based learning
30.	Fermi Level in Intrinsic and Extrinsic Semiconductors.		34	Online & demonstration based learning
31.	Energy Band Gap		35	Offline & activity based learning
32.	Review of Unit-IV		36	Online & demonstration based learning
33.	Unit 5		Introduction of Nanomaterials.	37
34.		Classification of Nanomaterial.	38	Offline & blackboard teaching
35.		Electrical, Optical, Mechanical & Magnetic Properties.	39	Online & demonstration based learning
36.		Methods for Creating Nanostructures	40	Offline & Experiment with problem solving in group based learning
37.		Applications & Advantages.	41	Offline & based on project
38.		Review of Unit-V	42	Online & demonstration based learning

Online	Offline
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	Black Board Teaching	Group based Learning	Learning through projects	Learning through demonstration	Learning through experimentation	Activity based Learning	Onsite/field based learning
28.57	4.76	14.28	2.38	16.66	11.90	7.14	2.38



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