

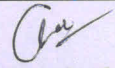
Lesson Plan


Subject: Physical Metallurgy (TH-2)

Name of faculty:


Semester: 4TH Class allotted: 5p/week Branch: METALLURGY Session: 2025(S)


Discipline	Semester	From date:	To date:	Teaching Aid
Subject:	No of days/per week	Theory/Practical–Topics/Lesson		
Week	Date/Period			
1	04/02/2025 TO 08/02/2025	Crystal Structure of metals : Define crystal and crystallography Define space lattice and unit cell Compare different types of crystal lattices, bravis lattices and primitive lattices. Define with sketch B.C.C., F.C.C & H.C.P.		White Board Marker Smart board
2	10/02/2025 TO 15/02/2025	Define Miller indices, planes and directions Define isotropy and anisotropy in metallic materials Define imperfections in metallic materials Differentiate between types of imperfections : point defect, line defect, surface defect and volume defect (elementary idea)		White Board Marker Smart board
3	17/02/2025 TO 22/02/2025	2.Solidification of pure metals & alloys Define alloys and solid solution Define solidification and crystallization Explain role of free energy thermodynamic potential in conversion of liquid to solid		White Board Marker Smart board
4	24/02/2025 TO 01/03/2025	Define super cooling, under cooling, degree of super cooling Explain mechanism of solidification/ crystallization, nucleation, critical size nucleus, spontaneous nucleation, relation between ration of nucleation and grain growth. Discuss shape of crystals and solidification of ingot .		White Board Marker Smart board


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Week	Date/Period	Theory/Practical–Topics/Lesson	Teaching Aid
5	03/03/2025 TO 08/03/2025	3. Equilibrium Diagram Define equilibrium diagram Discuss the importance of equilibrium diagram Draw equilibrium diagram of binary alloys State types of equilibrium diagram	White Board Marker Smart board
6	01/03/2025 TO 15/03/2025	Explain isomorphous equilibrium diagram with examples Explain eutectic type and eutectoid equilibrium diagram with example Explain peritectic type and peritectoid equilibrium diagram with example	White Board Marker Smart board
7	17/03/2025 TO 22/03/2025	Define phase rule, lever rule . Apply phase rule, and lever rule in each equilibrium diagram. Draw iron carbon equilibrium diagram and describe different phases and micro constituent in iron carbon diagram	Marker White Board
8	24/03/2025 TO 29/03/2025	Discuss role of carbon with iron to differentiate steel and cast iron Apply lever rule in iron and carbon diagram Differentiate between iron-carbon, iron-cementite, and iron-graphite diagram	White Board Marker Smart board
9	31/03/2025 TO 05/04/2025	4. Solid solution : Define solution, alloying Explain different types of solid solution	White Board Marker Smart board
10	07/04/2025 TO 12/04/2025	Differentiate between substitutional and interstitial solid solution, chemical compound, mechanical mixture and intermetallic compounds. Differentiate between ordered and disordered solid solution	Marker White Board Smart board
11	14/04/2025 TO 19/04/2025	Define Hume Rothery rule and describe the different factors governing the formation of solid solutions 5. Cast iron : Define cast iron, differentiate between steel and cast iron, alloy steel and alloy cast iron.	White Board Marker Smart board
12	21/04/2025 to 26/04/2025	Discuss different types of cast iron with their composition	Marker White Board Smart board


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13.	28/04/2025 TO 03/05/2025	Define graphitization and role of graphitization in cast iron	White Board Marker Smart board
14	05/05/2025 TO 10/05/2025	Draw structures of cast iron 6. Metallurgical Microscope : Differentiate between metallurgical microscope & biological microscope Describe different types of metallurgical microscope	White Board Marker Smart board
15	12/05/2025 TO 17/05/2025	State working principle of metallurgical microscope Define magnifying power & resolving power, spherical and chromatic aberration. Explain with sketch principle of electron microscope Prepare a sample for study of microstructures e.g. sampling, cutting, grinding, rough polishing, intermediate polishing, fine polishing and etching	White Board Marker smart Board



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