PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH

LESSON PLAN

Session-2024-2025

Semester: 4th Discipline: Metallurgical Engg.

Subject: PM (TH-2)

Name of the Teaching Faculty: Dr. Saikh Asad Hussain

Subject: PM No. of Days/per week class allotted : 04

Semester From Date : 04.02.2025 To Date: 28.02.2025 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
1st Topic-1	1st	Define crystal and crystallography
	2nd	Explain space lattice and unit cell
	3rd	Different crystal lattices
	4th	Sketch of BCC, FCC, HCP Structures
2nd	1st	Miller indices, planes and directions
	2nd	Isotropy and anisotropy properties
	3rd	Imperfections of metallic meterials
	4th	Different types of defects or imperfections
3rd Topic-2	1st	Definition of Solid Solution and alloys
	2nd	Define Solidification of metals
	3rd	Crystallisation of materials
	4th	Role of free energy in Liquid-Solid conversion

Signature of the Faculty

Subject: PM No. of Days/per week class allotted : 04

Semester From Date : 21.02.2025 To Date: 08.03.2025 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
4th	1st	Define Super cooling, undercooling
	2nd	Degree of Supercooling
	3rd	Mechanism of Solidification
	4th	Nucleation and grain growth
5th	1st	Types of nucleation, Critical size of nucleus.
Topic-3	2nd	Explanation of equilibrium diagram
	3rd	Importance of equilibrium diagram
	4th	Equilibrium diagram of binary alloys
6th	1st	Types of equilibrium diagram
	2nd	Isomorphous equilibrium diagram
	3rd	Eutectic type equilibrium diagrams
	4th	Eutectoid type equilibrium diagrams

Signature of the Faculty

Subject: PM No. of Days/per week class allotted : 04

Semester From Date : 10.03.2025 To Date: 29.03.2025 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
7th	1st	Peritectic type equilibrium diagrams
	2nd	Peritetoid equilibrium diagrams
	3rd	phase rule / Lever Rule
	4th	Applications of phase rule in equilibrium diagrams
8th	1st	Iron-Carbon equilibrium diagrams
	2nd	Different phases and Micro constituents
	3rd	Role of carbon in Iron and Steel
	4th	Lever rule to Iron-Carbon equilibrium diagram
9th	1st	Differen between iron-carbon, iron-cement and iron-graphite diagrams
Topic-4	2nd	Define Solid Solution
	3rd	Types of Solid Solution
	4th	Alloying purposes, Types of alloys.

Signature of the Faculty

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Semester From Date : 02.04.2025 To Date: 19.04.2025 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
10th	1st	Different types of Solid Solution
	2nd	Seebstitutional Solid Solution
	3rd	Interstitial Solid solution
	4th	chemical Compounds
11th	1st	Intermetallic Compounds, properties
	2nd	ordered Solid Solution
	3rd	Disordered Solid Solution
	4th	Hume Rothery Rule
12th	1st	Factors governing th formation of Solid Solution
Topic-5	2nd	Define cast iron, Types of cast iron
	3rd	Differentiate between steel and cast iron
	4th	Differentiate between alloy steel and alloy cast iron

Signature of the Faculty

Subject: PM No. of Days/per week class allotted : 04

Semester From Date : 21.04.2025 To Date: 10.05.2025 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
13th	1st	Types of cast iron with compositions
	2nd	Graphitisation in cast iron
	3rd	Draw the Structures of cast iron
Topic-6	4th	Metallurgical and biological Microscopes
14th	1st	Differentiate between the two
	2nd	Principles of Metallurgical Microscopes
	3rd	Types of Metallurgical Microscopes
	4th	Working principle with figures
15th	1st	Define Magnifying and resolving powers
	2nd	Define spherical and Chromatic abBreaction
	3rd	Electron Microscopy
	4th	Sample preparation for Metallurgy - Graphic study

Signature of the Faculty