LESSON PLAN FOR ACADEMIC SESSION: 2025-26 (WINTER)

Discipline: Metallurgical Engineering	**Semester : 5th**	**Name of the Teaching Faculty : Amarjit Mohanta**
Subject : Mineral Processing	No. of days / week class allotted	Semester From : 15/07/2025 to 15/11/2025 Nos. of Weeks per semester : 15
Week	**Class Day**	**Theory Topics**
1ST	1st	Definition and importance , Role in the metallurgy industry ,Various mineral resources of India
	2nd	Mineral and Ore
	3rd	Types of Ores Metallic ores (e.g., iron, copper, gold) ,Non-metallic ores (e.g., limestone, phosphate)
2ND	1st	Scope and objective of Ore dressing
	2nd	Different physical and chemical property of ore with their application to mineral dressing
	3rd	Importance of Comminution in mineral processing
3RD	1st	Importance of Comminution in mineral processing
	2nd	Mechanisms of size reduction
	3rd	Mechanisms of size reduction
4TH	1st	Blake jaw Crusher
	2nd	Blake jaw Crusher
	3rd	Dodge jaw Crusher
5TH	1st	Dodge jaw Crusher
	2nd	Roll crusher
	3rd	angle of Nip ,capacity and reduction ratio of crusher
6TH	1st	angle of Nip ,capacity and reduction ratio of crusher
	2nd	Laws of Crushing
	3rd	Ball mill operation
7TH	1st	Open circuit grinding
	2nd	Close circuit grinding
	3rd	Sizing & Concentration Methods

8TH	1st	Ro-tap Sieve Shaker Particle size analysis
	2nd	Basic fundamentals & principle of jigging
	3rd	operations and application of wilfley table
9TH	1st	principle of heavy media separations
	2nd	industrial process using heavy liquid
	3rd	Du - Pont process
10TH	1st	Chance process
	2nd	Principle of froth flotation
	3rd	practical utility of frother
11TH	1st	collector
	2nd	modifier
	3rd	activators
12th	1st	depressant without physic – chemical Principle
	2nd	Magnetic Separator
	3rd	Electrostatic Separator
13th	1st	Two Drum Ball-Norton Wet magnetic separator
	2nd	High Tension or Huff's Electrostatic separation
	3rd	Class Test
14th	1st	Revision
	2nd	Advanced Comminution Techniques: High-Pressure Grinding Rolls (HPGR), Ultra-Fine Grinding (UFG)
	3rd	Microwave-Assisted Comminution, Advanced Gravity Separation Techniques: Multi-Gravity Separator (MGS)
15th	1st	Advanced Flotation Techniques: Microbubble & Nanobubble Flotation, Magnetic & Electrostatic Separation

	2nd	High-Intensity Magnetic Separation (HIMS) Sustainable & Eco-Friendly Mineral Processing: Dry Beneficiation Technique, Zero-Waste Processing
	3rd	Revision

Amar 12/09/25

Prepared by
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