

DEPARTMENT OF MINING ENGINEERING

LESSION PLAN

Name of the Teaching Faculty: PARTHA SARATHY DASH

Discipline: MINING	SEMESTER: 3 RD	
Subject: SURFACE MINING TECHNOLOGY	No. of Days/ week class allotted: 3	Semester from date: 01.07.2026 to Date- 05.11.2026 No of weeks- 15
Week	Class Day	Topics
1st	1st	Choice of Opencast Mining: Define mine, mining, mineral, ore, tenor.
	2nd	Classify Surface mining.
	3rd	State factors affecting choice of Opencast mining method.
2nd	1st	Define Stripping ratio & its classification.
	2nd	Factors affecting Stripping ratio. Define Quarriable limit.
	3rd	State favorable conditions for mechanized opencast mines.
3rd	1st	State advantages & disadvantages surface mining.
	2nd	Define Box cut & its type.
	3rd	Determine the location of Box cut.
4th	1st	Benching: Determine bench parameters.
	2nd	1st INTERNAL ASSESSMENT
	3rd	Objectives of benching in opencast mining.
5th	1st	Factors affecting height, width of bench.
	2nd	Slope stability: Define slope stability.
	3rd	Factors affecting slope stability.
6th	1st	Types of Slope failure.
	2nd	Causes and prevention of Slope failure.
	3rd	
7th	1st	Explosive & Blasting accessories: Define Explosive, its constituents.
	2nd	Properties & Characteristics of Explosive, its classification, its compositions & uses.
	3rd	Explain PMS & SMS. Define Permitted Explosive & its classification.
8th	1st	Explain sheathed & equivalent sheathed & ultra-safe explosive.
	2nd	State properties of Permitted Explosive. State composition & constructional features of safety fuse, detonating fuse, detonating relay, igniter cord, nonel & raydet.
	3rd	Describe different types of detonators & their uses.
9th	1st	State advantages of delay detonators.
	2nd	State different types of Exploder, its construction & safety features.
	3rd	Describe circuit tester stemming rod, crack detector knife, crimper
10th	1st	Drilling: Different types of Drilling used in surface mining. Explain different principles & methods of exploratory drilling in surface mining.
	2nd	State different types of drill machines used in opencast mining.
	3rd	Describe simple constructional features of churn drill, drill master, wagon drill & jack hammer
11th	1st	State DTH
	2nd	Describe different types of drill bits used in mines.
	3rd	Blasting Practices in Mines: Define conventional Blasting.

12th	1st	Describe preparation of charge. State procedure of firing shots.
	2nd	Direct & inverse initiation, stemming materials, water ampoules.
	3rd	State & describe plaster shooting, pop shooting, toe blasting.
13th	1st	Controlled Blasting Techniques as per statutory provision: State & describe pre splitting,
	2nd	cushion blasting,
	3rd	muffle blasting, coyote hole blasting,
14th	1st	chambered hole blasting
	2nd	Directional blasting
	3rd	Electronic Blasting system.
15th	1st	Magazines: Describe layout & arrangement types of magazines.
	2nd	2nd INTERNAL ASSESSMENT
	3rd	State their safety features.

Partha Sarathy Dash
 1.7.26
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 SENIOR LECTURER