IIPM SCHOOL OF ENGINEERIN AND TECHNOLOOGY

LESSON PLAN: 2023-24

SUB : **MINING MACHINERY-II (TH-1)**

Faculty name : **Deeptikant Sharma**

Branch : **Mining Engineering**

Semester : **6th**

Duration : **60 hours**

OBJECTIVE

Mining Machinery is a core course for undergraduate program in Mining Engineering. This course deals with the basic construction, operation and maintenance aspects of machines used in mining and quarrying industry so that a graduate mining engineer can select the right equipment for specific job under defined geo-mining conditions and provide feed-back for design, application and upkeep of the machines. This course briefly reviews the fundamentals of machinery and covers machinery used in mining for preparing work-site by leveling, grading and compacting ground, for preparing roads, removal of over burden and transporting it to the dumping sites, preparing ground for mineral production, transporting the same to the processing sites. It also covers machines for under underground mining and evacuation of bulk materials with brief introduction of maintenance management aspects.

LEARNING OUTCOME: -

SL.NO	CHAPTER	PROPOSED WEEK FOR TEACHING	LECTURE NO.	SUB. TOPIC	IMPORTANT TEACHING POINTS	CONTENT SOURCE
1	I.	I	1	UNDERGROUND FACE MACHINERIES	UNDERGROUND FACE MACHINERIES. ELECTRIC COAL DRILL.	INTERNET & PERSONAL NOTES
2			2	UNDERGROUND FACE MACHINERIES	STATE TYPES OF DRILL ROODS & DRILL BITS USED IN ELECTRIC COAL DRILL. DRILLROD	INTERNET & PERSONAL NOTES
3			3	UNDERGROUND FACE MACHINERIES	DRILL BIT :	INTERNET & PERSONAL NOTES
4			4	UNDERGROUND FACE MACHINERIES	DRILL BIT :	INTERNET & PERSONAL NOTES
5	II.		1	UNDERGROUND FACE MACHINERIES	SCRAPER LOADER:	INTERNET & PERSONAL NOTES
6			2	UNDERGROUND FACE MACHINERIES	SIDE DISCHARGE LOADER::	INTERNET & PERSONAL

						NOTES
7			3	UNDERGROUND FACE MACHINERIES	APPLICABILITY: ADVANTAGES: DISADVANTAGES:	INTERNET & PERSONAL NOTES
8			4	UNDERGROUND FACE MACHINERIES	LOAD & HAUL LOADER:	INTERNET & PERSONAL NOTES
9	III.		1	UNDERGROUND FACE MACHINERIES	APPLICABILITY: DESCRIBE BASIC CONSTRUCTIONAL FEATURES & OPERATION PRINCIPLE OF JACK HAMMER DRILL & AIR LEG DRILL. JACK HAMMER	INTERNET & PERSONAL NOTES
10			2	UNDERGROUND FACE MACHINERIES	DRILL: AIR LEG DRILL:	INTERNET & PERSONAL NOTES
11			3	UNDERGROUND FACE MACHINERIES	DRILL: AIR LEG DRILL:	INTERNET & PERSONAL NOTES
12			4	UNDERGROUND FACE MACHINERIES	AIR LEG DRILL:	INTERNET & PERSONAL NOTES
13	IV.		1	UNDERGROUND FACE MACHINERIES	DESCRIBE BASIC CONSTRUCTIONAL FEATURES & OPERATION PRINCIPLE OF ROAD HEADER & SHEARER	INTERNET & PERSONAL NOTES
14		I &II	2	UNDERGROUND FACE MACHINERIES	LOADER. ROAD HEADER:	INTERNET & PERSONAL NOTES
15			3	UNDERGROUND FACE MACHINERIES	SHEARER LOADER:	INTERNET & PERSONAL NOTES
16			4	OPENCAST MACHINERIES	DESCRIBE BASIC CONSTRUCTIONAL FEATURES OF SURFACE MINER, DRAGLINE, SHOVEL & BACKHOE, BUCKET WHEEL EXCAVATOR. SURFACE MINER	INTERNET & PERSONAL NOTES
17	V.		1	OPENCAST MACHINERIES	APPLICATION: ADVANTAGES OF SURFACE MINER DISADVANTAGES OF SURFACE MINER	INTERNET & PERSONAL NOTES
18		II	2	OPENCAST MACHINERIES	DRAGLINE:	INTERNET & PERSONAL NOTES
19			3	OPENCAST MACHINERIES	SYSTEM OF WORKING LOADING CAPACITY	INTERNET & PERSONAL NOTES
20			4	OPENCAST MACHINERIES	APPLICABILITY CONDITION ADVANTAGES OF DRAGLINE DISADVANTAGE OF DRAGLINE	INTERNET & PERSONAL NOTES
21	VI.		1	OPENCAST MACHINERIES	SHOVEL:	INTERNET & PERSONAL NOTES
22			2	OPENCAST MACHINERIES	BACKHOE:	INTERNET & PERSONAL NOTES
23			3	OPENCAST MACHINERIES	BUCKET WHEEL EXCAVATOR OPERATION	INTERNET & PERSONAL

						NOTES
24		II	4	OPENCAST MACHINERIES	DESCRIBE BASIC CONSTRUCTION FEATURES OF DUMPER, DOZER, SCRAPER & ROAD GRADER. DUMPER:	INTERNET & PERSONAL NOTES
25	VII.		1	OPENCAST MACHINERIES	THE POWER ENGINE THE DRIVE SYSTEM HYDRO STATIC DRIVE	INTERNET & PERSONAL NOTES
26			2	OPENCAST MACHINERIES	SUSPENSION UNIT: :	INTERNET & PERSONAL NOTES
27			3	OPENCAST MACHINERIES	HYDRAULIC SYSTEM:	INTERNET & PERSONAL NOTES
28			4	OPENCAST MACHINERIES	BODY: TYRES: ROAD GRADER	INTERNET & PERSONAL NOTES
29	VIII.	II&III	1	OPENCAST MACHINERIES	DOZER: SCRAPER:	INTERNET & PERSONAL NOTES
30			2	OPENCAST MACHINERIES	DOZER: SCRAPER:	INTERNET & PERSONAL NOTES
31			3	MINE PUMPS.	CLASSIFY MINE PUMPS. ○ DESCRIBE CONSTRUCTIONAL FEATURES, WORKING & USE OF RAM PUMPS.	INTERNET & PERSONAL NOTES
32			4	MINE PUMPS.	CLASSIFY MINE PUMPS. DESCRIBE CONSTRUCTIONAL FEATURES, WORKING & USE OF RAM PUMPS.	INTERNET & PERSONAL NOTES
33	IX.	III	1	MINE PUMPS.	CENTRIFUGAL & TURBINE PUMPS. DESCRIBE CONSTRUCTIONAL FEATURES OF CENTRIFUGAL & TURBINE PUMPS.	INTERNET & PERSONAL NOTES
34			2	MINE PUMPS.	CENTRIFUGAL & TURBINE PUMPS. DESCRIBE CONSTRUCTIONAL FEATURES OF CENTRIFUGAL & TURBINE PUMPS.	INTERNET & PERSONAL NOTES
35			3	MINE PUMPS.	CENTRIFUGAL & TURBINE PUMPS. ○ DESCRIBE CONSTRUCTIONAL	INTERNET & PERSONAL NOTES

					FEATURES OF CENTRIFUGAL & TURBINE PUMPS.	
36			4	MINE PUMPS.	STATE PRINCIPLE OF CENTRIFUGAL & TURBINE PUMPS & ITS APPLICABILITY.	INTERNET & PERSONAL NOTES
37	X.		1	MINE PUMPS.	STATE PRINCIPLE OF CENTRIFUGAL & TURBINE PUMPS & ITS APPLICABILITY.	INTERNET & PERSONAL NOTES
38			2	MINE PUMPS.	EXPLAIN BALANCING THE AXIAL THRUST OF TURBINE PUMPS.	INTERNET & PERSONAL NOTES
39			3	MINE PUMPS.	EXPLAIN BALANCING THE AXIAL THRUST OF TURBINE PUMPS.	INTERNET & PERSONAL NOTES
40			4	MINE PUMPS.	DRAW CHARACTERISTIC CURVES FOR TURBINE PUMPS.	INTERNET & PERSONAL NOTES
41	XI.		1	MINE PUMPS.	DRAW CHARACTERISTIC CURVES FOR TURBINE PUMPS.	INTERNET & PERSONAL NOTES
42			2	MINE PUMPS.	SOLVE NUMERICAL PROBLEMS ON CENTRIFUGAL & TURBINE PUMPS	INTERNET & PERSONAL NOTES
43			3	MINE PUMPS.	SOLVE NUMERICAL PROBLEMS ON CENTRIFUGAL & TURBINE PUMPS	INTERNET & PERSONAL NOTES
44			4	MINE PUMPS.	DESCRIBE CONSTRUCTIONAL FEATURES AND WORKING PRINCIPLE & USE OF ROTO PUMP (SCREW PUMP)	INTERNET & PERSONAL NOTES
45	XII.		1	MINE PUMPS.	DESCRIBE CONSTRUCTIONAL FEATURES AND WORKING PRINCIPLE & USE OF ROTO PUMP (SCREW PUMP)	INTERNET & PERSONAL NOTES
46			2	MINE PUMPS.	DESCRIBE CONSTRUCTIONAL FEATURES & WORKING	INTERNET & PERSONAL NOTES

					PRINCIPLE OF SINKING PUMP.	
47			3	MINE PUMPS.	DESCRIBE CONSTRUCTIONAL FEATURES & WORKING PRINCIPLE OF SINKING PUMP.	INTERNET & PERSONAL NOTES
48			4	MINE PUMPS.	STATE PROCEDURE OF SUSPENSION IN SHAFT.	INTERNET & PERSONAL NOTES
49	XIII.	III&IV	1	MINE PUMPS.	STATE PROCEDURE OF SUSPENSION IN SHAFT.	INTERNET & PERSONAL NOTES
50			2	MINE PUMPS.	STATE PROCEDURE OF SUSPENSION IN SHAFT.	INTERNET & PERSONAL NOTES
51			3	BORE HOLE PUMP	INTRODUCTION	INTERNET & PERSONAL NOTES
52			4	BORE HOLE PUMP	DESCRIBE CONSTRUCTIONAL FEATURES &	INTERNET & PERSONAL NOTES
53	XIV.	IV&V	1	BORE HOLE PUMP	WORKING OF BORE HOLE PUMP.	INTERNET & PERSONAL NOTES
54			2	BORE HOLE PUMP	STATE INSTALLATION OF BORE HOLE PUMP.	INTERNET & PERSONAL NOTES
55			3	BORE HOLE PUMP		INTERNET & PERSONAL NOTES
56			4	PIPES AND VALVES	STATE TYPES OF PIPES USED IN MINES MILD STEEL PIPE CAST IRON PIPE ALKATHENE PIPE	INTERNET & PERSONAL NOTES
57	XV.	V&VI	1	PIPES AND VALVES	STATE TYPES OF VALVES USED IN MINES DESCRIBE CONSTRUCTIONAL FEATURES OF VARIOUS TYPE OF VALVES. FOOT VALVE	INTERNET & PERSONAL NOTES
58			2	PIPES AND VALVES	THE MAIN VALVE: RETAINING VALVE: BY PASS VALVE STATE & DESCRIBE DIFFERENT TYPES OF PIPE JOINTS.	INTERNET & PERSONAL NOTES
59			3	PIPES AND VALVES	PIPE JOINT: LOOSE-FLANGE JOINT SPIGOT & FAUCET JOINT: THE UNICORE JOINT: EXPANSION JOINT:	INTERNET & PERSONAL NOTES
60			4	PIPES AND	DESCRIBE SUPPORT OF RISING MAIN PIPE IN SHAFT	INTERNET &

				VALVES	STATE THE PROCEDURE OF SUPPORTING THE PIPE IN SHAFT.	PERSONAL NOTES

TEXT BOOK SUGGESTED : INTERNET & PERSONAL NOTES

SIGNATURE OF

FACULTY MEMBER HOD PRINCIPAL/ DIRECTOR