

Discipline - MINING	Semester - 2 nd	Name of teaching Staff
Subtel.: Surface mining	No. of classes allotted per week :- 04	from date: - To date: - No. of weeks - 15
Weeks	Classes	Theory / Practical Topics
1 st	1 st	<ul style="list-style-type: none"> → About mining, surface mining → category of open cast mining system
	2 nd	<ul style="list-style-type: none"> → Advantages and limitations of open pit mining → Stripping ratio factors affecting S.R.
	3 rd	<ul style="list-style-type: none"> → Break-even stripping ratio, life of open cast mining.
	4 th	<ul style="list-style-type: none"> → Geotechnical parameters of Rocks, production & cost, Degree of mechanization.
2 nd	1 st	<ul style="list-style-type: none"> → Environmental management, availability of power, cost & economic analysis, etc.
	2 nd	<ul style="list-style-type: none"> → Land Reclamation, re-siting of open cast mining

Weeks	Classes	
	3 rd	<p style="text-align: center;"><u>Exploration</u></p> <ul style="list-style-type: none"> → 1st phase - core drilling in pattern → error in sampling → 2nd phase - Details Exploration Various aspects for the feasibility report, including Reserve.
	4 th	<ul style="list-style-type: none"> • Various aspects regarding surface mining layout <ul style="list-style-type: none"> → Bench parameters → slope stability → Highway slope.
3 rd	1 st	<ul style="list-style-type: none"> → Spill dump slope stability → Slope mass rating. → Length of face. → Position of haul roads.
	2 nd	<ul style="list-style-type: none"> • <u>Quality Control</u> <ul style="list-style-type: none"> → Assessment of air grades → constant distance weighting → inverse distance weighting technique → Inverse distance square weighting technique.
	3 rd	<ul style="list-style-type: none"> • <u>mining method</u> and <u>sequence</u> <ul style="list-style-type: none"> → Bush clearing → grubbing and de-auction → excavation of earth

Weeks	Classes	Theory/practical Topics
4th	closed	Theory/practical Topics
4th	1 st	<ul style="list-style-type: none"> • Box cut <ul style="list-style-type: none"> → Types of Box cut → Location of Box cut → Various conditions etc. • Ramp • Excavation of O.B.
2 nd	1 st	<ul style="list-style-type: none"> • Over casting on side casting. • Over casting or side casting by precast • Simple side casting, extended bench side casting. • Transfer side casting.
2 nd	3 rd	<ul style="list-style-type: none"> • Over casting by shovel <ul style="list-style-type: none"> → cut by shovel, frontal parallel etc. • Shovel, mobile crusher mobile bridge conveyor belt, conveyor combinator • mobile input crushing technology
3 rd	4th	<ul style="list-style-type: none"> • Over casting by B.W.P.O.B removed by B.W.P. • Cross-pit system of O.B removal • Working method by B.W.P. • Specification of few steels.
4th	4th	<ul style="list-style-type: none"> • Geo technical points of 2 types of B.W.P.

Weeks	Classes	Theory/practical Topics
5 th	1 st	<ul style="list-style-type: none"> • Disposal of OB for the deposited occurring in the well top. • Disposal of OB by vertical or inclined shafts and drift.
	2 nd	<ul style="list-style-type: none"> • Transporting of OB in steeply dipping deposits. • crusher, high angle belt conveyor. • Belt conveyor, combination including skip truck part.
	3 rd	<p style="text-align: center;"><u>Revising</u></p> <p>Stopping Ratio :- to reach even point of eye logical parameter, emp. EIA.</p>
	4 th	<p style="text-align: center;"><u>Revising</u></p> <p>Explosion, Quality control, winning and winery.</p>
6 th	1 st	Auger mining operation in the surface coal mines.
	2 nd	Surface continuous miner in the application, types, mechanization of rock excavator.
	3 rd	Advantages & Disadvantage of surface mining. The mining of draw or cutting cent.
	4 th	Some blast hole. Does well in one mine.

Weeks	Classes	Theory/Practical: Topics
7th	1st	Hydraulics, placer mining dredging.
	2nd	<ul style="list-style-type: none"> • <u>Dredging</u> ⇒ Bucket dredging, hydraulic dredging, some sandy matters
	3rd	<ul style="list-style-type: none"> • <u>Leaching</u> ⇒ Appreciation and operation basic in-situ leaching and in-situ leaching process for the deposit located below ground. example.
	4th	<ul style="list-style-type: none"> • <u>Excavators</u> → Factors of selection of excavator → Effect of selecting larger size equipment. → Factors which play during purchase of equipment.
8th	1st	<ul style="list-style-type: none"> • <u>Shovel</u> → Applications advantages and disadvantages → Selection of a shovel → A comparison betⁿ rope shovel vs. Hydraul shovel
	2nd	<ul style="list-style-type: none"> → Comparison between rope shovel vs hydraulic shovel → Dumping parameter height etc. etc. maximum design Rules.

<u>Weeks</u>	<u>Classes</u>	<u>Theory / Practical Types</u>
	3 rd	<ul style="list-style-type: none"> → <u>Sever factors</u> <u>Swing factors</u>, <u>cycle time factors</u> <u>off-estoy delay</u>, <u>dog stener</u>
	4 th	<ul style="list-style-type: none"> → <u>cuttization</u>, <u>suilent para</u> <u>Swing</u> <u>calultra</u>, <u>of capacity</u> <u>opa</u> <u>Shu</u> <u>Numeral</u> <u>trushu</u> <u>on</u> <u>shover</u>
9 th	1 st	<ul style="list-style-type: none"> • <u>Rope Shovel</u> → <u>main</u> <u>units</u> <u>of</u> <u>dised</u> <u>open</u> <u>casted</u> <u>and</u> <u>electric</u> <u>open</u> <u>cast</u> <u>shovel</u> → <u>Front</u> <u>attachment</u> <u>of</u> <u>a</u> <u>dipper</u> <u>Shovel</u>, <u>hoisting</u> <u>unit</u>.
	2 nd	<ul style="list-style-type: none"> → <u>crucialing</u> <u>unit</u> <u>etc</u>, <u>bucket</u> <u>or</u> <u>peesh</u> <u>descripition</u>, <u>prevention</u> <u>for</u> <u>the</u> <u>improvement</u> <u>of</u> <u>the</u> <u>line</u> <u>of</u> <u>bound</u> <u>and</u> <u>teeth</u>.
	3 rd	<ul style="list-style-type: none"> → <u>operation</u> <u>and</u> <u>efficiency</u> <u>of</u> <u>shovel</u> <u>Improvement</u> <u>of</u> <u>efficiency</u> <u>of</u> <u>other</u> → <u>shovel</u> <u>specification</u>.
	4 th	<ul style="list-style-type: none"> • <u>Hydraulic Shovel</u> <u>Working</u> <u>principle</u> <u>shovel</u> <u>specification</u>.

Weeks	Class	Theory/practical Topics
10th	1st	<ul style="list-style-type: none"> • <u>Draglines</u> <ul style="list-style-type: none"> → Application System of Working → selection of dragline including various advantages. → Demerits of draglines → Working draglines.
	2nd	<ul style="list-style-type: none"> • <u>Front-End-Loader</u> <ul style="list-style-type: none"> → Application, advantages, Selection → The bucket and other main units operation. → merit and demerits of a front end loader.
	3rd	<ul style="list-style-type: none"> • <u>Bucket wheel excavator</u> <ul style="list-style-type: none"> Application, The machine and operation, the main unit.
	4th	<ul style="list-style-type: none"> • Safety in bucket wheel excavator and its operation. • Various types of B.W.E.
11th	1st	<ul style="list-style-type: none"> • Comparison among wheel dragline, front-end loader and B.W.E.
	2nd	<ul style="list-style-type: none"> • <u>Back Hole Transport equipped</u> <ul style="list-style-type: none"> rear discharge dumper. side discharge dumper.

Weeks	Classes	Theory/practical Topics
	3 rd	<ul style="list-style-type: none"> → Bottom discharge dumper → safety precautions during dumping → maintenance of a truck/dumper
	4 th	A comparison between rear and bottom discharge dumper.
12 th	1 st	main unit of a truck/dumper the power engine, the drive system.
	2 nd	hydraulic drive to raise & lower other unit, suspension unit, hydraulic system, body, traction.
	3 rd	Right type of the wire to be used Review of wire rope work
	4 th	Review of wire rope work
13 th	1 st	<ul style="list-style-type: none"> • Rail Transport system, • pipe line Transport system • belt conveyor system
	2 nd	→ application, selection of wire
	3 rd	<ul style="list-style-type: none"> → Moulton Belt conveyor → Cable belt conveyor
	4 th	<u>Rope haulage</u> <ul style="list-style-type: none"> • Direct rope haulage • man over the reel • Endless rope haulage

Weeks	Classes	Theory/practical Topics
	3 rd	<ul style="list-style-type: none"> → Bottom discharge dumpers → safety precautions during dumping → main units of a truck/dumper.
	4 th	A comparison between rear and bottom discharge dumper.
12 th	1 st	main unit of a truck/dumper the power engine, A/C drive system.
	2 nd	hydraulic drive torque converter other unit. suspension unit. Hydraulic system, body, traction.
	3 rd	Right types of the tire to be used Revision of wiring and work
	4 th	<u>Revision of wiring and work</u>
13 th	1 st	<ul style="list-style-type: none"> • Rail Transport system. • pipe line Transport system • belt conveyor system.
	2 nd	→ application, selection of size
	3 rd	<ul style="list-style-type: none"> → Bowler belt conveyor → cable belt conveyor
	4 th	<u>Rope hauler</u> <ul style="list-style-type: none"> • Direct rope hauler • non end to the hauler • Endless rope hauler

Weeks	Classes	Theory / practical Topics
14/2	1st	<ul style="list-style-type: none"> Other equipment used in the surface mining systems <ul style="list-style-type: none"> → Scraper → Ripper → Bulldozer
	2nd	<ul style="list-style-type: none"> → clamshell → motor grader → Conveyer equipment → Hydraulic shovel
	3rd	<ul style="list-style-type: none"> • Spreader/Steerer and Roll over crawler types. Details of Bow
	4th	<ul style="list-style-type: none"> • Revision of o/c machinery.
15th	1st	<p>Water in the surface mine and mine pump.</p> <ul style="list-style-type: none"> → Source of water. → problem created by water → who remove it.
	2nd	<p><u>Mine pump</u> types and details</p>
	3rd	<ul style="list-style-type: none"> • centrifugal pump → Donnell's flow start and stopping of pump → stall, wear time being.
	4th	<ul style="list-style-type: none"> • Turbine pump. Reciprocating pump • Reciprocating pump and E.P. (Exposure meter, Air flow meter)