

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B. E. SEMESTER: V**  
**MINING ENGINEERING**

Subject Name: **Surface Mine Production**

Subject Code: **152202**

<b>Teaching Scheme</b>				<b>Evaluation Scheme</b>		
<b>Theory</b>	<b>Tutorial</b>	<b>Practical</b>	<b>Total</b>	<b>University Exam (Theory) (E)</b>	<b>Mid Sem Exam (Theory) (M)</b>	<b>Practical (I)</b>
2	0	2	4	70	30	50

<b>Sr. No.</b>	<b>Content</b>
1.	<b>Surface Mining :</b> General information, Basic definition, Surface mining, Quarrying strip mining, Open pit mining, Open cast mining, Terms: Advantages and disadvantages. Determination of main parameters, Major dimensions, Heights and widths and benches, Slop angles.
2.	Opening up of mines by surface methods, Driving of ingoing trenches, Laying of communication routes, System of disposal of overburden, Removal of cover rocks, Factors influencing selection and characteristics of opencast work.
3.	General surface mining method, Basis layouts, Choice of mining method.
4.	Major operations in surface mining.
5.	<b>Ground Preparation :</b> Bull dozing, Scrapping, Grading, Ripping.
6.	<b>Drilling:</b> Criteria for selection and performance of different types of drilling equipments, Drilling patterns: Inclined drilling.
7.	<b>Blasting:</b> Explosives, Multirow blasting, Twin bench blasting: Coyote blasting, Secondary blasting, Overcastting by explosives.
8.	<b>Excavation and Loading:</b> Factors influencing choice of excavating and loading machines, their performance in different condition of ground, Power shovel, Dragline, BWE, BCE, Front end loaders, Backhoes, Surface miner.

9.	<b>Transport:</b> Comparative study of different transport system in opencast mines, Factors influencing choice of a system, Optimization of load haul system, Dumpers, Coal haulers, Belt conveyer, Pipe line transportation.
10.	<b>Storage:</b> Stock piling and rehandling, Spreaders, Reclaimers.
11.	<b>Reclamation:</b> Planning methods of reclamation for different types of opencast mines.
12.	<b>Drainage:</b> Sources of water assessment of drainage requirements drainage patterns, Slope Stability: Factors influencing stability of slopes, Mechanics of slope failures, Stability analysis, Methods of improving stability of slopes, Protection and monitoring, Influence of pit slope on mine economics.

### Reference Books:

1. Elements of Mining Tech. (Vol- I), D. J. Deshmukh.
2. Surface Mining Technology, Samir Kumar Das.
3. Heavy Earth Moving Machines, Amitosh de.
4. U M S