



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3172211

Semester – VII

Subject Name: Advanced Mining Methods

Type of course: Undergraduate

Prerequisite: Zeal to learn the subject

Rationale: The course is designed to help the student in understanding the advance mining methods in different seam situation. They can select a suitable method of mining and support system used for support the roof in various mining methods.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	0	3	70	30	00	00	100

Content:

Sr. No.	Content	Total Hrs
1	Support System: General support system, Powered Support: Components and types; Principles of operation and design; Selection of powered support; Latest development in powered support system; Application- Support for wide excavations.	7
2	Horizon Mining: Definition; Features, Layout of Horizon Mining; General Considerations before adopting horizon mining; Planning considerations, Semi-Horizon Mining (Level Mining); Application, Advantages and disadvantages.	7
3	Mining of Thick Coal Seams: Problems of mining thick coal seams; Factors affecting choice of method; Various methods- Slice Mining, Sublevel Caving, Shield method of mining.	8
4	Mining of Thin Coal Seams: Problems in mining thin seams; Face development, Equipment and methods for thin seam extraction,	6
5	Hydraulic Mining: General; Suitable Conditions; Operations; Layout of workings; Advantages and disadvantages.	6
6	Underground Coal Gasification: General; Suitable Conditions; Principles, Technology of underground coal gasification; Advantages and disadvantages; Future Scope.	7



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7	Special Methods: Thermal, hydro-chemical and biochemical methods; Methods of mining radioactive minerals; Deep-sea Mining for Manganese Nodules; Ore Mining by Leaching.	6
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Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	20	18	5	4	3

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Modern Coal Mining Technology, By Samir Kumar Das
2. Elements of Mining Technology, Volume-I, By D. J. Deshmukh
3. Coal Mining, By R. D. Singh

Course Outcomes:

After learning the course the students should be able to

Sr. No.	CO statement	Marks % weightage
CO-1	Learn and understand the various advance mining methods in different seam situation.	50
CO-2	Select a suitable support system used to support the roof in various mining methods.	20
CO-3	Select suitable mining methods depending upon the applicable conditions.	30

List of Open Source Software/learning website:

1. Wikipedia.com