

# GUJARAT TECHNOLOGICAL UNIVERSITY

## MINING ENGINEERING ADVANCE MINING METHODS SUBJECT CODE: 2182202 B.E. 8<sup>th</sup> SEMESTER

**Type of course:** Undergraduate Level

**Prerequisite:** Zeal to learn Subject

**Rationale:** The course is designed to help the student in understanding the different mining methods in different seam situation. They can select a suitable method of mining and to 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)	
		PA	ALA		ESE	OEP				
3	0	0	3	70	20	10	0	0	0	100

**Content:**

Sr. No.	Content	Total Hrs	% Weightage
<b>1</b>	<b>Support System:</b> General, 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, Longwall faces and Depillaring.	<b>7</b>	<b>15</b>
<b>2</b>	<b>Horizon Mining:</b> Definition; Layout of Horizon Mining; General Considerations before adopting horizon mining; Semi-Horizon Mining (Level Mining); Application.	<b>7</b>	<b>15</b>
<b>3</b>	<b>Mining of Thick Coal Seams:</b> Problems of mining thick coal seams; Factors affecting choice of method; Various methods- Slice Mining, Sublevel Caving.	<b>7</b>	<b>15</b>
<b>4</b>	<b>Mining of Thin Coal Seams:</b> Problems in mining thin seams; Equipment and methods for thin seam extraction.	<b>7</b>	<b>15</b>
<b>5</b>	<b>Hydraulic Mining:</b> General; Suitable Conditions; Operations; Layout of workings; Advantages and disadvantages.	<b>6</b>	<b>10</b>
<b>6</b>	<b>Underground Coal Gasification:</b> General; Suitable Conditions; Technology of underground coal gasification; Advantages and disadvantages; Future Scope.	<b>7</b>	<b>15</b>

7	<b>Special Methods:</b> Thermal, hydro-chemical and biochemical methods; Methods of mining radioactive minerals; Deep-sea Mining for Manganese Nodules; Ore Mining by Leaching.	7	15
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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
64%	18%	12%	2%	2%	2%

**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 Outcome:** After learning the course the students should be able to learn and understanding the different mining methods in different seam situation. They can select a suitable method of mining and to support system used for support the roof in various mining methods.

**List of Open Source Software/learning website:**

1. Wikipedia.com

**ACTIVE LEARNING ASSIGNMENTS:** Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.