GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering
Subject Code: 313221
Semester – III
Subject Name: INTRODUCTION TO MINING

Type of course: Regular

Prerequisite: Zeal to learn the subject

Rationale: Introduction to Mining is the subject enclosing the basic knowledge about mining. It gives knowledge about the stages of mining i.e. prospecting and exploration of minerals which further extends the idea about drilling and blasting, development, production and mine closure phase.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
4	0	0	4	70	30	0	0	100

Content:

Sr. No.	Content	Total Hrs
1	**Introduction to Mining Industry** : - Mineral resources of Gujarat and India, Mining Terminologies, Stages of Mining,	4
2	Basic Concepts :- Classification and comparison of Surface and Underground mining, Unit operations involved in surface and underground mining,	6
3	Prospecting & Exploration - Reconnaissance, Principles and methods:- Trenching & Pitting. Boring:- Principles of boring; surface layout; Method of drilling :- percussive, rotary, rotary-percussive, Core recovery:- Instruments, Interpretation of borehole data, borehole logging, directional drilling, deflection of boreholes, difficulties in boring.	12
4	Drilling & Blasting:- Drilling equipments, Drilling accessories, Selection of drill bits, Drillability of rocks, Drilling patterns (surface & underground drilling patterns), Explosives:- Classification, properties, selection. Blasting:- Introduction to blasting accessories, basic concept of blasting.	12
5	Development Phase:- Development of surface mining, Development of underground mining.	8
6	Production Phase:- Loading – loading equipments and their application in surface and underground mines, Transportation – Basic ideas about Transportation equipment and	8

	their application in surface and underground mines.	
7	Mine Closure:- Basic concept of mine closure and its importance in surface and underground mines.	**6**

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
30	**25**	**25**	**20**	**00**	**00**

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. Elements of Mining Tecchnology, D.J.Deshmukh Part I, II & III
2. Introduction to mining – Haward L. Hartman.
3. Surface Mining Technology – Samir Kumar Das.
4. Mine Economics- Arvind Kumar
5. A Study of Metalliferous Mining methods, Y.P.Chacharkar
6. Universal Mining School- Part I & II 5. Coal Mining, B.Ghosh

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	To know the present status of mineral in Gujarat and India and also know the mine terminologies.	15 %
CO-2	To know the method of prospecting and exploration of the minerals.	30 %
CO-3	To know about various methods of drilling and blasting including types of drilling patterns and explosives used extracting minerals.	25 %
CO-4	To know the development, production and mine closure phase of mine planning.	30 %

Major Equipment:

(1) Models showing Open cast mining features.

(2) **Models showing Underground mining features.**