

GUJARAT TECHNOLOGICAL UNIVERSITY

MINING (22) INTRODUCTION TO MINING SUBJECT CODE: 2132201 B.E. 3RD SEMESTER

Type of course: N.A.

Prerequisite: Zeal to learn the subject

Rationale: Introduction to Mining is the subject enclosing the basic knowledge about mining. It gives knowledge about the exploration and prospecting of minerals which further extends the idea about drilling, blasting, development and transportation of mineral including the safety of environment and human kind.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks						Total Marks
L	T	P		Theory Marks			Practical Marks			
			ESE (E)	PA (M)		PA (V)		PA (I)		
				PA	ALA	ESE	OEP			
4	0	0	4	70	20	10	0	0	0	100

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1	Significance of Mining Industry, History of Mining, Mining & Socio-Economic impact.	04	
2	Mining and Surface Environment, Health and Safety.	02	
3	Mineral Resource of Gujarat & India, Mineral and energy resources of world, Terminology in Mining	04	
4	Basis Concepts of University Mining, Mining methods for coal and non-coal deposits, Elementary ideas about Surface Mining, Comparison of underground and surface mining.	06	
5	Prospecting & Exploration- Reconnaissance, Principles and methods- Trenching & Pitting. Boring: Principles of boring; surface layout; method of percussive, rotary, (drilling), properties of drilling muds, Core recovery: Interpretation of borehole data, borehole logging, difficult boring, directional drilling, deflection of boreholes, Difficulties in boring.	12	
6	General concepts of Mine Development.	02	
7	Unit Operations-drills and drilling, explosives and blasting, loading and transportation.	06	
8	Drills & Drilling : Types of drills, drilling accessories, drill ability of rocks, diamond drilling.	04	
9	Explosives & Blasting : Types of explosives, properties of explosives, modern explosives, initiation systems, principles of blasting, Blasting practice surface blasting, underground blasting.	10	
10	Loading: Basic Loading equipment and their application.	02	
11	Transportation: Basis ideas about Transportation equipment and their application.	04	

Reference Books:

1. Elements of Mining Technology, D.J.Deshmukh Part I, II & III
2. Mine Economics- Arvind Kumar
3. A Study of Metalliferous Mining methods, Y.P.Chacharkar
4. Universal Mining School- Part I & II
5. Coal Mining, B.Ghosh
6. Open cast Mining, B. Ghosh

Course Outcome:

1. To know the history of mining and understand the socio-economic impact on environment.
2. To know the method of prospecting and exploration of the minerals.
3. To know about various methods of drilling and blasting including types of explosives used for extracting minerals.
4. To get idea about economic ways of transportation of minerals.

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.