

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. SEMESTER: VI

Mining Engineering

Subject Name: **Underground Metal Mining**

Subject Code: **162202**

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Practical (I)
4	0	2	6	70	30	50

Sr. No	Course Content	Total Hrs.
1.	Present status of Indian metal mining industry.	2
2.	Mine Structures : Construction of mine portals, shaft insets and plats; ore and waste bins; skip-pockets, engine chambers, ore passes, chutes, garages, grizzlies. Underground chambers and sumps and other subsidiary excavations.	8
3.	Secondary Breaking : Conventional, electrical and mechanical methods.	6
4.	Stoping Methods : Selection of stoping methods, classification of different mining methods.	6
5.	Stope layouts and stope preparation work with different stoping methods. Haulage and dumping, ventilation loading, underground crushing.	6
6.	Open stoping method-Room and Pillar, sub-level, Shrinkage, Blast Hole and Vertical Crater Retreat, Stopping and their variations.	6
7.	Supported stoping methods Timber, Post and Pillar, square set, cut and fill and their variations.	6

8.	Fill Support : Material of backfill and their procurement; sand gathering plant, theoretical aspects of slurry transportation; preparation, transport and placement of hydraulic backfill with and without cement; rock and concrete fills, surface arrangement for storage and mixing; pneumatic and mechanical methods of backfill. Caving Stopping methods Top slicing, sub-level caving, block caving and their variations. Design and construction of draw points, mechanics of draw and draw control procedures, recovery and dilution.	14
9.	Stopping of super-imposed veins and parallel ore bodies. Combined methods.	2

Reference Books:

1. Metalliferous Mining Methods - Y.P.Chacharkar
2. Elements of Mining Technology – Vol. III
3. Introduction to Mining - Hartman