GUJARAT TECHNOLOGICAL UNIVERSITY

MINING ENGINEERING
GEOLOGICAL EXPLORATION OF MINERAL DEPOSITS
SUBJECT CODE: 2182207
B.E. 8th SEMESTER

Type of course: Undergraduate Level

Prerequisite: Zeal to learn Subject

Rationale: The course is designed to help the student in understanding the Exploration and their various methods which are used in various stages in mining activities the detail knowledge about use of remote sensing and aerial ropeway and boring.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks			Practical Marks			
				ESE (E)	PA (M)		ESE (V)		PA (I)	
					PA	ALA	ESE	OEP		
2	0	2	4	70	20	10	20	10	20	150

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	**Exploration:** General, Objectives, Principles, Methods, Stages, Tracing and Cutting deposits; Exploration grids, Classification of Mineral Reserves, Surface Exploration and Subsurface Exploration.	5	15
2	**Aerial Photography and Remote Sensing:** Introduction, Operational Stages, Aerial Camera, Use of remote sensing techniques in exploration.	5	15
3	**Geological Exploration:** Principles of geological exploratory mapping, Underground Mapping.	5	15
4	**Geophysical Exploration:** Introduction, Methods- Airborne Survey, Electrical, Magnetic, Gravity, Seismic with Principles, Interpretation of Geological and Geophysical Data.	5	15
5	**Geochemical Exploration:** Introduction, Planning, Sampling, Analysis, Interpretation, Reconnaissance Techniques- Stream Sediment Sampling, Overburden Geochemistry, Hydro-geochemistry, Gases, Vegetation, Rock Geochemistry.	6	20
6	**Boring:** Introduction, Objectives, Methods- Percussive, Rotary; Core Recovery, Wire Line Drilling, Water Loss during Drilling, Underground Drilling, Bore hole deviation, Bore hole survey and Bore hole deflection, Difficulties in Boring.	6	20

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. Geological Prospecting and Exploration, Mir Publication, By V. M. Kreiter
2. Mine Surveying and Leveling, Volume-II, By S. Ghatak
3. Elements of Mining Technology, Volume-I, By D. J. Deshmukh

Course Outcome: The course is designed to help the student in understanding the Exploration and their various methods which are used in various stages in mining activities the detail knowledge about use of remote sensing and aerial ropeway and boring.

List of Experiments:

1. Study about surface and subsurface exploration.
2. Study about use of remote sensing techniques in exploration.
3. Study about underground mapping.
4. Study about reconnaissance techniques used in geochemical exploration.
5. Study about bore hole deviation and deflection in boring.

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.