



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering
Subject Code: 3172217
Semester – VII
Subject Name: Safety Engineering

Type of course: Mining

Prerequisite: Zeal to learn the subject.

Rationale: The course is designed to help the student in understanding the different accidents occurs in mines and how can increase the safety of workers and machineries and mine safety with risk assessment, mitigation and management.

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)	
3	0	0	3	70	30	00	00	100

Content:

Sr. No.	Content	Total Hrs
1	Safety management systems in Indian mining industry; engineering aspects of safety management.	4
2	Mine Accidents: different types, accidents classifications on different bases, accident investigations; accident analysis; accident prevention and corrective action, accident proneness, creating and maintaining safety awareness, job safety analysis.	8
3	Accident causes: concept of causes, unsafe conditions, unsafe acts, purpose and procedure of investigation, accidents reports, emergency organization.	7
4	Accidents rates: frequency and severity rates; inter-industry and international comparisons, accidents record and statistics. Accident and incident analysis.	5
5	Measurement of safety efficiency; safety audit methods; safety records management. Safety legislations, Safety meetings, constitution of safety committees, functions, pit safety committee, Safety organization, development of safe behavior, safety instruction, safety drives and campaigns, Role of safety officers.	8
6	Risk Management: Risk Management related terms and definitions; Basic concept of risk; Difference between hazards and risks; Risk components and types, Risk management objectives, Risk management process; Risk analysis objectives in hazardous system life cycle; Functions of a risk manager; Hazards Identification and Risk Assessment (HIRA).	8
7	Safety education and training: techniques of training, training aids, motivation of workers, training records and reports, appraisal of trainees, assessment and evaluation of training schemes.	5



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3172217

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
65 %	20 %	10 %	2 %	2 %	1 %

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. Mine Safety by Prof. Kejriwal
2. Occupational Safety and Health in Industries and Mines by C.P.Singh
3. Management Systems for Safety by J. Stranks.
4. Risk Assessment / Management Issues in the Environmental Planning in Mines by D. A. Zyl, M. Koval, M. Li Ta.

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	To learn different kinds of accidents and its mitigation.	25 %
CO-2	To learn the various steps of safety audit.	25 %
CO-3	To develop an initial skill to monitor the safety related to mining.	25 %
CO-4	To gain the idea about preparation of safety management plan and risk calculation.	25 %