

GUJARAT TECHNOLOGICAL UNIVERSITY

BRANCH NAME: Mining Engineering
SUBJECT NAME: ENVIRONMENT MANAGEMENT IN MINES
SUBJECT CODE: 2172203
B.E. 7th SEMESTER

Type of course: Mining

Rationale:

The course is designed to help the student in understanding the different approaches to manage over all environments of mining area and the surroundings. They can predict the environmental impacts due to mining activity and take suitable preventive measures. This course is helpful in grasping process of environmental study their importance, impacts due to mining and systematic approach for mitigational measures.

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)	
					PA	ALA	ESE	OEP		
3	0	2	5	70	20	10	20	10	20	150

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	Environmental impact of Mining: Environmental impact of Mining Projects on its various stages. Waste Rock Mill Tailing disposal: Characterization, Site selection, Rock and Mill Tailing disposal: Potential environment impact, Decommissioning reclamation.	8	20 %
2	Treatment of Acid Mine Drainage: Active and passive treatment technologies including constructed wetlands.	4	10 %
3	Ecological Restoration of Mining Sites: Ecological restoration, Natural restoration, Restoration planning, goal and objectives, Restoration techniques, Resilience and restoration success.	8	10 %
4	Post Mining Land Use: Management principles, Inventory of pre-mining land use, Post mining land uses, Selection of post mining land use.	6	10 %
5	Mine Closure: Causes, mine closure objective, Planning, Closure design, Risk and Socio economic response of mine closure, Closure of mine entries.	6	20 %

6	Preparation of Environment management plan: Public hearing, collecting baseline data, Environment impact assessment and prediction, Environment management plan, environment monitoring and management.	6	20 %
7	Environment Protection Act: Environment Protection Act 1986 and other relevant provisions for the environment applicable to mining projects.	4	10 %

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:

Sr. No.	Author	Title of Books	Publication
1	D.J.Deshmukh	Elements of Mining Technology Vol.2	Denett & Co., Nagpur.
2	KL Tiwari and Jadhav	Paryavaran Addhyan	I K International Pvt. Ltd-New Delhi
3	Dr.N.C.Saxena	Environment Management In Mining Area,	Lovely Prakashan
4	G.B. Mishra	Mine Ventilation & Environment	Lovely Prakashan
5	S.K.Maiti	Hand Book of Methods in Environment Studies	Lovely Prakashan
6	T V Ramachandra and Vijay Kullkarni	Environmental Management	TERI Press New Delhi

Course Outcome:

After learning the course the students should be able to:

- i. Prepare and design an Environment management plan depending upon various site conditions.
- ii. Select suitable mining methods depending upon the environmental conditions.

- iii. Explain various technical parameters related with environmental planning.
- iv. Follow the environment friendly and economic working procedure for mining.

List of Experiments:

Sr. No	Practical /Exercise	Approx. Hours Required
1	Preparation of Environmental Management Plan (EMP) of any mine as a case study.	6
2	Preparation of Mine Closure Plan (MCP) of any mine as a case study.	6
3	Assessment of Environmental Impact of any mine as a case study.	6
4	Evaluation of Latest amendments of Environment Protection Acts.	4
5	Preparation and collection of Base Line Data of a mining area as a case study.	6
Total		28

Major Equipment:

- i. Case study of various mines.
- ii. Various charts, and tables related with Environment management subjects.
- iii. Field Visits to various mining areas.
- iv. Expert Lectures by senior mining field officers.

List of Open Source Software/learning website:

- i. www.researchgate.net
- ii. www.min.eng.com
- iii. www.journal.elsevier.com
- iv. www.mdpi.com/journal/mineral
- v. www.edumine.com

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.