

GUJARAT TECHNOLOGICAL UNIVERSITY

BRANCH NAME: Mining Engineering
SUBJECT NAME: Mine Surface Environment
SUBJECT CODE: 2162205
B.E. 6th SEMESTER

Type of course: Mining

Rationale: The degree holders in mining engineering will be responsible to keep environment of mine's surface in environmental friendly conditions. They should be able to select the suitable method for controlling pollution, reclaim and rehabilitation process carried out in mines.

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 | | | | | | |
| 4 | 0 | 2 | 6 | 70 | 20 | 10 | 20 | 10 | 20 | 150 |

Content:

| Sr. No. | Content | Total Hrs | % Weightage |
|---------|--|--------------|-------------|
| 1 | Introduction : Environmental issues in mineral industry. | 2 | 3 % |
| 2 | Socio-Economic Environment: Parameters, economic impacts direct and Indirect, social impact demography, housing, local services, socio cultural. | 8 | 15 % |
| 3 | Land Environment: Visual impacts; landscape analysis; land use pattern; landscape planning; degradation of soil quality. | 10 | 25 % |
| 4 | Water Environment: Natural drainage pattern, water table, Impact on surface water and on sub-surface waters, Acid Mine Drainage – source, formation, impact on the environment, problems in India, treatment and control. | 10 | 25 % |
| 5 | Air Environment: Gaseous and particulate air pollution sources, monitoring and control, Airborne Repairable Dust: Generation, dispersion, measurement and control | 10 | 25 % |

| | | | |
|----------|--|----------|------------|
| 6 | Ecological Environment: Impacts on flora and fauna | 4 | 7 % |
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Suggested Specification table with Marks (Theory):

| Distribution of Theory Marks | | | | | |
|------------------------------|-------------|------------|------------|------------|------------|
| R Level | U Level | A Level | N Level | E Level | C Level |
| 68 % | 22 % | 5 % | 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:

| Sr. No. | Title of Books | Author | Publication |
|---------|---------------------------------|------------|------------------|
| 1 | Mining and Environmental Impact | Chaterjee | |
| 2 | U.M.S. | - | Lovely Prakashan |
| 3 | Mine Environment & Ventilation. | G.B.Mishra | Lovely Prakashan |

Course Outcome:

After learning the course the students should be able to:

- i. Assess quality of air, water and land on the surface of the mine. ii. Select suitable method for controlling air, water and land pollution.
- iii. Select suitable process of reclamation and rehabilitation.

List of Open Source Software/learning website:

- i. https://books.google.co.in/books?id=FCNCcCY_pzIC&printsec=frontcover#v=onepage&q&f=false ii.
- ii. <http://technology.infomine.com/reviews/acidminedrainage/welcome.asp?view=full>
- iii. www.technomine.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.