GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: MINING & PROCESSING OF DIMENTIONAL STONE
(COURSE CODE: 3352206)

Diploma Programme in which this course is offered	Semester in which offered
Mining Engineering	5th Semester

1. RATIONALE

The diploma holders in mining engineering will be responsible to manage all the dimensional stone mining operation. In additions to this they should also know the marketability of dimensional stone in any sphere of the work and keep environment safe from all mining operations and maintain comfortable working conditions. This subject provides them basic knowledge about occurrence and properties of various stones found in India and development of mine and procurement of various machineries used in stone mining industries.

2. LIST OF COMPETENCY

The course content should be taught with the aim to develop required skills in students so that they are able to acquire following competency.

- **Plan proper mining operation and select appropriate sizes of dimensional stone for a particular mining condition to improve marketability of stones.**

3. COURSE OUTCOMES

The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning outcomes in cognitive, psychomotor and affective domain to demonstrate following course outcomes

i. Illustrate various properties of dimensional stones.
ii. Assess and explain various statutory requirements for effective mining of dimensional stones.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PA	ESE	PA	
3	0	2	5	70	30	20	30	150

Legends: L - Lecture; **T -**Tutorial/Teacher Guided Student Activity; **P -** Practical; **C -** Credit; **ESE** -End Semester Examination; **PA** - Progressive Assessment

5. COURSE CONTENT DETAILS

Unit	Major Learning Outcomes (outcomes in cognitive domain)	Topics and Sub-topics
Unit – I Resources of Dimensional Stones	1a: Explain geological distribution of stone in India. 1b. Describe the Examination procedure of physico Mechanical properties of dimensional stones. 1c. State the selection of right type of stone for a particular purpose.	1.1 Resources of Marble, Granite, Slate, Sandstone and Limestone as Dimensional stones in india. 1.2 Geological, Mineralogical and physico Mechanical properties of dimensional stones. 1.3 Criteria for selection of dimensional stone deposit.
Unit – II Mining Operations	2a.Explain the adoption of a particular method of mining for different stones. 2b. Describe the various activities of mining during extraction.	2.1 Convention mining of sandstone, Limestone, Marble and Granite, Wire saw, Chain saw, hydraulic splitting Flam jet cutting, water channeling, etc. 2.2 Blasting in dimensional stone mines. 2.3 Development of mine, Mine layout, Block yield.
Unit – III Miscellaneous Activities	3a. Explain working of different machines, their problems and remedies. 3b. Explain different activities for dimensional stone required after mining.	Different machines 3.1 Dressing, Sawing, Gangs saw, Circular saw, 3.1.1 Preparation , mounting of blade/ discs and Segments. Different activities for dimensional stone 3.2 Polishing Manual Mechanical, Various Types of polishing machine. 3.3 Tile preparation, Automatic tiling Plant.
Unit-IV Abrasive use	4a. State the parameters selection of right type of stones for right type of job.	4.1 Type, use and selection, shaping.
Unit V Environmental Impact and Remedies	5a. Describe the Environmental impact of mining and processing of dimensional stones 5b State the Secondary use of quarried land and Waste of the industry. 5c List the steps to assess environment problems due to stone mining and describe the remedial measures.	5.1 Environmental impact of mining and processing of dimensional stones 5.2 Secondary use of quarried land and Waste of the industry.

6. SUGGESTED SPECIFICATIONTABLE WITH HOURS & MARKS (THEORY)

Unit	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
1	Resources of Dimensional Stones	10	04	06	07	17
2	Mining	10	04	06	07	17
3	Processing	08	04	06	04	14
4	Abrasive use	07	02	05	04	11
5	Environmental Impact And Remedies	07	02	05	04	11
Total		**42**	**16**	**28**	**26**	**70**

Legends: R = Remember; U = Understand; A = Apply and above levels (Bloom's Revised 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.

7. SUGGESTED LIST OF EXERCISES/PRACTICAL

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills ***(outcomes in psychomotor and affective domain)*** so that students are able to acquire the competencies/course outcomes. Following is the list of practical exercises for guidance.

Note*: outcomes in psychomotor domain are listed here as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of* ***Course Outcomes*** *related to affective domain. Thus over all development of* ***Programme Outcomes (****as given in a common list at the beginning of curriculum document for this programme) would be assured.*

Faculty members should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

S. No.	Unit No.	Practical/Exercise (outcomes in psychomotor domain)	Apprx. Hrs. Required
1	1	Prepare Charts of various dimensional stones found in India.	04
2	1	Examine Physio Mechanical Properties of dimensional stones.	04
3	2	Demonstrate Mining Methods of dimensional stones.	04
4	3	Examine and maintain various machines used in dimensional stone mines	04
5	3	Demonstrate Processing of dimensional stones.	04
6	5	Demonstrate various operations involved in Tile Preparation.	04
7	5	Prepare Charts on Environmental impact of mining with all remedial measures.	04
		Total	**28**

8. SUGGESTED LIST OF STUDENT ACTIVITIES

i. Explore internet by visiting websites of reputed mining companies and study the latest trends in dimensional Stone Mines.

ii. Different students may prepare report on latest trends in mining of different types of dimensional stones and present it in the class.

9. SPECIAL INSTRUCTIOAL STRATERGIES (If Any):

i. Arrange visit to nearby Dimensional Stone Mines and ask students to prepare a report on different aspects of it.

ii. Show video films/pictures of different dimensional stone mines and different procedures/techniques used in these mines.

10. SUGGESTED LEARNING RESOURCES

A. List of Books:

S. No.	Title of Books	Author	Publication
1	Mining Geology	Agor	Central techno publication
2	Gems & Jewelry	-	
3	Reports on Marble Mining		

B. List of Major Equipment/Materials:

i. Models.

C. List of Software/Learning Websites

i. Wikipedia.

ii. www.youtube.com

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. S.G. Srivastav**, (I/c HOD) Lecturer, G.P.Bhuj
- **Prof. M.V. Ramanuj**, Lecturer, G.P.Bhuj

Coordinator and Faculty Members from NITTTR Bhopal

- **Prof. Dr. K .K Pathak**, Prof. Dept. of Civil & Environment Engineering
- **Prof. Dr. Peeyush Verma**, Professor, Department of Vocational Education & Entrepreneurship Development