

# GUJARAT TECHNOLOGICAL UNIVERSITY

## MINING ENGINEERING MINING AND PROCESSING OF DIMENSIONAL STONE SUBJECT CODE: 2182203 B.E. 8<sup>th</sup> SEMESTER

**Type of course:** Undergraduate Level

**Prerequisite:** Zeal to learn Subject

**Rationale:** The course is designed to help the student in understanding the different methods to mining and processing also extraction methods of dimensional stone. They can know about various properties of dimensional stone and various machines to use for extraction of dimensional stone.

### 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	<b>Introduction:</b> General, Leasing Policy, Exploration of Recourses, Estimation of Reserves, Quarrying Techniques, Processing Units, Marketing, etc.	6	13
2	<b>Geology and Exploration:</b> General, Dimensional Stone Reserves in India, Geology and Geographical distribution of Marble, Granite, Sandstone, Limestone, Slate Deposits, Prospecting and exploration of dimensional stone deposits, Reserve Estimation.	9	18
3	<b>Characterization of Dimensional Stone:</b> Introduction, Petrography Examination and Physico-mechanical Properties.	6	13
4	<b>Mining of Dimensional Stone:</b> General, Conventional Mining of Limestone (Kotah stone), Sandstone, Granite, Marble	6	13
5	<b>Processing:</b> General, Flow chart of Processing; Dressing, Cutting/Sawing, Surface Grinding and Polishing/Flaming, Edging/Trimming/Grooving, Gang Saw, Circular Saw, Various types of Polishing Machines.	10	20
6	<b>Abrasives:</b> Types, Use and Selection, Shaping.	5	10
7	<b>Dimensional Stones:</b> Uses, Marketing and Environmental Aspects of Stone Industry.	6	13

### 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. Dimensional Stone Technology, By S. S. Rathore, et.al

**Course Outcome:** After learning the course the students should be able to help the student in understanding the different methods to mining and processing also extraction methods of dimensional stone. They can know about various properties of dimensional stone and various machines to use for extraction of dimensional stone.

### List of Experiments:

1. Dimensional stone resources of the country: Marble, Granite, Sandstone, Flaggy limestone, Slate.
2. Determination of Rock Mass Rating (RMR) of various Dimensional Stones.
3. Constructional and Operational features of Chain-saw cutting Machine.
4. Constructional and Operational features of Belt-saw cutting Machine.
5. Constructional and Operational features of Diamond Gang-saw cutting Machine.
6. Various abrasives used in dimensional stone processing & their application.

### Major Equipment:

1. Gang Saw, Circular Saw, Various types of Polishing machines

### List of Open Source Software/learning website:

**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.