

**Curriculum**  
**For**  
**Certificate in Marble Cutting**  
**And**  
**In-Lays**  
**(Duration of Course Six Months)**  
**Code:VD35S001**  
**(2013)**

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## SCHEME OF STUDIES

### Marble Cutting and In-Lays:

| Sr. #              | Module                           | Theory (Hours) | Practical (Hours) | Total (Hours) |
|--------------------|----------------------------------|----------------|-------------------|---------------|
| 1                  | G. Ensure Safety Precautions     | 16             | 64                | 80            |
| 2                  | F. Maintain Tools and Equipment  | 16             | 64                | 80            |
| 3                  | A. Handling of Stones            | 20             | 80                | 100           |
| 4                  | C. Perform Marble Cutting        | 20             | 80                | 100           |
| 5                  | B. Apply sizing to Marble Blocks | 20             | 80                | 100           |
| 6                  | D. Perform In-Lays Cutting       | 48             | 192               | 240           |
| 7                  | E. Perform Polishing             | 20             | 80                | 100           |
| <b>TOTAL HOURS</b> |                                  | <b>160</b>     | <b>640</b>        | <b>800</b>    |

## **Introduction: Marble Cutting and In-Lays**

**Name of Course:                    Marble Cutting and In-Lays**

### **Overall objective of course**

To provide the basic skill to the workers in the field of Marble handling, cutting and then value addition to it in the shape of In- Lays. It will enable the students to meet the challenges in the field of marble industry. Further, to improve the skill level of the workers and prepare them for the marble industry to meet the market competition.

### **Specific objectives of the course**

1. Basic information about Marble
2. Provision of basic skills in marble handling, storage, cutting, designing and fixing.
3. Prepare students as per industrial requirement
4. Educate them with latest techniques in marble processing
5. Maximum exposure to the machines
6. Importance of skilled workers in the market
7. Knowledge about different machines for marble cutting and processing
8. Knowledge of different techniques for marble cutting and processing
9. Knowledge of designing for in-Lays
10. Apply and fix marble pieces in the in-Lays
11. To make the students capable of using of cutting, grinding and polishing machines

### **Competencies gained after completion of course**

On successful completion of this course the trainee would be able to:

1. Safe handling of Marble blocks
2. use the tools and measuring instruments used in marble industry
3. Cut marble slabs
4. Carry out all safety rules and precautions for personal and equipment
5. Use gang saw, horizontal and vertical cutting machines
6. Identify the quality of the marble and able to distinguish good and poor quality of marble.
7. Handle industrial machines

8. Develop design pattern for In-Lays
9. Control the material wastage
10. Make marble In – Lays

## **Job opportunities available immediately and in the future**

After completion of this course the candidates can be employed in the following areas/field:

1. Marble industries engaged in the business of marble cutting and In-Lay
2. Start their own business for marble In-Lays
3. Opportunities to work abroad like Middle East, Europe

### **Trainee entry level:**

Secondary School Certificate (Matric)

### **Minimum qualification of trainer**

Intermediate with 6 months certificate of Marble Cutting and In-Lays with 3 year industrial experience in Marble Cutting and In-Lays.

### **Medium of Instruction**

Urdu/English

Sequence of the modules

- i. Module A – Handling of Stone
- ii. Module C – Perform Marble Cutting
- iii. Module B – Apply sizing to Marble Blocks
- iv. Module D – Perform In-Lays Cutting
- v. Module E – Perform Polishing
- vi. Module F – Maintain Tools and Equipment
- vii. Module G – Ensure Safety Precautions

### **Timeframe of Assessment**

|                       |                          |
|-----------------------|--------------------------|
| Duration of Course:   | 6 Months                 |
| Total Hours:          | 800 hrs.                 |
| Days Per Week:        | 06                       |
| Per Week Hours:       | 40 hrs                   |
| Per Day Hours:        | 07 Hrs. (Friday, 5 Hrs.) |
| Training Methodology: | Practical 80%            |
|                       | Theory 20%               |

## Curriculum Overview

| Module Title and Aim   | Learning Units  | Theory <sup>1</sup><br>Days/hours | Workplace<br>Days/hours | Timeframe<br>of modules |
|--|---|-----------------------------------|-------------------------|-------------------------|
| <p>Module A<br/><b>Handling of Stones</b></p> <p><b>Aim</b><br/>This module deals with the skill and knowledge of grading of Marble stone and storage.</p>           | <ol style="list-style-type: none"> <li>1. Allocate space for placement of stone</li> <li>2. Inspection of Stone</li> <li>3. Unload Stone from vehicle</li> <li>4. Ensure proper placement of stone</li> <li>5. Use Overhead crane for transportation of stone</li> <li>6. Ensure safety of stone</li> <li>7. Maintain inventory register</li> </ol>   | 20                                | 80                      | Independent             |
| <p>Module B<br/><b>Apply Sizing to Marble Blocks</b></p> <p><b>Aim</b><br/>This module deals with the skill and knowledge of grading and sizing of marble slabs.</p> | <ol style="list-style-type: none"> <li>1. Select machine</li> <li>2. Check machine</li> <li>3. Measure Blocks</li> <li>4. Ensure Water supply</li> <li>5. Check voltage</li> <li>6. Cut slabs in horizontal shape</li> <li>7. Cut slabs in vertical shapes</li> <li>8. Cut slabs in rectangular shape</li> <li>9. Cut slabs in square shape</li> <li>10. Perform resizing according to requirement</li> </ol> | 20                                | 80                      | Independent             |
| <p>Module C<br/><b>Perform Marble Cutting</b></p> <p><b>Aim</b><br/>This module deals with the skill and knowledge of preparation of marble stones</p>               | <ol style="list-style-type: none"> <li>1. Select relevant tools</li> <li>2. Arrange Material for Cutting</li> <li>3. Adjust cutting machine</li> <li>4. Measure Stone</li> <li>5. Ensure water supply</li> <li>6. Check voltage</li> <li>7. Perform bridge cutting</li> <li>8. Perform gang saw cutting</li> </ol>  | 20                                | 80                      | After module B          |
| Module D   | <ol style="list-style-type: none"> <li>1. Select color of stone</li> </ol>  | 40                                | 200                     | After module            |

|  |  |    |    |                |
|--|--|----|----|----------------|
| <p><b>Perform In-Lays Cutting</b></p> <p><b>Aim</b><br/>This module deals with the skill and knowledge of making new pattern and apply design on base pattern</p>  | <ol style="list-style-type: none"> <li>2. Select design of stone</li> <li>3. Draw sketch on Stone</li> <li>4. Cut stone according to design</li> <li>5. Perform finishing of cut pieces</li> <li>6. Bind pieces according to design</li> </ol>   |    |    | C              |
| <p>Module E<br/><b>Perform Polishing</b></p> <p><b>Aim</b><br/>This module deals with the skill and knowledge of surface finishing</p>                             | <ol style="list-style-type: none"> <li>1. Fix material in the polishing machine</li> <li>2. Select proper disc for grinding</li> <li>3. Perform grinding</li> <li>4. Ensure water supply on material</li> <li>5. Prepare surface for Polishing</li> <li>6. Prepare Chemical Polish</li> <li>7. Apply Polish on material</li> <li>8. Remove material from machine</li> <li>9. Perform buffing on material</li> <li>10. Ensure safe placement of the finished product</li> </ol> | 20 | 80 | After module D |
| <p>Module F<br/><b>Maintain Tools and Equipment</b></p> <p><b>Aim</b><br/>This module deals with the skill and knowledge of maintenance of tools and equipment</p> | <ol style="list-style-type: none"> <li>1. Clean tools and machines</li> <li>2. Apply oiling to machines</li> <li>3. Protect machines from dust</li> <li>4. Place tools in proper position</li> <li>5. Check the supply of water</li> <li>6. Ensure cleanliness of the work place</li> <li>7. Ensure supply of electricity</li> <li>8. Check the condition of the machine</li> </ol>  | 16 | 64 | Independent    |
| <p>Module G<br/><b>Ensure Safety Precautions</b></p> <p><b>Aim</b><br/>This module deals with the skill and knowledge of personal and equipment safety</p>         | <ol style="list-style-type: none"> <li>1. Wear proper clothing</li> <li>2. Ensure safety of machines</li> <li>3. Ensure drainage of waste water</li> <li>4. Ensure safety of the workplace</li> <li>5. Practice general safety.</li> </ol>   | 16 | 64 | Independent    |



# Curriculum Contents

## Module A: Handling of Stones

**Objective of the Module:** To be able to handle the marble stone.

**Duration:** Theory: 20 hours Practice: 80 hours

| Learning Unit                                | Learning Outcomes  | Learning Elements   | Duration                                    | Materials Required     | Learning Place  |
|--|--|---|---|------------------------|-----------------|
| A.1<br>Allocate space for placement of stone | <b>Able to:</b><br>Able to allocate the area / space for stock of marble stone | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Available area</li> <li>– Type of vehicle carrying stone</li> <li>– Importance of Stone</li> <li>– Space required for the movement of vehicle</li> <li>– Knowledge of stock to be maintained</li> <li>– How to recognize different types of stones</li> <li>– Block size</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Estimate the area required</li> <li>– Identify the area for various type of stocks</li> <li>– Utilization of maximum area</li> <li>– Assess utility of the block</li> </ul> | Theory<br>02 Hrs<br><br>Practical<br>08 Hrs | Blocks of marble stone | Marble Industry |
| A-2<br>Inspection of Stone                   |  | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Quality of the marble (physical defects)</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Pass or reject the stone based on physical defects</li> </ul>   | Theory<br>02 Hrs<br><br>Practical<br>08 Hrs | Marble Blocks          | Marble Industry |
| A.3  |  | <b>Knowledge of:</b>  | Theory                                      | Blocks of              | Marble          |

|   |   |   |  |   |                        |
|---|---|---|--|---|------------------------|
| <p>Unload Stone from vehicle</p>                              | <p><b>Able to:</b><br/>Perform / manage unloading of stone from the vehicle</p>           | <ul style="list-style-type: none"> <li>- Standing Position of worker and movement of machines</li> <li>- Crane / hoist (steel wire rope) and tools used for unloading</li> <li>- Space required for vehicle movement</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>- Place stone safely on ground</li> <li>- Guide the operator of machine for safe unloading</li> </ul>                        | <p>02 Hrs<br/>Practical<br/>08 Hrs</p>                 | <p>marble stone</p>                                   | <p>Industry</p>        |
| <p>A.4<br/>Ensure proper placement of stone</p>               | <p><b>Able to :</b><br/>Place the stone safely after unloading from the vehicle</p>       | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>- Types of stone being stocked</li> <li>- Labelling the stone</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>- Carefully labelling and numbering to the stone</li> <li>- Maintain the record of stone</li> <li>- Place stone according to the types and grades</li> </ul>   | <p>Theory<br/>02 Hrs<br/><br/>Practical<br/>08 Hrs</p> | <p>Blocks of marble stone</p>                         | <p>Marble Industry</p> |
| <p>A.5<br/>Use Overhead crane for transportation of stone</p> | <p><b>Able to:</b><br/>Operate overhead crane for the safe transport of marble blocks</p> | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>- Tools required for movement of stone</li> <li>- Area to which the stone is required to place</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>- Operate the overhead crane</li> <li>- Fasten the stone with steel rope</li> <li>- Safe transportation of stone</li> <li>- Troubleshoot the fault of overhead crane</li> </ul> | <p>Theory<br/>06 Hrs<br/><br/>Practical<br/>24 Hrs</p> | <p>Blocks of marble stone<br/><br/>Overhead crane</p> | <p>Marble Industry</p> |

|   |  |  |  |                                       |                        |
|---|--|--|--|---------------------------------------|------------------------|
| <p>A.6</p> <p>Ensure Safety of stone</p>      | <p><b>Able to:</b></p> <p>Follow the safety precautions at work place for personal and stone</p> <p>Take the safety measure while using tools and other equipments</p> | <p><b>Knowledge of :</b></p> <ul style="list-style-type: none"> <li>- Worth of the stone</li> <li>- Usage of stone</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>- Manage for safe movement during transportation and handling</li> </ul>  | <p>Theory<br/>04 Hrs</p> <p>Practical<br/>16 Hrs</p> | <p>Slabs / Blocks of marble stone</p> | <p>Marble Industry</p> |
| <p>A.7</p> <p>Maintain inventory register</p> | <p><b>Able to:</b></p> <p>Generate inventory report for various type of stone</p>  | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>- Color of the stone</li> <li>- Various types of stone</li> <li>- Quality / terminology used for stone identification</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>- Identify the stone</li> <li>- Place the stone in respective area</li> <li>- Dispatch the proper product</li> <li>- Generate the inventory report</li> </ul> | <p>Theory<br/>02 Hrs</p> <p>Practical<br/>08 Hrs</p> | <p>Stationary, Register, pen</p>      | <p>Class room</p>      |

## Module B:

## Apply sizing to Marble Blocks

**Objective of the Module:** To enable the trainee to be able to make slabs from blocks of marble stone

**Duration:** Theory: 20 hours Practice: 80 hours

| Learning Unit         | Learning Outcomes  | Learning Elements   | Duration                                      | Materials Required                              | Learning Place  |
|-----------------------|--|---|---|---|-----------------|
| B.1<br>Select machine | <b>Able to :</b><br>Select the machine for required production   | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Requirements of the order / customer for Inlay</li> <li>– Capacity of the machine</li> <li>– Availability of tools</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Estimate the production requirement</li> <li>– Assess the capability of the machine</li> </ul>  | Theory<br>1.2 Hrs<br><br>Practical<br>4.8 Hrs | Gang saw<br><br>Bridge cutter<br>Sizing Machine | Marble industry |
| B.2<br>Check machine  | <b>Able to :</b><br>Check the machine before production and take necessary maintenance steps when required | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Required tools / spare parts for machine</li> <li>– Maintenance schedule / check list of the machine</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Maintain the machines according to machine manuals</li> <li>– Assess the correct working of the machine</li> <li>– Adjustment / setting of the machine when required</li> </ul> | Theory<br>02 Hrs<br><br>Practical<br>08 Hrs   | Gang saw<br><br>Bridge cutter<br>Sizing Machine | Marble industry |
| B.3<br>Measure Blocks | <b>Able to :</b><br>Take measurements of the marble block at different points                              | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Measuring tools</li> <li>– Terminology used in the industry</li> <li>– Estimation</li> </ul>  | Theory<br>02 Hrs<br><br>Practical<br>08 Hrs   | Marble blocks                                   | Marble industry |

|                                      |  |   |   |  |                              |
|--------------------------------------|--|---|---|--|------------------------------|
|                                      |  | <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Use measuring tape to measure in inches and centimetres</li> <li>– Follow common terminology of measuring</li> </ul>  |   |  |                              |
| B.4<br>Ensure water supply           | <b>Able to :</b><br>Manage the water supply at machine                   | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Water supply line</li> <li>– clean water</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Adjust water pressure / flow</li> </ul>   | Theory<br>0.4 Hr<br><br>Practical<br>1.6 Hrs  | Water pipe<br>Water Storage tank                 | Marble industry              |
| B.5<br>Check voltage                 | <b>Able to:</b><br>check voltage for safe operation of machine           | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– A.C voltage</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Understand required correct voltage</li> <li>– Use volt meter</li> </ul>   | Theory<br>0.4 Hrs<br><br>Practical<br>1.6 Hrs | Single phase and 3 - phase Electrical connection | Marble industry / class room |
| B.6<br>Cut slabs in horizontal shape | <b>Able to:</b><br>Cut the marble slabs with machine in horizontal shape | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Type / quality of stone</li> <li>– Cutting tools</li> <li>– Start / stop of machine</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Fix the stone on cutter for horizontal cutting</li> <li>– Adjust machine for required size</li> <li>– Assess the quality of cutting tool</li> <li>– Adjust the speed of machine</li> </ul> | Theory<br>3 Hrs<br><br>Practical<br>12 Hrs    | Gang saw<br><br>Bridge cutter<br>Sizing Machine  | Marble industry              |
| B.7<br>Cut slabs in vertical shape   | <b>Able to:</b><br>Cut the marble slabs with machine in vertical shape   | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Type / quality of stone</li> <li>– Cutting tools</li> <li>– Start / stop of machine</li> </ul>  | Theory<br>3 Hrs<br><br>Practical<br>12 Hrs    | Bridge cutter                                    | Marble industry              |

|   |   |  |   |   |                 |
|---|---|--|---|---|-----------------|
|   |   | <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Fix the stone on cutter for vertical cutting</li> <li>– Adjust machine for required size</li> <li>– Assess the quality of cutting tool</li> <li>– Adjust the speed of machine</li> </ul>   |   |   |                 |
| B.8<br>Cut slabs in rectangular shape             | <b>Able to:</b><br>Cut the marble slabs with machine in rectangular shape | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Type / quality of stone</li> <li>– Cutting tools</li> <li>– Start / stop of machine</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Fix the stone on cutter for rectangular cutting</li> <li>– Adjust machine for required size</li> <li>– Assess the quality of cutting tool</li> <li>– Adjust the speed of machine</li> </ul> | Theory<br>3 Hrs<br><br>Practical<br>12 Hrs  | Marble cutting machine<br><br>Bridge cutter<br><br>Sizing Machine | Marble industry |
| B.9<br>Cut slabs in square shape                  | <b>Able to:</b><br>Cut the marble slabs with machine in square shape      | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Type / quality of stone</li> <li>– Cutting tools</li> <li>– Start / stop of machine</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Fix the stone on cutter for square cutting</li> <li>– Adjust machine for required size</li> <li>– Assess the quality of cutting tool</li> <li>– Adjust the speed of machine</li> </ul>      | Theory<br>3 Hrs<br><br>Practical<br>12 Hrs  | Marble cutting machine<br><br>Sizing Machine                      | Marble industry |
| B.10<br>Perform resizing according to requirement | <b>Able to:</b><br>Use resizing machine for resizing of                   | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Type / quality of stone</li> <li>– Cutting tools</li> <li>– Start / stop of machine</li> </ul>   | Theory<br>02 Hrs<br><br>Practical<br>08 Hrs | Marble cutting machine<br><br>Sizing Machine                      | Marble industry |

|  |                                 |  |  |  |  |
|--|---------------------------------|--|--|--|--|
|  | marble slabs according to sizes | <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Fix the stone on cutter for resizing</li> <li>– Adjust machine for required size</li> <li>– Assess the quality of cutting tool</li> <li>– Adjust the speed of machine</li> </ul> |  |  |  |
|--|---------------------------------|--|--|--|--|

## Module C:

## Perform Marble Cutting

**Objective of the Module:** To enable the trainee to be able to perform marble cutting

**Duration:** Theory: 20 hours Practice: 80 hours

| Learning Unit                           | Learning Outcomes  | Learning Elements   | Duration                                    | Materials Required  | Learning Place                 |
|---|--|---|---|---|--------------------------------|
| C.1.<br><br>Select relevant tools       | <b>Able to :</b><br><br>Select relevant tools for different operations | <b>Knowledge of:</b><br><br><ul style="list-style-type: none"> <li>– Cutting tools</li> <li>– Grinding tools</li> </ul> <b>Ability to:</b><br><br><ul style="list-style-type: none"> <li>– Assess the quality of tools</li> <li>– Select relevant tool</li> </ul>   | Theory<br>02 Hrs<br><br>Practical<br>08 Hrs | Grinder(p edestal /handy) Grinding disc, Drill Machine with Bits  | Class room/<br>Marble industry |
| C.2<br><br>Arrange material for cutting | <b>Able to:</b><br>Manage the material as per requirements             | <b>Knowledge of:</b><br><br><ul style="list-style-type: none"> <li>– Different type / quality of stones</li> <li>– Estimated quantity of material</li> <li>– Size of material</li> </ul> <b>Ability to:</b><br><br><ul style="list-style-type: none"> <li>– Select correct size of material</li> <li>– Select correct hardness / type of material</li> </ul>      | Theory<br>02 Hrs<br><br>Practical<br>08 Hrs | Marble slabs  | Marble industry                |
| C.3<br><br>Adjust cutting machine       | <b>Able to:</b><br>Adjust the machine for required cutting             | <b>Knowledge of:</b><br><br><ul style="list-style-type: none"> <li>– Cutting machine</li> <li>– Cutting disc / tools</li> <li>– Measuring tools</li> </ul> <b>Ability to:</b><br><br><ul style="list-style-type: none"> <li>– Understand machine adjustments</li> <li>– Fix the cutting tools in machine</li> <li>– Adjust the cutter in required size</li> </ul> | Theory<br>06 Hrs<br><br>Practical<br>24 Hrs | Marble cutting machine<br><br>Bridge cutter<br><br>Sizing Machine | Marble industry                |
| C.4<br><br>Measure Stone                | <b>Able to :</b>   | <b>Knowledge of:</b><br><br><ul style="list-style-type: none"> <li>– Measuring tools</li> <li>– Terminology used in</li> </ul>  | Theory<br>1.2 Hrs<br><br>Practical          | Marble block, Measuring tape                                      | Marble industry                |



|     |  |  |   |   |  |                              |
|-----|--|--|---|---|--|------------------------------|
|     | Take measurements at different points of the marble pieces | <p>the industry</p> <ul style="list-style-type: none"> <li>– Estimation</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Use measuring tape to measure in inches and centimetres</li> <li>– Follow common terminology of measuring</li> </ul> | 4.8 Hrs   |   |  |                              |
| C.5 | Ensure water supply  | <p><b>Able to :</b><br/>Manage the water supply at machine</p>   | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>– Water supply line</li> <li>– clean water</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Adjust water pressure / flow</li> </ul>   | <p>Theory<br/>0.4 Hr</p> <p>Practical<br/>1.6 Hrs</p> | <p>Rubber pipe / G.I. Pipe</p> <p>Water Storage Tank</p>                         | Marble industry              |
| C.6 | Check voltage  | <p><b>Able to:</b><br/>Use volt meter and ensure correct voltage for safe operation of machine</p>   | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>– A.C voltage</li> <li>– voltmeter</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Understand required correct voltage</li> <li>– Use volt meter</li> </ul>  | <p>Theory<br/>0.4 Hr</p> <p>Practical<br/>1.6 Hrs</p> | <p>3 - phase Electrical connection</p> <p>Single phase electrical connection</p> | Marble industry / class room |
| C.7 | Perform bridge cutting                                     | <p><b>Able to:</b><br/>Operate bridge cutter safely for making slabs</p>   | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>– Quality / Type of stone</li> <li>– Cutting blades / tools</li> <li>– Machine operation</li> </ul> <p><b>Ability to</b></p> <ul style="list-style-type: none"> <li>– Fix the stone on cutting machine</li> <li>– Adjust the speed of the cutter</li> <li>– Adjust the cutting blades in required size</li> <li>– Assess quality of cutting blade / discs</li> </ul> | <p>Theory<br/>4Hrs</p> <p>Practical<br/>16 Hrs</p>    | Bridge cutter  | Marble industry              |

|  |   |   |   |                        |                        |
|--|---|---|---|------------------------|------------------------|
| <p>C.8</p> <p>Perform gang saw cutting</p> | <p><b>Able to:</b></p> <p>Use gang saw cutter safely to Cut slabs in required sizes in good quality</p> | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>- Quality / Type of stone</li> <li>- Cutting blades / tools</li> <li>- Machine operation</li> </ul> <p><b>Ability to</b></p> <ul style="list-style-type: none"> <li>- Fix the stone on gang saw</li> <li>- Adjust the speed of the Gang saw</li> <li>- Adjust the cutting blades in required size</li> <li>- Assess quality of cutting blades of gang saw</li> </ul> | <p>Theory<br/>4 Hrs</p> <p>Practical<br/>16 Hrs</p> | <p>Gang saw cutter</p> | <p>Marble industry</p> |
|--|---|---|---|------------------------|------------------------|

## Module D: Perform In-Lays Cutting

**Objective of the Module:** To enable the trainee to be able to make new pattern to perform In-Lays

**Duration:** Theory: 40 hours Practice: 200 hours

| Learning Unit                 | Learning Outcomes   | Learning Elements  | Duration                                    | Materials Required                            | Learning Place |
|-------------------------------|---|--|---|---|----------------|
| D.1<br>Select color of stone  | <b>Able to :</b><br>Choose color stone for new product  | <b>Knowledge of:</b><br><ul style="list-style-type: none"> <li>– Colour scheme</li> <li>– Basic color</li> </ul> <b>Ability to:</b><br><ul style="list-style-type: none"> <li>– Develop samples with different color schemes for different product</li> </ul>  | Theory<br>4Hrs<br><br>Practical<br>16 Hrs   | Marble stone of different colors              | Class room     |
| D.2<br>Select design of stone | <b>Able to:</b><br>Select design / shape of stone to develop In-Lay using different shapes of the stone | <b>Knowledge of:</b><br><ul style="list-style-type: none"> <li>– Geometrical shapes</li> <li>– Material required</li> <li>– Kind of material use in the sample development</li> <li>– Kinds of pattern to be made for one product</li> <li>– Pattern numbering</li> </ul> <b>Ability to:</b><br><ul style="list-style-type: none"> <li>– Search the stone for required color and design</li> </ul> | Theory<br>4 Hrs<br><br>Practical<br>16 Hrs  | Marble stone of different dimensions / shades | Class room     |
| D.3<br>Draw sketch on stone   | <b>Able to :</b><br>Develop different designs with innovative ideas                                     | <b>Knowledge of:</b><br><ul style="list-style-type: none"> <li>– Free hand sketching</li> </ul> <b>Ability to:</b><br><ul style="list-style-type: none"> <li>– Draw basic sketch</li> <li>– Apply basic calculations to work with design</li> </ul>  | Theory<br>12 Hrs<br><br>Practical<br>48 Hrs | measuring tape, sketch paper, pencils         | Class room     |

|  |  |   |  |   |                                     |
|--|--|---|--|---|-------------------------------------|
| <p>D.4<br/>Cut stone according to design</p>   | <p><b>Able to :</b><br/>Use cutting machine for fine cutting and grinding of stone pieces to fit into the design</p> | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>– Quality of stone</li> <li>– Cutting machine and tools</li> <li>– Measuring tools</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Applying design according to drawing sheet</li> <li>– Convert design with proper shapes</li> <li>– Adjust tools and speed of the machine</li> </ul>                                   | <p>Theory<br/>10 Hrs</p> <p>Practical<br/>40 Hrs</p> | <p>Marble stone of different colors, Vertical / cross cutting machine</p> | <p>Class room / marble industry</p> |
| <p>D.5<br/>Perform finishing of cut pieces</p> | <p><b>Able to :</b><br/>Make the small pieces of marble for fitting into the designs</p>                             | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>– Extracting design pieces</li> <li>– Cutting instruments</li> <li>– Need of ready shape pattern</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Operate machine for fine cutting and grinding</li> <li>– Adjust tools and speed of the machine</li> </ul>   | <p>Theory<br/>10 Hrs</p> <p>Practical<br/>40 Hrs</p> | <p>Marble stone of different colors, Vertical / cross cutting machine</p> | <p>Class room / marble industry</p> |
| <p>D.6<br/>Bind pieces according to design</p> | <p><b>Able to:</b><br/>Place small pieces of marble into design and fix them with glue</p>                           | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>– Importance of design</li> <li>– Aesthetics</li> <li>– Lining style</li> <li>– Kinds of lining</li> <li>– Fixing material / glue</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Maintaining shapes after applying cutting pieces</li> <li>– Use of lining</li> <li>– Use of fixing material without wastage</li> </ul> | <p>Theory<br/>8 Hrs</p> <p>Practical<br/>32 Hrs</p>  | <p>Marble stone of different colors, Glue, Mesh,</p>                      | <p>Class room / marble industry</p> |

## Module E: Perform Polishing

**Objective of the Module:** To enable the trainee to be able to perform polishing

**Duration:** Theory: 20 hours Practice: 80 hours

| Learning Unit                          | Learning Outcomes   | Learning Elements   | Duration                                      | Materials Required   | Learning Place               |
|--|---|---|---|--|------------------------------|
| E.1<br>Select proper disc for grinding | <b>Able to:</b><br>Select proper tools /disc for safe operation of grinding | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Abrasives</li> <li>– Grain size of the abrasives</li> <li>– Different types of tools</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Choose correct tool</li> <li>– to assess the quality of the abrasives</li> <li>– Fix grinding disc properly in the machine</li> </ul>   | Theory<br>02 Hrs<br><br>Practical<br>08 Hrs   | Abrasives of different sizes                                 | Class room / marble industry |
| E.2<br>Perform grinding                | <b>Able to:</b><br>Use grinding machine safely                              | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Abrasives</li> <li>– Grain size of the abrasives</li> <li>– Handling the grinding machine</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Able to assess the quality of the abrasives</li> <li>– Fix abrasives properly in the machine</li> <li>– Hold the machine safely on to the material</li> <li>– Able to assess the required level of grinding</li> </ul> | Theory<br>2.4 Hrs<br><br>Practical<br>3.6 Hrs | Grinding pads of different sizes, Grinder (pedestal / handy) | Class room / marble industry |
| E.3<br>Ensure water on material        | <b>Able to:</b><br>Use water according to the cutting requirement           | <b>Knowledge of :</b> <ul style="list-style-type: none"> <li>– Water supply</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Adjust water pressure</li> <li>– Avoid water wastage</li> <li>– Adjust water on abrasives</li> </ul>   | Theory<br>0.4 Hrs<br><br>Practical<br>1.6 Hrs | G.I. /rubber pipe  | Class room / marble industry |

|   |  |   |  |   |                                     |
|---|--|---|--|---|-------------------------------------|
| <p>E.4</p> <p>Fix material in the polishing machine</p> | <p><b>Able to:</b><br/>Fix material accurately in the machine for further processing</p> | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>– Different kinds of marble</li> <li>– Machine operations</li> <li>– Tools for polishing</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Handle the material safely</li> <li>– Fix the material in the machine</li> <li>– Operate the machine</li> <li>– Identify the tools for polishing</li> <li>– Adjust the material in level</li> </ul> | <p>Theory<br/>02 Hrs</p> <p>Practical<br/>08 Hrs</p> | <p>Polish machine, polishing stones</p> | <p>Class room / marble industry</p> |
| <p>E.5</p> <p>Prepare surface for polishing</p>         | <p><b>Able to:</b><br/>Make the surface of the marble ready for polishing</p>            | <p><b>Knowledge of :</b></p> <ul style="list-style-type: none"> <li>– Material to be polished</li> <li>– Material used in polishing</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Assess the cleanliness before polishing</li> <li>– Use tools to make surface ready for polish</li> </ul>  | <p>Theory<br/>02 Hrs</p> <p>Practical<br/>08 Hrs</p> | <p>Sand paper, dry cloth</p>            | <p>Class room / marble industry</p> |
| <p>E.6</p> <p>Prepare chemical polish</p>               | <p><b>Able to:</b><br/>Mix the materials in correct ratio to prepare chemical polish</p> | <p><b>Knowledge of :</b></p> <ul style="list-style-type: none"> <li>– Chemical used in polishing</li> <li>– Quality of different polishes like Five Extra (Yellow)</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Mix the ingredient of polish safely</li> <li>– Prepare polish in required quantity</li> </ul>  | <p>Theory<br/>02 Hrs</p> <p>Practical<br/>08 Hrs</p> | <p>Ingredient of chemical polish</p>    | <p>Class room / marble industry</p> |
| <p>E.7</p> <p>Apply polish on material</p>              | <p><b>Able to:</b><br/>Apply polish on the surface in correct quantity</p>               | <p><b>Knowledge of :</b></p> <ul style="list-style-type: none"> <li>– Area to be polished</li> <li>– Material used in polishing</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Assess the cleanliness before polishing</li> <li>– Apply polish in minimum required thickness</li> <li>– Take safety measure</li> <li>– Use machine safely for polishing</li> </ul>   | <p>Theory<br/>02 Hrs</p> <p>Practical<br/>08 Hrs</p> | <p>Chemical polish, dry cloth</p>       | <p>Class room / marble industry</p> |

|   |  |  |   |  |                                     |
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| <p>E.8<br/>Remove material from machine</p>               | <p><b>Able to:</b><br/>Remove the job safely from machine after polishing</p>                            | <p><b>Knowledge of :</b></p> <ul style="list-style-type: none"> <li>– Polished surface</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Handle material safely after polishing</li> <li>– Store material safely</li> </ul>  | <p>Theory<br/>02 Hrs</p> <p>Practical<br/>08 Hrs</p>    | <p>Polishing machine</p>                       | <p>Class room / marble industry</p> |
| <p>E.9<br/>Perform buffing on material</p>                | <p><b>Able to:</b><br/>Make the surface finish smooth by buffing</p>                                     | <p><b>Knowledge of :</b></p> <ul style="list-style-type: none"> <li>– Material to be buffed</li> <li>– Material used in buffing</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Assess the cleanliness before buffing</li> <li>– Handle the machine safely</li> <li>– Fix the buffing material in the machine</li> </ul> | <p>Theory<br/>3.2 Hrs</p> <p>Practical<br/>12.8 Hrs</p> | <p>Grinder (handy), buffing pads</p>           | <p>Class room / marble industry</p> |
| <p>E.10<br/>Ensure safe placement of finished product</p> | <p><b>Able to:</b><br/>Pack the finished goods as per packing standards and keep record of inventory</p> | <p><b>Knowledge of :</b></p> <ul style="list-style-type: none"> <li>– Material handling</li> <li>– Storage of fragile materials</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Store and pack the finished product safely</li> <li>– Use strong packing</li> <li>– Numbering for identification</li> </ul>              | <p>Theory<br/>02 Hrs</p> <p>Practical<br/>08 Hrs</p>    | <p>Packing box, dry matt, packing material</p> | <p>Class room / marble industry</p> |

## Module F: Maintain Tools and Equipment

**Objective of the Module:** To enable the trainee to be maintain the tools and equipments.

**Duration:** Theory: 16 hours Practice: 64 hours

| Learning Unit                         | Learning Outcomes  | Learning Elements  | Duration                                    | Materials Required   | Learning Place  |
|---------------------------------------|--|--|---|--|-----------------|
| F.1<br><br>Clean tools and machine    | <b>Able to:</b><br>Keep the machine and tools clean and ready for next use     | <b>Knowledge of:</b><br><ul style="list-style-type: none"> <li>– tools</li> <li>– machines</li> <li>– material used for cleaning</li> </ul> <b>Ability to:</b><br><ul style="list-style-type: none"> <li>– Use cleaning material safely</li> <li>– Handle tools safely</li> <li>– Handle machine safely</li> </ul>             | Theory<br>4 Hrs<br><br>Practical<br>16 Hrs  | Cutting machines, grinding disc, hammer, wrench set                                      | Class room      |
| F.2<br><br>Apply oiling to machines   | <b>Able to:</b><br>Lubricate the machine as per manufacturer's recommendations | <b>Knowledge of:</b><br><ul style="list-style-type: none"> <li>– Types of oil</li> <li>– Oiling points of machines</li> </ul> <b>Ability to:</b><br><ul style="list-style-type: none"> <li>– Maintain the oiling record</li> <li>– Oil the machines in required quantity</li> <li>– Clean the machines after oiling</li> </ul> | Theory<br>02 Hrs<br><br>Practical<br>08 Hrs | Cutting machines, grinding machines, overhead crane                                      | Marble industry |
| F.3<br><br>Protect machines from dust | <b>Able to</b><br>Keep the machine in perfect operating condition              | <b>Knowledge of :</b><br><ul style="list-style-type: none"> <li>– Machines to be protected</li> </ul> <b>Ability to:</b><br><ul style="list-style-type: none"> <li>– Cover the machines with dust protection covers</li> <li>– De dusting of machines at regular intervals</li> </ul>  | Theory<br>02 Hrs<br><br>Practical<br>08 Hrs | Cutting machines, grinding machine, vertical cutting machine, horizontal cutting machine | Marble industry |



|   |  |  |  |  |                                     |
|---|--|--|--|--|-------------------------------------|
| <p>F.4</p> <p>Place tools in proper position</p>      | <p><b>Able to:</b><br/>Keep tools safely at designated area and maintain inventory record</p>  | <p><b>Knowledge of :</b></p> <ul style="list-style-type: none"> <li>– Tools</li> <li>– Tool box</li> <li>– Tool holder</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Place tools at designated place</li> <li>– Maintain the record of tools</li> <li>– Place the tools at safe place</li> </ul> | <p>Theory<br/>02 Hrs</p> <p>Practical<br/>08 Hrs</p> | <p>Screw driver, pliers, hammer, wrench set, grinding tips, tool box</p> | <p>Class room</p>                   |
| <p>F.5</p> <p>Check the water supply</p>              | <p><b>Able to :</b><br/>Manage the water supply at machine</p>                                 | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>– Water supply line</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Adjust water pressure / flow</li> </ul>   | <p>Theory<br/>02 Hrs</p> <p>Practical<br/>08 Hrs</p> | <p>G.I. / Rubber pipe</p> <p>Water storage tank</p>                      | <p>Class room / marble industry</p> |
| <p>F.6</p> <p>Ensure cleanliness of the workplace</p> | <p><b>Able to</b><br/>Make the workplace clean and tidy after the job is finished</p>          | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>– Necessity of cleanliness</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Keep the workplace neat and clean after the job is finished</li> </ul>   | <p>Theory<br/>02 Hrs</p> <p>Practical<br/>08 Hrs</p> | <p>Cutting / grinding area</p>   | <p>Marble industry</p>              |
| <p>F.7</p> <p>Ensure supply of electricity</p>        | <p><b>Able to:</b><br/>Volt meter and ensure correct voltage for safe operation of machine</p> | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>– Electricity supply</li> <li>– voltmeter</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Use voltmeter</li> <li>– Take safety precautions at electrical equipments</li> </ul>  | <p>Theory<br/>02 Hrs</p> <p>Practical<br/>08 Hrs</p> | <p>Single phase and 3 - phase Electrical connection</p>                  | <p>Marble industry / class room</p> |

|  |   |   |   |   |                        |
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| <p>F.8</p> <p>Check the condition of the machine</p> | <p><b>Able to:</b></p> <p>Maintain the machine in perfect condition as recommended by the machine manufacturer for smooth operation</p> | <p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>– Machines working</li> </ul> <p><b>Ability to:</b></p> <ul style="list-style-type: none"> <li>– Assess the correct working of the machine</li> <li>– Take prompt maintenance when required</li> <li>– Follow routine maintenance</li> <li>– Maintain the register for maintenance</li> <li>– Stop the machine for maintenance when it is not in good condition</li> </ul> | <p>Theory<br/>4 Hrs</p> <p>Practical<br/>16 Hrs</p> | <p>Gang saw, bridge cutter, polishing machine, vertical cutter, horizontal cutter</p> | <p>Marble industry</p> |
|--|---|---|---|---|------------------------|

## Module G: Ensure Safety Precautions

**Objective of the Module:** To enable the trainee to be able to ensure safety precautions.

**Duration:** Theory: 16 hours Practice: 64 hours

| Learning Unit                         | Learning Outcomes  | Learning Elements   | Duration                                    | Materials Required                | Learning Place  |
|---------------------------------------|--|---|---|-----------------------------------|-----------------|
| G.1<br>Wear proper clothing           | <b>Able to</b><br>Use safety / working clothes as per work environment     | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Work safety and environment</li> <li>– Type of safety clothing</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Identify the work environment and select proper clothes</li> </ul>  | Theory<br>02 Hrs<br><br>Practical<br>08 Hrs | Pant shirt, gloves, masks, shoes, | Class room      |
| G.2<br>Ensure safety of the machines  | <b>Able to:</b><br>Identify and select the proper safety steps for machine | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Safety of machines and its importance</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Make routine checks of the machine</li> <li>– Follow the procedure for operation as described in manual of the machine</li> <li>– Fix / ensure safe guards at the machine</li> </ul> | Theory<br>02 Hrs<br><br>Practical<br>08 Hrs | Safety sign boards                | Class room      |
| G.3<br>Ensure drainage of waste water | <b>Able to:</b><br>Perform steps for proper drainage of the water          | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Waste water</li> <li>– Channels for drainage</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>– Make the drainage passage clear</li> <li>– Routine cleaning of the drain channels</li> </ul>  | Theory<br>4Hrs<br><br>Practical<br>16 Hrs   | Drain channels                    | Marble industry |
| G.4<br>Ensure safety of the workplace | <b>Able to:</b><br>Take necessary safety measure for the work place        | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>– Safety code</li> <li>– Follow safety precautions at workplace</li> </ul>  | Theory<br>4Hrs<br><br>Practical<br>16 Hrs   | Safety sign boards                | Class room      |

|                                    |  |   |  |                    |            |
|------------------------------------|--|---|--|--------------------|------------|
|                                    |  | <b>Ability to:</b> <ul style="list-style-type: none"> <li>- Keep the work place neat and clean</li> <li>- Point out the hazard areas</li> </ul>   |  |                    |            |
| G.5<br><br>Practice general safety | <b>Able to:</b><br><br>Take necessary measures for the safety of personal , machine and work place | <b>Knowledge of:</b> <ul style="list-style-type: none"> <li>- Safety tools /equipments</li> </ul> <b>Ability to:</b> <ul style="list-style-type: none"> <li>- Manage general safety equipments</li> <li>- Ensure to use safety equipments before entering work place</li> </ul> | Theory<br>4 Hrs<br><br>Practical<br>16 Hrs | Safety sign boards | Class room |

## Assessment Template

### Module A: Handling of Stones

| Learning Units  | Theory Days/ hours | Workplace Days/hours | Recommended formative assessment  | Recommended Methodology                  | Scheduled Dates      |
|---|--------------------|----------------------|---|--|----------------------|
| A.1<br>Allocate space for placement of stone          | 20                 | 80                   | Describe the importance of space allocation for placement of stone.<br>Identify the quality of the stone  | Q & A<br>Illustrative test               | At the end of module |
| A.2<br>Inspection of the Stone                        |                    |                      | Describe the types of physical defects in the marble stone  | Q & A                                    | At the end of module |
| A.3<br>Unload stone from vehicle                      |                    |                      | Demonstrate how to unload the stone from vehicle<br><br>List down tools and equipment and safety precautions during unloading                           | Practical<br>Direct Observation<br>Q & A | At the end of module |
| A.4<br>Ensure proper placement of stone               |                    |                      | Demonstrate how to place the stone at safe place<br><br>Explain and Identify a situation and object in which certain problem occurs while placing stone | Practical<br>Direct Observation<br>Q & A | At the end of module |
| A.5<br>Use overhead crane for transportation of stone |                    |                      | Demonstrate how to shift the stone with overhead crane<br>Describe the major faults of the crane  | Practical<br>Direct Observation          | At the end of module |
| A.6<br>Ensure safety of stone                         |                    |                      | Explain why the safety of stone is necessary  | Q & A                                    | At the end of module |
| A.7<br>Maintain inventory register                    |                    |                      | Describe the importance of inventory<br>Explain types of quality of marble  | Q & A                                    | At the end of module |

## Module B: Apply sizing to Marble Blocks

| Learning Units                        | Theory Days/ hours | Workplace Days/hours | Recommended formative assessment  | Recommended Methodology                          | Scheduled Dates      |
|---------------------------------------|--------------------|----------------------|---|--|----------------------|
| B.1<br>Select machine                 | 20                 | 80                   | Demonstrate the criteria for selection of machine<br>Explain different types of the tools used in sizing of marble  | Illustrative test<br>Direct Observation<br>Q & A | At the end of module |
| B.2<br>Check machine                  |                    |                      | Demonstrate how to check the machine before starting the work<br>Demonstrate how to adjust the machine for different types of jobs  | Practical<br>Direct Observation<br>Q & A         | At the end of module |
| B.3<br>Measure Blocks                 |                    |                      | Explain and Identify tools and equipment used for measuring the block<br>Describe various terms used for measurement<br>Give estimated dimensions of the marble block         | Q & A<br>Direct Observation                      | At the end of module |
| B.4<br>Ensure water supply            |                    |                      | Explain why the supply of water is necessary for cutting  | Q & A  | At the end of module |
| B.5<br>Check voltage                  |                    |                      | What is difference between single and three phase electric supply<br>Demonstrate How to check voltage   | Q & A<br>Direct Observation<br>Practical         | At the end of module |
| B.6<br>Cut slabs in horizontal shape  |                    |                      | Explain difference between vertical and horizontal slabs<br>Illustrate what tools are required for horizontal cutting   | Practical<br>Direct Observation<br>Q & A         | At the end of module |
| B.7<br>Cut slabs in vertical shape    |                    |                      | Explain difference between vertical and horizontal slabs<br>Demonstrate how to fix the stone in the machine for cutting<br>Demonstrate how to adjust the speed of the machine | Q & A<br>Direct Observation                      | At the end of module |
| B.8<br>Cut slabs in rectangular shape |                    |                      | Demonstrate how to cut irregular stone into rectangular shape slabs   | Practical<br>Direct Observation<br>Q & A         | At the end of module |
| B.9<br>Cut slabs in square shape      |                    |                      | Demonstrate how to cut irregular stone into square shape slabs<br>Describe how to check the   | Practical<br>Direct Observation<br>Q & A         | At the end of module |

|  |  |  |   |  |                         |
|--|--|--|---|--|-------------------------|
|  |  |  | quality of the cutting tools  |  |                         |
| B.10<br>Perform<br>resizing<br>according to<br>requirement |  |  | Demonstrate the procedure of<br>resizing of slabs<br>Demonstrate how to fix the<br>stone in the machine for<br>resizing | Practical<br>Direct Observation<br>Q & A | At the end<br>of module |

## Module C: Perform Marble Cutting

| Learning Units                      | Theory Days/ hours | Workplace Days/hours | Recommended formative assessment  | Recommended Methodology                                       | Scheduled Dates      |
|-------------------------------------|--------------------|----------------------|---|---|----------------------|
| C.1.<br>Select relevant tools       | 20                 | 80                   | Explain and identify the tools required for marble cutting  | Practical<br>Direct Observation<br>Q & A<br>Illustrative test | At the end of module |
| C.2<br>Arrange material for cutting |                    |                      | Identify different type of stones based on the hardness   | Q & A<br>Direct Observation                                   | At the end of module |
| C.3<br>Adjust cutting machine       |                    |                      | Explain and Identify a situation and object in which certain problem occurs while adjusting machine   | Practical<br>Direct Observation<br>Q & A                      | At the end of module |
| C.4<br>Measure Stone                |                    |                      | Demonstrate how to take measurement with measuring tape<br>Give an estimated dimension of the marble stone  | Practical<br>Direct Observation<br>Q & A                      | At the end of module |
| C.5<br>Ensure water supply          |                    |                      | Explain why water is necessary for cutting of marble stone  | Q & A   | At the end of module |
| C.6<br>Check voltage                |                    |                      | Which instrument is used to check voltage<br>Demonstrate to check the voltage   | Practical<br>Direct Observation<br>Q & A                      | At the end of module |
| C.7<br>Perform bridge cutting       |                    |                      | Explain what steps are involved in bridge cutting.<br>Demonstrate how to fix the stone under the bridge saw<br>Demonstrate how to adjust the speed of the machine   | Practical<br>Direct Observation<br>Q & A                      | At the end of module |
| C.8<br>Perform gang saw cutting     |                    |                      | Explain what steps are involved in gang saw cutting.<br>Demonstrate how to fix the stone under the bridge saw<br>Demonstrate how to adjust the speed of the machine | Practical<br>Direct Observation<br>Q & A                      | At the end of module |



## Module D: Perform In-Lays Cutting

| Learning Units                         | Theory Days/ hours | Workplace Days/hours | Recommended formative assessment   | Recommended Methodology                  | Scheduled Dates      |
|--|--------------------|----------------------|--|--|----------------------|
| D.1<br>Select color of stone           | 40                 | 200                  | Illustrate the importance of color scheme for a design by the customer.  | Q & A                                    | At the end of module |
| D.2<br>Select design of stone          |                    |                      | Demonstrate how to select the design by the customer   | Q & A                                    | At the end of module |
| D.3<br>Draw sketch on stone            |                    |                      | Draw a sketch<br><br>List of tools and equipment and safety precautions  | Practical<br>Direct Observation<br>Q & A | At the end of module |
| D.4<br>Cut stone according to design   |                    |                      | Demonstrate the cutting of stone for a specific design<br><br>List of tools and equipment and safety precautions | Practical<br>Direct Observation<br>Q & A | At the end of module |
| D.5<br>Perform finishing of cut pieces |                    |                      | Demonstrate how to develop a finished surface<br>Illustrate how to adjust machine for fine cutting               | Q & A<br>Practical<br>Direct Observation | At the end of module |
| D.6<br>Bind pieces according to design |                    |                      | Explain different type of binding / fixing materials<br>Demonstrate how to bind the stones for a specific design | Q & A<br>Practical<br>Direct Observation | At the end of module |

## Module E: Perform Polishing

| Learning Units                               | Theory Days/ hours | Workplace Days/hours | Recommended formative assessment   | Recommended Methodology                          | Scheduled Dates      |
|--|--------------------|----------------------|--|--|----------------------|
| E.1<br>Select proper disc for grinding       | 20                 | 80                   | What factors are kept in mind while selecting abrasives<br>Demonstrate how to fix abrasives in the machine   | Q & A<br>Direct Observation                      | At the end of module |
| E.2<br>Perform grinding                      |                    |                      | Explain the procedure for grinding<br>What are different types of abrasives<br>What precautions should be taken during grinding                    | Practical<br>Direct Observation                  | At the end of module |
| E.3<br>Ensure water on material              |                    |                      | Describe the need of water for cutting   | Q & A  | At the end of module |
| E.4<br>Fix material in the polishing machine |                    |                      | Explain and Identifying the different types of polishing machines and tools<br>Illustrate how to abrasives in the machine                          | Illustrative test<br>Q & A<br>Direct Observation | At the end of module |
| E.5<br>Prepare surface for polishing         |                    |                      | Demonstrate how to prepare the surface for polishing   | Q & A<br>Practical<br>Direct Observation         | At the end of module |
| E.6<br>Prepare chemical polish               |                    |                      | Demonstrate how to prepare chemical polish<br>What materials are required for polish   | Q & A<br>Practical<br>Direct Observation         | At the end of module |
| E.7<br>Apply polish on material              |                    |                      | Demonstrate how to apply polish on the surface<br>Describe the safety measures to be taken during polishing of stone                               | Q & A<br>Practical<br>Direct Observation         | At the end of module |
| E.8<br>Remove material from machine          |                    |                      | Demonstrate how and when to remove the material from the machine   | Q & A<br>Practical<br>Direct Observation         | At the end of module |
| E.9<br>Perform buffing on material           |                    |                      | Demonstrate how to prepare the surface for buffing<br>What materials are used in buffing<br>Demonstrate how to fix the buffing pads in the machine | Q & A<br>Practical<br>Direct Observation         | At the end of module |

|  |  |  |   |                             |                         |
|--|--|--|---|-----------------------------|-------------------------|
| E.10<br>Ensure safe<br>placement of<br>finished<br>product |  |  | Explain why and how to place<br>material safely<br>Illustrate how to pack and label<br>the finished product | Q & A<br>Direct Observation | At the end<br>of module |
|--|--|--|---|-----------------------------|-------------------------|



## Module F: Maintain Tools and Equipment

| Learning Units                             | Theory Days/ hours | Workplace Days/hours | Recommended formative assessment  | Recommended Methodology                  | Scheduled Dates      |
|--|--------------------|----------------------|---|--|----------------------|
| F.1<br>Clean tools and machine             | 16                 | 64                   | Demonstrate how to clean tools<br>List of tools and equipment and safety precautions            | Q & A<br>Practical<br>Direct Observation | At the end of module |
| F.2<br>Apply oiling to machines            |                    |                      | Demonstrate how to oil the machine  | Q & A<br>Practical<br>Direct Observation | At the end of module |
| F.3<br>Protect machines from dust          |                    |                      | Demonstrate how to protect the machines from dust   | Q & A<br>Practical<br>Direct Observation | At the end of module |
| F.4<br>Place tools in proper position      |                    |                      | Demonstrate how to place tools in tool box<br>List of tools and equipment                       | Q & A<br>Practical<br>Direct Observation | At the end of module |
| F.5<br>Check the water supply              |                    |                      | Describe the need of water for cutting  | Q & A                                    | At the end of module |
| F.6<br>Ensure cleanliness of the workplace |                    |                      | Describe why it is important to keep the work place clean                                       | Q & A                                    | At the end of module |
| F.7<br>Ensure supply of electricity        |                    |                      | Which instrument is used to check voltage<br>Demonstrate to check the voltage                   | Practical<br>Direct Observation<br>Q & A | At the end of module |
| F.8<br>Check the condition of the machine  |                    |                      | Describe how to check the condition of machine<br>Explain the procedure for machine maintenance | Q & A<br>Practical<br>Direct Observation | At the end of module |

## Module G: Ensure safety Precautions

| Learning Units                        | Theory Days/ hours | Workplace Days/hours | Recommended formative assessment  | Recommended Methodology                  | Scheduled Dates      |
|---------------------------------------|--------------------|----------------------|---|--|----------------------|
| G.1<br>Wear proper clothing           | 16                 | 64                   | Identify the tools, equipment needed for safety<br>What kind of clothes to be used                            | Practical<br>Direct Observation<br>Q & A | At the end of module |
| G.2<br>Ensure safety of the machines  |                    |                      | what are the check list for the safety of the machine   | Q & A                                    | At the end of module |
| G.3<br>Ensure drainage of waste water |                    |                      | Explain what will happen if the drainage is not clear<br><br>List of tools and equipment cleaning of drainage | Illustrative test<br>Q & A               | At the end of module |
| G.4<br>Ensure safety of the workplace |                    |                      | Identify the safety signs<br>Why the work place safety is important   | Q & A<br>Direct Observation<br>MCQs      | At the end of module |
| G.5<br>Practice general safety        |                    |                      | Explain what safety measure should be taken for personal and machine at work place                            | Q & A                                    | At the end of module |

## Supportive notes

### **Assessment context:**

Introduction and explanation about the marble cutting and In-Lays process will be in the class room where as practical will be in a marble factory.

### **Critical aspect:**

The learner should be properly guided about the self safety and about care to be taken while operating machines.

### **Assessment condition:**

Learner will have access to all tools related with marble cutting and In - Lays.

### **Resources required for assessment:**

Marble cutting machines, bridge cutter, gang saw cutter, Sizing machine, polishing machine, measuring tape, handy grinder, hammer, cutting disc.

## List of Tools, Machinery & Equipment

|               |                            |
|---------------|----------------------------|
| Name of Trade | Marble cutting and In-Lays |
| Duration      | 6 months                   |

| Sr. No. | Name of Item/ Equipment / Tools |
|---------|---------------------------------|
| 1.      | Grinder (Handy / Pedestal)      |
| 2.      | Overhead Crane                  |
| 3.      | Tripod stand with pulley        |
| 4.      | Bridge Cutter                   |
| 5.      | Polish machine                  |
| 6.      | Buff pad                        |
| 7.      | Measurement tape                |
| 8.      | Cutting tools, blades           |
| 9.      | Hammer                          |
| 10.     | Water pump                      |
| 11.     | Gloves                          |
| 12.     | Masks                           |
| 13.     | Safety shoes                    |
| 14.     | Wrench set                      |
| 15.     | Vertical cutting machine        |
| 16.     | Cross cutting machine           |
| 17.     | Jelly / Glue                    |
| 18.     | Tester                          |
| 19.     | Section Cutting machine         |
| 20.     | Marble block / slab             |
| 21.     | Drill Machine with Diamond bits |
| 22.     | Sizing Machine                  |
| 23.     | Volt meter / Ampere meter       |



## List of Consumable Supplies

| Sr. No. | Name of Consumable Supplies |
|---------|-----------------------------|
| 1.      | Paper tape 1 inch.          |
| 2.      | Note book                   |
| 3.      | Paper rim A4                |
| 4.      | Box board sheet             |
| 5       | Lead Pencil                 |
| 6       | Lubricating oil             |

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