

Curriculum
For
Certificate in Marble Handicrafts
(Duration Six Months)
Code:VD35S002
(2013)

SCHEME OF STUDIES

Marble Handicraftsman:

Sr. #	Module	Theory (Hours)	Practical (Hours)	Total (Hours)
1	A. Prepare activity plan	20	80	100
2	B. Perform Marble Cutting	28	112	140
3	C. Perform Turning / Shaping	60	240	300
4	D. Perform Polishing	20	80	100
5	E. Maintain Tools and Equipment	16	64	80
6	F. Ensure Safety Precautions	16	64	80
TOTAL HOURS		160	640	800

Table of Contents

Name of Course: Marble Handicrafts	4
Overall objective of course:-	4
Course Objectives	4
Competencies gained after completion of course.....	4
Job opportunities available immediately and in the future	5
Trainee entry level:	5
Minimum qualification of trainer	5
Medium of Instruction	5
Sequence of the modules	5
Timeframe of Assessment	5
Curriculum Overview	6
Curriculum Contents	8
Module A: Prepare activity plan	8
Module B: Perform Marble Cutting	10
Module C : Perform Turning / Shaping	13
Module D: Perform Polishing	15
Module E: Maintain Tools and Equipment	19
Module F: Ensure Safety Precautions	22
Assessment Template	24
Module A: Prepare activity plan	24
Module B: Perform Marble Cutting	25
Module C: Perform Turning / Shaping	26
Module D: Perform Polishing	27
Module E: Maintain Tools and Equipment	29
Module F: Ensure safety Precautions	30
Supportive notes	31
List of Tools, Machinery & Equipment.....	32
List of Consumable Supplies	33
Contributions for Development of This Curriculum	34

Name of Course: Marble Handicrafts

Short History:-

The history of handicrafts in the areas generally now comprising India & Pakistan is ancient, dating back almost 5000 years. The Indus valley civilization had a rich craft tradition, as well as a high degree of technical excellence in the fields of stone sculpture, stone handicrafts. Marble or stone handicrafts are now wide field, many countries like China, India, Pakistan etc, especially Pakistani onyx handicrafts are very famous in all over the world.

Marble:-

Marble is a metamorphic rock composed carbonate minerals, most commonly calcite or dolomite. Marble is commonly used for as a building material, handicrafts, sculptures, mosaics & many other uses. Marble handicrafts actually refer to stone handicrafts which includes marble, travertine, onyx & any other stone family.

Handicrafts:- it's a wide variety of types of work where useful & decorative objects are made completely by hand or by using only simple tools.

Overall objective of course:-

To provide the basic skills to the trainees in the field of Marble handicrafts and value addition to it. It will enable the trainees to meet the challenges in the field of marble handicrafts. Further, to improve the skill level of the workers and prepare them for the marble industry to meet the local, national and international market competition.

Course Objectives

1. Basic information about Marble and marble handicrafts.
2. Provision of basic skills in marble handling, cutting, designing and planning for production.
3. Prepare students as per industrial requirement.
4. Educate them with latest techniques
5. Maximum exposure to the machinery & equipments.
6. Importance of skilled workers in the market
7. Knowledge about different machines for marble designing, cutting and processing
8. Knowledge of different techniques for marble designing, cutting and processing
9. Knowledge of marble handicrafts
10. Capable using of cutting and polishing machines

Competencies gained after completion of course

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

1. Prepare of activity plan for making marble handicrafts
2. Use the required tools and measuring instruments
3. Cutting the marble blocks according to the required shapes.
4. Carry out all safety measures and precautions for personal and equipment
5. Use of cutting, polishing and turning machines

6. Identify the quality of the marble and able to distinguish good and poor quality of marble required for handicrafts
7. Handle machines related with marble handicrafts.
8. Know about the marble handicrafts
9. Develop design pattern for handicrafts
10. Pack and store finished products

Job opportunities available immediately and in the future

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

1. Marble industries
2. Start their own business for marble handicrafts
3. Opportunities to work regional, national and international markets

Trainee entry level:

At least Middle(preferable Matric)

Minimum qualification of trainer

Higher Secondary School Certificate or equivalent (preferably technical stream) with 6 months certificate in Marble handicrafts or 3 years industrial experience in marble handicrafts.

Medium of Instruction

Urdu/English (especially local languages)

Sequence of the modules

1. Module A – Prepare activity plan
2. Module B – Perform Marble Cutting
3. Module C – Perform Turning / Shaping
4. Module D – Perform Polishing
5. Module F – Maintain Tools and Equipment
6. Module E – Ensure Safety Precautions

Timeframe of Assessment

Duration of Course:	6 Months
Total Hours:	800 hrs.
Days Per Week:	06
Per Week Hour	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 ¹ Days/hours	Workplace Days/hours	Timeframe of modules
Module A Prepare Activity plan Aim This module deals with the skill and knowledge of preparing of action plan to perform the job	<ol style="list-style-type: none"> 1. Interact with customer 2. Take requirement from customer 3. Prepare estimate 4. Take order 5. Select material 6. Quality production 	20	80	Independent
Module B Perform Marble Cutting Aim This module deals with the skill and knowledge of preparation of marble stones for making handicrafts	<ol style="list-style-type: none"> 1. Select relevant tools 2. Arrange Material for Cutting 3. Decide designing of the product 4. Adjust cutting machine 5. Apply sizing to material 6. Ensure sizing according to sample 7. Quality of products according to specifications 	28	112	After module A
Module C Perform Turning / Shaping Aim This module deals with the skill and knowledge of operating lathe machine for turning and shaping	<ol style="list-style-type: none"> 1. Fix mandrel 2. Fix material on lathe machine 3. Adjust leveling 4. Select tool 5. Ensure watering on material 6. Perform turning 7. Perform shaping 	60	240	After module B
Module D Perform Polishing Aim This module deals with the skill and knowledge of surface finishing	<ol style="list-style-type: none"> 1. Perform filling in material 2. Fix material in the polishing machine 3. Select appropriate sand paper 4. Ensure watering on material 5. Prepare surface for polishing 6. Prepare chemical polish 7. Apply polish on material 8. Remove material from machine 9. Detach mandrel from material 10. Perform buffing on material 	20	80	After module C

	<ol style="list-style-type: none"> 11. Pack the product properly 12. Ensure safe placement of the finished product 13. Estimate casts & market prices 			
<p>Module E Maintain Tools and Equipment</p> <p>Aim This module deals with the skill and knowledge of maintenance of tools and equipment</p>	<ol style="list-style-type: none"> 1. Clean tools and machines 2. Apply oiling to machines 3. Protect machines from dust 4. Place tools in proper position 5. Sharpen the cutting tools 6. Ensure cleanliness of the work place 7. Ensure supply of electricity 8. Check the condition of the machine 9. Check the supply of water 	16	64	After module D
<p>Module F Ensure Safety Precautions</p> <p>Aim This module deals with the skill and knowledge of personal and equipment safety</p>	<ol style="list-style-type: none"> 1. Wear proper clothing 2. Ensure safety of machines 3. Ensure drainage of waste water 4. Ensure safety of the workplace 5. Practice general safety. 	16	64	Independent

Curriculum Contents

Module A: Prepare activity plan

Objective of the Module: To be able to interact, take requirement & prepare estimate for the customer. Take order from the customer & select suitable material to meet both ends.

Duration: Theory: 20 hours Practice: 80 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
A.1 Interact with customer	Able to: Interact with customers with the understanding of communication skills	Knowledge of: <ul style="list-style-type: none"> - products information - Communication skill (5w's) - Dealing with customers Ability to: <ul style="list-style-type: none"> - Soft spoken with customer - Attract the concentration of the customer - Read the mind of customer - Perceive ideas of the customer - Convince the customers 	Theory 3 Hrs Practical 12 Hrs	Stationary items	Class room
A.2 Take requirement from the customer	Able to: Understand the requirement of customer for production	Knowledge of: <ul style="list-style-type: none"> - Designs and patterns - Time required for Production - Varieties of products Ability to: <ul style="list-style-type: none"> - Satisfy the customer - Get enough delivery time - Final design /color approval - Quantity required 	Theory 3 Hrs Practical 12 Hrs	Stationary items	Class room
A.3 Prepare estimates	Able to : Make estimation for cost, material, time and labor required for production	Knowledge of: <ul style="list-style-type: none"> - Availability of material - Cost of material - Time management - Availability of Production facilities - Availability of labour 	Theory 10 Hrs Practical 40 Hrs	Stationary items	Class room

		<p>Ability to:</p> <ul style="list-style-type: none"> - Calculate the quantity of material required - Costing - Estimate availability of labour and machine - Keep margin for unforeseen problems 			
A.4	<p>Take order</p> <p>Able to:</p> <p>Get confirmed order with the satisfaction of the customer</p>	<p>Knowledge of:</p> <ul style="list-style-type: none"> - Negotiation skill - Up to date products <p>Ability to:</p> <ul style="list-style-type: none"> - Convince the customer on quality and delivery time - Get order - Satisfy the customer - Record keeping 	<p>Theory 2 Hrs</p> <p>Practical 8 Hrs</p>	Stationary items	Class room
A.5	<p>Select material</p> <p>Able to :</p> <p>Select suitable material for production</p>	<p>Knowledge of :</p> <ul style="list-style-type: none"> - Different type of stones - Worth of the marble stones - Use of machinery & equipments <p>Ability to:</p> <ul style="list-style-type: none"> - Assess the quality of marble - Estimate the material required - Forecasting of material used 	<p>Theory 2 Hrs</p> <p>Practical 8 Hrs</p>	Slabs of marble stone	Class room /Marble Industry

Module B: Perform Marble Cutting

Objective of the Module: To enable the trainee to select required tools, decide design arrange required material ,adjust machine for the required sizing according to selected shap.

Duration: Theory: 28 hours Practice: 112 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
B 1. Select relevant tools	Able to: Select various kind of tools used in the cutting of marble slabs	Knowledge of: <ul style="list-style-type: none"> – Cutting tools – Grinding tools – Utilization of tools Ability to: <ul style="list-style-type: none"> – Assess the quality of tools – Fix the tools in machine – Adjust the tools for required cutting 	Theory 4 Hrs Practical 16 Hrs	Grinder(p edestal /handy)G rinding disc,	Class room/ Marble industry
B.2 Arrange material for cutting	Able to: Manage the correct type of material as per requirements of the job	Knowledge of: <ul style="list-style-type: none"> – Different type / quality of stones according to requirements – Estimated quantity of material – Size of material Ability to: <ul style="list-style-type: none"> – Select correct size of material – Select correct hardness / type of material 	Theory 4 Hrs Practical 16 Hrs	Marble slabs	Class / room Marble industry
B 3. Decide design for the product	Able to: Get final confirmation of the design from the customer	Knowledge of : <ul style="list-style-type: none"> – Designing – Different kind of stones – Tools required for designing 	Theory 4 Hrs Practical 16 Hrs	Marble slabs Design book	Class / room Marble industry

		<p>Able to:</p> <ul style="list-style-type: none"> – Read and understand design drawings – Understand the complication of design 			
B.4	<p>Able to:</p> <p>Fix the tools and adjust the machine for cutting of slabs in required sizes</p>	<p>Knowledge of:</p> <ul style="list-style-type: none"> – Cutting machine – Cutting disc / tools – Measuring tools – Utilization of tools machinery <p>Ability to:</p> <ul style="list-style-type: none"> – Understand machine adjustments – Fix the cutting tools in machine – Adjust the cutter in required size 	<p>Theory 6 Hrs</p> <p>Practical 24 Hrs</p>	<p>Marble cutting machine</p> <p>Bridge cutter</p>	<p>Marble industry</p>
B.5	<p>Able to:</p> <p>Adjust and operate the sizing machine for getting required sizes of marble pieces</p>	<p>Knowledge of:</p> <ul style="list-style-type: none"> – Measuring tools – Terminology used in the industry – Estimation – Machines used for sizing <p>Ability to:</p> <ul style="list-style-type: none"> – Use measuring tape to measure in inches and centimetres – Follow common terminology of measurement – Operate the sizing machine 	<p>Theory 6 Hrs</p> <p>Practical 24 Hrs</p>	<p>Marble block, Measuring tape</p>	<p>Class room / Marble industry</p>
B.6	<p>Able to:</p> <p>Take measurement and ensure the sizes of the pieces being produced</p>	<p>Knowledge of:</p> <ul style="list-style-type: none"> – Quality of finished product – measurement <p>Ability to:</p> <ul style="list-style-type: none"> – use measuring tapes/ tools – adjust the machine for required size 	<p>Theory 2 Hrs</p> <p>Practical 8 Hrs</p>	<p>Sizing machine</p>	<p>Marble industry</p>

B7. Quality of products according to specification		Knowledge of : Product Customer order Able to: Meet time frame Meet Specification	Theory 2 Hrs Practical 8 Hrs	Marble Stone	Laborat ory

Module C : Perform Turning / Shaping

Objective of the Module: To enable the trainee to utilization of mandrel, lathe machine & related tools, equipments. how & when to perform turning & shaping & How much water should be consumed & how the marble slurry should be disposed.

Duration: Theory: 60 hours Practice: 240 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
C.1 Fix mandrel	Able to: Fix the material in mandrel for further process	Knowledge of: – mandrel fixing Ability to: – fix mandrel on the work piece	Theory 3.2 Hrs Practical 12.8 Hrs	Mandrel equipments	marble industry
C.2 Fix material on lathe machine	Able to: Perform techniques to fix the material on lathe machine for further process	Knowledge of: – Lathe machine – Marble stone – Mandrel Ability to: – Use mandrel – Adjust lathe machine – Operate lathe machine	Theory 8 Hrs Practical 32 Hrs	Marble stone of different dimensions, Lathe machine mandrel	marble industry
C.3 Adjust leveling	Able to: Perform techniques to fix and adjust the level of the piece in lathe machine	Knowledge of: – Leveling – Tools used for leveling – Vernier scale Ability to: – Operate lathe machine – Adjust chucks of lathe machine – Fix the material in lathe chucks – Use of Vernier scale	Theory 4 Hrs Practical 16 Hrs	Vernier scale Spirit level	Class room
C.4 Select tools	Able to: Select and fix the tools in machine	Knowledge of: – Cutting machine – Equipments	Theory 4 Hrs Practical	Spirit level, measuring tools, cutting	marble industry

	according to the design of the job	<ul style="list-style-type: none"> – Measuring tools Ability to: <ul style="list-style-type: none"> – Select correct tools according to the design – Adjust tools in the machine – Adjust speed of the machine according to the type of tools 	16 Hrs	tools, cutting tips		
C.5	Ensure watering on material	Able to: Use minimum water to keep the tools cold	Knowledge of : <ul style="list-style-type: none"> – Required Water supply – Water recycling Ability to: <ul style="list-style-type: none"> – Adjust water pressure – Avoid water wastage – Adjust water on cutting tools – Disposal of marble slurry 	Theory 0.8 Hrs Practical 3.2 Hrs	Source of water rubber pipe	Class room / marble industry
C.6	Perform turning	Able to: Fix the tools and Operate the lathe machine at optimum speed for turning of the piece	Knowledge of: <ul style="list-style-type: none"> – Operation of lathe machine – Cutting tools for turning – Lathe machine chucks Ability to: <ul style="list-style-type: none"> – Adjust suitable speed for turning – Select cutting tools for turning – Fix material tightly into the lathe machine chucks 	Theory 20 Hrs Practical 80 Hrs	Lathe machine Tools equipments	marble industry
C.7	Perform shaping	Able to: Operate lathe machine for shaping of the material as per drawing	Knowledge of: <ul style="list-style-type: none"> – Drawings – Measuring tools – Taking measurement Able to: <ul style="list-style-type: none"> – Read drawing – Use measuring tools – Operate lathe machine 	Theory 20 Hrs Practical 80 Hrs	Lathe machine	marble industry

Module D: Perform Polishing

Objective of the Module: To enable the trainee to perform polishing which is a very important module in the whole course it will enable the trainee to perform filling, fixing material in the polishing machine, select sand papers, prepare polish chemical, watering, surface for polishing. This module will also enable the trainee to how remove the material from machine, detach mandrel, buffing, packing & standardizing the product & to ensure safe placement.

Duration: Theory: 20 hours Practice: 80 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
D.1 Perform filling in material	Able to: Prepare the filling material and apply it to pieces as required	Knowledge of: – Filling materials – Tools used for filling Ability to: – Mix the material for preparing filling material – Apply filling material to the piece – Select the correct tool for filling	Theory 1 Hrs Practical 4 Hrs	Filling material, tools for filling, marble pieces	marble industry
D.2 Fix material in the polishing machine	Able to: Fix material safely, adjust level and operate the machine.	Knowledge of: – Different kinds of marble – Machine operations – Tools for polishing Ability to: – Handle the material safely – Fix the material in the	Theory 1 Hrs Practical 4 Hrs	Polish machine, polishing stones	marble industry

		<ul style="list-style-type: none"> – machine – Operate the machine – Identify the tools for polishing – Adjust the material in level 			
D.3 Select appropriate sand paper	<p>Able to</p> <p>Select and use sand paper for smoothing the surface</p>	<p>Knowledge of:</p> <ul style="list-style-type: none"> – Various grades of sand paper – Various quality of sand paper <p>Ability to:</p> <ul style="list-style-type: none"> – Select sand paper for getting required surface finish – Apply sand paper smoothly 	<p>Theory 1 Hrs</p> <p>Practical 4 Hrs</p>	Water proof Sand paper of different numbers 60, 80, 100, 120	marble industry
D.4 Ensure water on material	<p>Able to:</p> <p>Use water according to requirement of the material</p>	<p>Knowledge of :</p> <ul style="list-style-type: none"> – Water supply <p>Ability to:</p> <ul style="list-style-type: none"> – Adjust water pressure – Avoid water wastage – Adjust water on the material 	<p>Theory 1 Hrs</p> <p>Practical 4 Hrs</p>	Source of water rubber pipe	marble industry
D.5 Prepare surface for polishing	<p>Able to:</p> <p>Perform steps for preparation of the surface for polish</p>	<p>Knowledge of :</p> <ul style="list-style-type: none"> – Material to be polished – Material used in polishing <p>Ability to:</p> <ul style="list-style-type: none"> – Assess the cleanliness before polishing – Use tools to make surface ready for polish 	<p>Theory 2 Hrs</p> <p>Practical 8 Hrs</p>	Sand paper, dry cloth	marble industry
D.6 Prepare chemical polish	<p>Able to:</p> <p>Estimate the polished required and mix the materials in correct</p>	<p>Knowledge of :</p> <ul style="list-style-type: none"> – Chemical used in polishing – Quality of different polishes <p>Ability to:</p>	<p>Theory 2 Hrs</p> <p>Practical 8 Hrs</p>	Ingredient of chemical polish	Class room / marble industry

	ratio and for preparing chemical polish	<ul style="list-style-type: none"> – Mix the ingredient of polish safely – Prepare polish in required quantity 			
D.7 Apply polish on material	<p>Able to:</p> <p>Apply polish on the surface in correct quantity</p>	<p>Knowledge of :</p> <ul style="list-style-type: none"> – Area to be polished – Material used in polishing <p>Ability to:</p> <ul style="list-style-type: none"> – Assess the cleanliness before polishing – Apply polish in minimum required thickness – Take safety measure – Use machine safely for polishing 	<p>Theory 4 Hrs</p> <p>Practical 16 Hrs</p>	Chemical polish, dry cloth	marble industry
D.8 Remove material from machine	<p>Able to:</p> <p>Remove the job safely form the machine</p>	<p>Knowledge of :</p> <ul style="list-style-type: none"> – Polished surface <p>Ability to:</p> <ul style="list-style-type: none"> – Handle material safely after polishing – Store material safely 	<p>Theory 1 Hrs</p> <p>Practical 4 Hrs</p>	Polishing machine	marble industry
D.9 Detach mandrel from material	<p>Able to:</p> <p>Remove the mandrels safely form the work piece</p>	<p>Knowledge of :</p> <ul style="list-style-type: none"> – Mandrel – Lathe machine – Using tools for removing mandrel <p>Ability to:</p> <ul style="list-style-type: none"> – Use tools to remove the mandrel from work piece 	<p>Theory 1 Hrs</p> <p>Practical 4 Hrs</p>	Tools Equipments Lathe machine	marble industry
D.10 Perform buffing on material	<p>Able to:</p> <p>Fix the buffing pad into machine and Buff the material with safety</p>	<p>Knowledge of :</p> <ul style="list-style-type: none"> – Material to be buffed – Material used in buffing – Buffing techniques <p>Ability to:</p> <ul style="list-style-type: none"> – Assess the cleanliness before buffing 	<p>Theory 4 Hrs</p> <p>Practical 16 Hrs</p>	Grinder (handy), buffing pads	marble industry

		<ul style="list-style-type: none"> - Handle the machine safely - Fix the buffing material in the machine 			
D.11	<p>Able to:</p> <p>Select packing material and pack the finished product for safe storage and handling</p>	<p>Knowledge of :</p> <ul style="list-style-type: none"> - Worth of finished product - Packing materials <p>Able to:</p> <ul style="list-style-type: none"> - Select correct type of packing material - Handle the material safely - Pack the finished product safely 	<p>Theory 1 Hrs</p> <p>Practical 4 Hrs</p>	<p>Wooden boxes, paper boxes, binding strips</p>	<p>Class room/ marble industry</p>
D.12	<p>Able to:</p> <p>Pack as per packing standards and keep record of inventory</p>	<p>Knowledge of :</p> <ul style="list-style-type: none"> - Material handling - Storage of fragile materials - International packing standards <p>Ability to:</p> <ul style="list-style-type: none"> - Store and pack the finished product safely - Store finished product at dry place - Use strong packing - Numbering for identification 	<p>Theory 1 Hrs</p> <p>Practical 4 Hrs</p>	<p>Packing box, dry matt, packing material</p>	<p>Class room / marble industry</p>

Module E: Maintain Tools and Equipment

Objective of the Module: To enable the trainee to maintain tools & equipments that how to clean tools, machines & equipments. how to oiling & protecting machine from dust, proper placing , cleanliness , power & water supply after completion of work.

Duration: Theory: 16 hours Practice: 64 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
E.1 Clean tools and machine	Able to Keep machine and tools clean and ready for next use	Knowledge of: <ul style="list-style-type: none"> – tools – machines – material used for cleaning Ability to: <ul style="list-style-type: none"> – Use cleaning material safely – Handle tools safely – Handle machine safely 	Theory 2 Hrs Practical 8 Hrs	Cutting machines, grinding disc, hammer, wrench set	Class room marble industry
E.2 Apply oiling to machines	Able to: Lubricate the machine as per manufacturer's recommendations for safe operations and maintain its log	Knowledge of: <ul style="list-style-type: none"> – Types of oil – Oiling points of machines – Frequency of oiling Ability to: <ul style="list-style-type: none"> – Lubricate the machine – Maintain the oiling record – Oil the machines in required quantity – Clean the machines after oiling 	Theory 1 Hrs Practical 4 Hrs	Cutting machines, grinding machines, overhead crane	Marble industry
E.3 Protect machines from dust	Able to Keep the machine clean and cover for the protection from dust	Knowledge of : <ul style="list-style-type: none"> – Machines to be protected Ability to: <ul style="list-style-type: none"> – Cover the machines with dust protection covers – Keep the area dust free – De dusting of machines at regular intervals 	Theory 1 Hrs Practical 4 Hrs	Cutting machines, grinding machine, vertical cutting machine, horizontal cutting machine	Marble industry

<p>E.4</p> <p>Place tools in proper position</p>	<p>Able to Keep tools at designated area and maintain inventory record</p>	<p>Knowledge of :</p> <ul style="list-style-type: none"> - Tools - Tool box - Tool holder - Tools record <p>Ability to:</p> <ul style="list-style-type: none"> - Place tools at designated place - Maintain the record of tools - Place the tools at safe place in tool box 	<p>Theory 2 Hrs</p> <p>Practical 8 Hrs</p>	<p>Screw driver, pliers, hammer, wrench set, grinding tips, tool box</p>	<p>Class room</p>
<p>E.5</p> <p>Sharpen the cutting tools</p>	<p>Able to: Sharp the cutting tools with safety</p>	<p>Knowledge of :</p> <ul style="list-style-type: none"> - Tools - Cutting tips - Tool sharpening process <p>Ability to:</p> <ul style="list-style-type: none"> - Sharp the tools on grinding wheel safely - Handle the tools with safety 	<p>Theory 2 Hrs</p> <p>Practical 8 Hrs</p>	<p>Grinding wheel, cutting tips, grinding stone</p>	<p>Class room Marble industry</p>
<p>E.6</p> <p>Ensure cleanliness of the workplace</p>	<p>Able to Perform steps for the cleaning of workplace after the job is finished</p>	<p>Knowledge of:</p> <ul style="list-style-type: none"> - Necessity of cleanliness <p>Ability to:</p> <ul style="list-style-type: none"> - Keep the workplace neat and clean after the job is finished 	<p>Theory 2 Hrs</p> <p>Practical 8 Hrs</p>	<p>Cutting / grinding area</p>	<p>Marble industry</p>
<p>E.7</p> <p>Ensure supply of electricity</p>	<p>Able to Use electricity at correct voltages and take safety precautions for machines</p>	<p>Knowledge of:</p> <ul style="list-style-type: none"> - Electricity supply <p>Ability to:</p> <ul style="list-style-type: none"> - Use electricity at correct voltage - Take safety precautions at electrical equipments 	<p>Theory 2 Hrs</p> <p>Practical 8 Hrs</p>	<p>Single phase and 3 - phase Electrical connection</p>	<p>Marble industry / class room</p>

<p>E.8</p> <p>Check the condition of the machine</p>	<p>Able to Operate and Maintain the machine in perfect condition for smooth operation and maintenance of record</p>	<p>Knowledge of:</p> <ul style="list-style-type: none"> – Machines working <p>Ability to:</p> <ul style="list-style-type: none"> – Assess the correct working of the machine – Take prompt maintenance when required – Follow routine maintenance – Maintain the register for maintenance – Stop the machine for maintenance when it is not in good condition 	<p>Theory 2 Hrs</p> <p>Practical 8 Hrs</p>	<p>Gang saw, bridge cutter, polishing machine, vertical cutter, horizontal cutter</p>	<p>Marble industry</p>
<p>E.9</p> <p>Check the water supply</p>	<p>Able to Adjust the water supply at machine to keep the tools cold</p>	<p>Knowledge of:</p> <ul style="list-style-type: none"> – Water supply line – clean water <p>Ability to:</p> <ul style="list-style-type: none"> – Adjust water pressure / flow 	<p>Theory 2 Hrs</p> <p>Practical 8 Hrs</p>	<p>Rubber pipe</p>	<p>Class room / marble industry</p>

Module F:

Ensure Safety Precautions

Objective of the Module: To enable the trainee to be able to ensure safety precautions like wear proper clothing , ensure safety of machine, drainage of waste water, work place & other general safety precautions.

Duration: Theory: 16 hours Practice: 64 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
F.1 Wear proper clothing	Able to Use safety clothes as per work environment	Knowledge of: <ul style="list-style-type: none"> – Work safety and environment – Type of safety clothing Ability to: <ul style="list-style-type: none"> – Identify the work environment and select proper clothes 	Theory 4 Hrs Practical 16 Hrs	Industrial Safety clothes, gloves, masks, shoes,	Class room
F.2 Ensure safety of the machines	Able to Check machines for safety guards and maintain safety of the machines	Knowledge of: <ul style="list-style-type: none"> – Safety of machines and its importance – Electric equipments Ability to: <ul style="list-style-type: none"> – Make routine checks of the machine – Follow the procedure for operation as described in manual of the machine – Fix / ensure safe guards at the machine – Know electric equipments self safety from electric current 	Theory 4 Hrs Practical 16 Hrs	Safety sign boards	Class room
F.3 Ensure drainage of waste water	Able to Perform steps for proper drainage of the water	Knowledge of: <ul style="list-style-type: none"> – Waste water – Channels for drainage Ability to: <ul style="list-style-type: none"> – Make the drainage passage clear – Routine cleaning of the drain channel 	Theory 2 Hrs Practical 8 Hrs	Drain channels	Marble industry

<p>F.4</p> <p>Ensure safety of the workplace</p>	<p>Able to:</p> <p>Take necessary measure for safety at work place</p>	<p>Knowledge of:</p> <ul style="list-style-type: none"> - Safety code - Follow safety precautions at workplace <p>Ability to:</p> <ul style="list-style-type: none"> - Keep the work place neat and clean - Point out the hazard areas 	<p>Theory 2 Hrs</p> <p>Practical 8 Hrs</p>	<p>Safety sign boards</p>	<p>Class room</p>
<p>F.5</p> <p>Practice general safety</p>	<p>Able to</p> <p>Perform steps for personal , machine and work place safety as per safety manuals</p>	<p>Knowledge of:</p> <ul style="list-style-type: none"> - Safety tools /equipments - Industrial safety codes <p>Ability to:</p> <ul style="list-style-type: none"> - Manage general safety of equipments - Ensure to use safety equipments before entering work place - Act as per safety manuals 	<p>Theory 4 Hrs</p> <p>Practical 16 Hrs</p>	<p>Safety sign boards</p>	<p>Class room</p>

Assessment Template

Module A: Prepare activity plan

Learning Units	Theory Days/ hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
A.1 Interact with customer	28	112	Describe how to deal with customer Describe 5Ws of communication	Q & A	At the end of module
A.2 Take requirement from the customer			Demonstrate the skills required to take requirements of the customer Work out the estimated time to make a medium size piece	Direct Observation Q & A	At the end of module
A.3 Prepare estimates			Demonstrate how to make estimate / BOQ for an average size of piece Explain and Identify a situation and object in which estimate goes wrong Prepare an estimated cost of production for an average size of piece	Illustrative test Direct Observation Q & A Practical	At the end of module
A.4 Take order			Demonstrate how to take the order from customer Explain and Identify a situation and object in which delivery time is not met.	Direct observation Q & A	At the end of module
A.5 Select material			Explain what factors should be kept in mind to select the material Prepare an estimate for material required to fulfill the order	Q & A MCQs	At the end of module

Module B: Perform Marble Cutting

Learning Units	Theory Days/ hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
B.1. Select relevant tools	20	80	Explain and identify the tools required for marble cutting List down various types of Abrasives Identify the tools for different types of jobs	Direct Observation Q & A	At the end of module
B.2 Arrange material for cutting			Explain various types of marble stone based on hardness Make BOQ to make an average size of piece	Practical Direct Observation	At the end of module
B.3 Decide design for the product			Explain the given drawing Explain the complications in a design	Practical Direct Observation Q & A	At the end of module
B.4 Adjust cutting machine			Explain and Identify a situation and object in which certain problem occurs while adjusting machine Demonstrate how to fix tools in the machine Demonstrate how to adjust the machine for given size	Direct Observation Q & A Practical	At the end of module
B.5 Apply sizing to material			Demonstrate how to take measurement with measuring tape Explain different general terms used for measurement Demonstrate how to operate sizing machine	Practical Direct Observation Q & A	At the end of module
B.6 Ensure sizing according to sample			Explain how the sizing is ensured Take measurement with Vernier Demonstrate how to adjust machine for different sizes	Practical Direct Observation Q & A	At the end of module

Module C: Perform Turning / Shaping

Learning Units	Theory Days/ hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
C.1 Fix mandrel	60	240	Illustrate how to fix the mandrel	Practical Illustrative	At the end of module
C.2 Fix material on lathe machine			Demonstrate how to fix the material on lathe machine Explain different parts of lathe machine	Practical Q & A Direct Observation	At the end of module
C.3 Adjust leveling			What tools are required for leveling Explain and Identify a situation in which certain problem occurs while adjusting level Demonstrate how to adjust the level of piece in the lathe machine	Q & A Practical Direct Observation	At the end of module
C.4 Select tools			Explain What kind of tools are used in making handicraft	Illustrative Q & A	At the end of module
C.5 Ensure watering on material			Why it is important to use water while performing turning / shaping Demonstrate how to adjust water during turning and shaping	Q & A	At the end of module
C.6 Perform turning			Demonstrate how to perform turning. What safety measure should be taken while performing turning Demonstrate how to fix material in turning machine	Practical Direct Observation Short Answer Questions	At the end of module
C.7 Perform shaping			Demonstrate how to perform shaping. What safety measure should be taken while performing shaping Explain the given drawing	Practical Direct Observation Short Answer Questions	At the end of module

Module D: Perform Polishing

Learning Units	Theory Days/ hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
D.1 Perform filling in material	20	80	Explain what materials are used in filling and how the filling material is prepared Demonstrate the tools required for filling	Practical Direct Observation Q & A	At the end of module
D.2 Fix material in the polishing machine			Explain and Identifying the different types of polishing machines. Demonstrate how to fix the material in polishing machine Demonstrate how to operate the polishing machine	Illustrative Q & A Direct Observation	At the end of module
D.3 Select appropriate sand paper			What factors are kept in mind while selecting sand papers Illustrate the use of sand paper	Direct Observation Q & A	At the end of module
D.4 Ensure water on material			Describe the need of water for cutting Demonstrate how to adjust water on the material	Q & A Direct Observation	At the end of module
D.5 Prepare surface for polishing			Demonstrate how to prepare the surface for polishing Demonstrate how to make surface clean for polish	Oral Practical Direct Observation	At the end of module
D.6 Prepare chemical polish			Demonstrate how to prepare chemical polish What materials are required for polish	Q & A Practical Direct Observation	At the end of module
D.7 Apply polish on material			Demonstrate how to apply polish on the surface Prepare an estimate of polish required for a given area Demonstrate how to use polishing machine Demonstrate the safety precautions to be taken during the application of polish	Practical Direct Observation Q & A	At the end of module
D.8 Remove material from machine			Demonstrate how and when to remove the material from the machine Demonstrate how to keep the material safely after polishing	Direct Observation Practical Illustrative	At the end of module

D.9 Detach mandrel from material			Demonstrate how to detach mandrel from material Explain what tools are required to remove mandrel	Practical Q & A Direct Observation	At the end of module
D.10 Perform buffing on material			Demonstrate how to prepare the surface for buffing What materials are used in buffing Explain different techniques of buffing Demonstrate how to operate buffing machine	Practical Direct Observation Q & A	At the end of module
D.11 Pack the product properly			Demonstrate how to pack the finished product Explain different types of packing	Direct Observation Q & A Practical	
D.12 Ensure safe placement of finished product			Explain why and how to place material safely Demonstrate how to place finished material safely	Q & A Direct Observation Illustrative	At the end of module

Module E: Maintain Tools and Equipment

Learning Units	Theory Days/ hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
E.1 Clean tools and machine	16	64	Demonstrate how to clean the tools Explain the safety measures to be taken during cleaning of tools	Practical Direct Observation Q & A	At the end of module
E.2 Apply oiling to machines			Demonstrate how to oil the machine Explain when to oil the machine	Practical Direct Observation Q & A	At the end of module
E.3 Protect machines from dust			Demonstrate how to protect the machines from dust	Q & A Practical Direct Observation	At the end of module
E.4 Place tools in proper position			Demonstrate how to place tools in tool box List down the tools and equipment used for handicraft	Q & A Practical Direct Observation	At the end of module
E.5 Sharpen the cutting tools			Demonstrate how to sharp the cutting tools Explain what safety measures to be taken during sharpening of tools	Practical Direct Observation Q & A	At the end of module
E.6 Ensure cleanliness of the workplace			Describe why it is important to keep the work place clean	Q & A	At the end of module
E.7 Ensure supply of electricity			Which instrument is used to check voltage Demonstrate to check the voltage	Practical Direct Observation Q & A	At the end of module
E.8 Check the condition of the machine			Describe what are the steps to check the condition of machine Explain the importance of the machine log book Explain when to stop machine for maintenance	Q & A Practical Direct Observation	At the end of module
E.9 Check the water supply			Describe the need of water for cutting	Q & A	At the end of module

Module F: Ensure safety Precautions

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

Supportive notes

Assessment context:

Introduction and explanation about the customer interaction, order taking, design finalizing shall be in class room where as marble cutting, shaping, turning and polishing process 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 machines and tools related with marble cutting, turning and polishing.

Resources required for assessment:

Marble cutting machines, lathe machine, polishing machine, measuring tape, handy grinder, hammer, cutting disc, grinding tips sand papers and filling materials.

List of Tools, Machinery & Equipment

Name of Trade	Marble Handicraftsman
Duration	6 months

Sr. No.	Name of Item/ Equipment / Tools
1.	Grinder (Handy / Pedestal)
2.	Lathe machine with three and four jaw chucks
3.	Lathe polishing machine
4.	Tools tips
5.	Sand paper
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.	Compass
16.	Chisels
17.	Vernier scale

List of Consumable Supplies

Sr. No.	Name of Consumable Supplies
1.	Paper tape 1"
2.	Note book
3.	Paper rim A4
4.	Box board sheet
5	Pen, Lead Pencil
6	Filling material
7	Sand papers

Contributions for Development of This Curriculum

DACUM Working Group

Mr. Muhammad Khan Sadaat Handicrafts, Mardan	Mr. Muhammad Sadiq Karachi Marble, Mardan
Mr. Uzair Ahmed Mashal Marble, Mardan	Mr. Mustafa Khan Pak National Marble Factory, Mardan
Mr. Muhammad Irsal Pak National Marble Factory, Mardan	Mr. Naseer Muhammad Marble Suppliers, Mardan
Mr. Muhammad Jahangir Ihtisham Marble Factory, Mardan	Mr. Ijaz Sanobar Usman Marble, Mardan
Mr. Misal Khan Saba Marble, Mardan	Mr. Asghar Khan Afridi Marble, Mardan

Curriculum Developer

--

National Curriculum Review Committee (NCRC) Members

Mr. Zahid Iqbal Khan President, Zahid Marble Industry	Mr. Waseem Khan Star Marble Factory
Mr. Arsal Khan Pak National Marble	Ms. Rabia Kousar Handy Trendy Accessories
Mr. Muhammad Shafique Khan Deputy Director, AJK TEVTA, Muzaffarabad	Ms. Shumaila Iftikhar Gujranwala Institute of Fine Arts
Mr. Asghar Khan Vice President, Mardan Marble Industries	Mr. Waqas Hussain The Frame
Mr. Fazal e Rabi Fazal Marble Factory	Mr. Muhammad Sajjad Khan President, Sarhad Marble
Mr. Khalid Mahmood The Frame	Ms. Nida Ameen College of Arts & Design

DACUM Facilitator

Mr. Atif Mahmood Assistant Director, NAVTTC, Islamabad

DACUM Coordinator

Mr. Muhammad Nasir Khan Deputy Director, NAVTTC, Islamabad
