Norwegian Embassy
Islamabad

MARBLE TECHNICIAN

Learner Guide

National Vocational
Certificate Level 4

Version 1 - JULY 2020

Implemented by
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für Internationale
Zusammenarbeit (GIZ) GmbH

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Contents

Introduction

Welcome to your Learner's Guide for the *Marble Technician* Program. It will help you to complete the program and to go on to complete further study or go straight into employment.

The *Marble Technician* program is to engage young people with a program of development that will provide them with the knowledge, skills and understanding to start this career in Pakistan. The program has been developed to address specific issues, such as the national, regional and local cultures, the manpower availability within the country, and meeting and exceeding the needs and expectations of their customers.

The main elements of your learner's guide are:

- **Introduction:**
  - o This includes a brief description of your guide and guidelines for you to use it effectively
- **Modules:**
  - o The modules form the sections in your learner's guide
- **Learning Units:**
  - o Learning Units are the main sections within each module
- **Learning outcomes**:
  - o Learning outcomes of each learning units are taken from the curriculum document
- **Learning Elements:**
  - o This is the main content of your learner's guide with detail of the knowledge and skills (practical activities, projects, assignments, practices etc.) you will require to achieve learning outcomes stated in the curriculum
  - o This section will include examples, photographs and illustrations relating to each learning outcome
- **Summary of modules**:
  - o This contains the summary of the modules that make up your learner's guide
- **Frequently asked questions**:
  - o These have been added to provide further explanation and clarity on some of the difficult concepts and areas. This further helps you in preparing for your assessment.
- **Multiple choice questions for self-test**:
  - o These are provided as an exercise at the end of your learner's guide to help you in preparing for your assessment.

Module-13

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Module 13: Perform CAD/CAM Operations

Objective: This module covers the skills and knowledge required to Interpret Drawing & Design using CAD, Draw & Design the job using CAD, Load the desired Tools, Perform Simulation, Perform Material Loading and Perform CAM Operations.

Duration: 500 Hours　　　　　　　　　**Theory: 51 Hours**　　　　　　　　　**Practice: 449 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1. Interpret Drawing & Design using CAD	*Trainee will be able to:* • Interpret the desired drawing & design • Transfer the desired drawing & design to the concerned section/ person • Perform supervision of the job as per drawing	• Knowledge and understanding about drawings	
LU2. Draw & Design the job using CAD	*Trainee will be able to:* • Consult catalogue as per client demand • Set Interface in CAD software • Make Multiview drawing & design of the job • Make 3D drawing & design of the job/ part • Render the job as per client's demand • Plot/ print the job	• Understanding of CAD software • Describe the tools/ Commands for drawing in CAD software.	
LU3. Load the desired Tools	*Trainee will be able to:* • Identify the required tools as per process • Select the tools in the CAD/CAM software	• Knowledge of specific bits/ cutters/ aggregates of CNC machine	

	• Load the tools in CAD/CAM software		
LU4. Perform Simulation	*Trainee will be able to:* • Convert CAD to CAM codes using the software • Run Simulation to check accuracy of process	• Knowledge of various CAM software • Understanding of various CAM operations.	
LU5. Perform Material Loading	*Trainee will be able to:* • Identify required parts of the job • Set the clamping/ vacuum sucking units as per parts of the job • Load the job parts on the machine bed	• Describe the vacuum system.	
LU6. Perform CAM Operations	*Trainee will be able to:* • Ensure the loading of desired tools/ bits in ATC. • Calibrate the machine. • Execute the machine to complete the process • Take out the completed part	• Describe the automatic tool changer.	

Examples and illustration:

Drawing with CAD

A CAD program uses a variety of specialized tools to create drawings. Some tools draw lines, rectangles and curves, while others modify and combine these lines into new shapes. There are also tools for adding dimensions and even a rubber-stamp tool that will copy and paste a shape multiple time. To use a tool, you click on it with your computer mouse, then draw the shape on the screen's drawing area. CAD programs also have tools common to most computer software, including commands for opening and saving files, printing, copying, cutting, pasting and even spell-checking.

AutoCAD.

This is the list of some of the most basic AutoCAD commands which every AutoCAD user should know. These are some of the Draw and Modify commands which make the very basics of AutoCAD and if you are just starting to learn AutoCAD then you should know all of these basic commands.

L

It can be used for making simple lines in the drawing.

C

It is the command used for making a circle in AutoCAD.

PL

This command can be used to make a Polyline in your drawing.

REC

This command will make a rectangle in AutoCAD.

POL

This command can be used to make a polygon with minimum of 3 sides and a maximum of 1024 sides.

ARC

As the name suggests, this command can be used to make an arc in AutoCAD.

ELLIPSE

As the name suggests, this command can be used to make an ellipse with the major and minor axis.
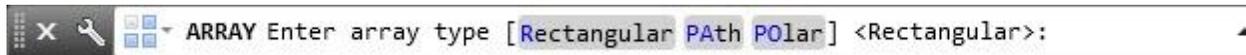
REG

This command can be used to make a region geometry in AutoCAD.

CO

This command is used to copy object(s) in AutoCAD.

ARRAY

Using this command, you can make Rectangular, polar or Path array.

TR

This command is used for trimming a geometry.

OP

Using this command, you can open options window which contains most of the settings of AutoCAD.

SC

This command is used to change the scale of an object.

B

This command is used for creating a block, the properties of the block can be defined using the block definition window.

I

This command can be used to insert an existing block or a drawing as a block in AutoCAD.

ST

Using this command, you can open text style window which controls properties of the default AutoCAD text style.

X

This command can be used to explode objects like Polyline to simple lines, an array or a block to a simple geometry etc.

F

This command can be used to add rounded corners to the sharp edges of the geometry, these round corners are also called fillets.

CHA

This command can be used to add slant edges to the sharp corners, these slant edges are also called chamfers.

LA

This command can be used to open layer properties manage palette which is a tool for creating and managing layers in a drawing.

Precise Dimensioning

Measuring the parts of your project is fast and accurate because the computer does the math for you. With CAD, even arcs and angles are easy to measure. This is a huge advantage when you need to measure an unusual angle or the radius of an arc.
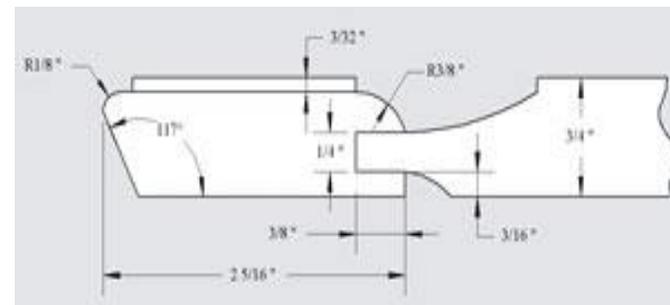
Design Development

CAD is great for exploring design options and proportions. The first design may take you just as long to draw with CAD as with pencil and paper, but once you have a drawing, you can copy it as many times as you like in a matter of seconds. You can make changes to the copies much more quickly than you could using pencil and paper. And you'll never have to worry about wearing a hole in your paper with your eraser.

Full-size Paper Patterns

Full-size patterns are particularly helpful when your project has a large or complex shape. You don't need a special printer to make full-size patterns, because CAD programs can split a large drawing across several sheets of letter-size paper. This is called tiled printing. After you've printed the paper pattern, simply attach it to your work piece with double-sided tape or spray adhesive and saw around it.

CAD Tools

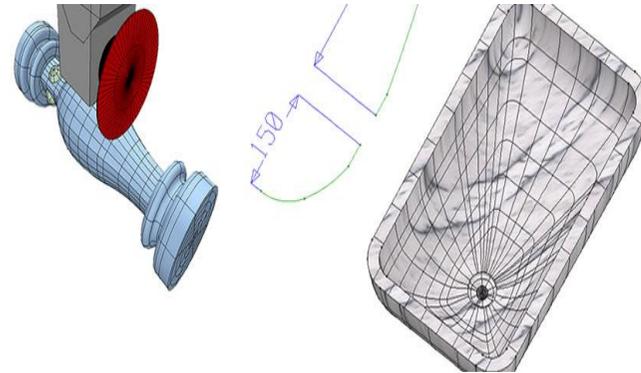Most CAD programs have dozens of tools, and you will use many of them every time you make a drawing. There's not room in this article to discuss all of them, but several are worth describing because they are particularly useful or user-friendly. It's worth noting that tool names are not always the same among programs. To keep things simple, we'll use either the most commonly used name or one that best describes the tool's function.

Easy-to-Use Resizing Tool

Individual shapes that are drawn with CAD are called objects. After you've drawn an object, you often need to make it larger or smaller. We found the easiest way to do this is by directly entering the new sizes into the boxes of a tool called the resizing palette or inspection bar. After entering the new dimensions, you simply press the return key and the shape automatically takes on the new size. This tool can also be used to check the size of any part in your drawing. Surprisingly, only a couple of the programs we tested have this extremely useful tool.
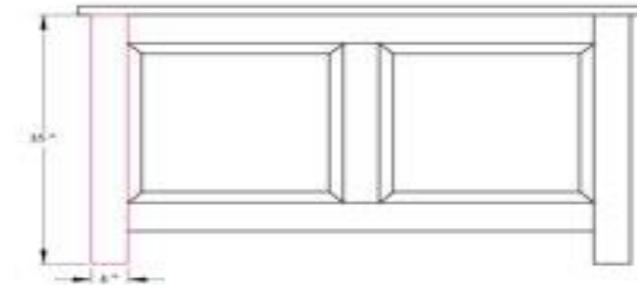
Grid Tool

This feature is like drawing on graph paper. When the grid tool is turned on, it will cause the lines and shapes you draw to match up with the grid lines. You can set the grid to almost any spacing you want. It's a useful tool and makes it easy to draw objects based on the grid's increments. For example, setting the grid to 1/4-in. spacing is helpful when you're drawing a project that uses materials and parts whose measurements are multiples of 1/4 in. You can turn off the grid tool when you want to draw a line between the grid lines. All programs have this tool, but some use dots rather than lines. We found the lines easier to follow
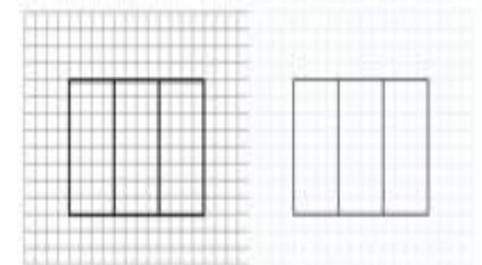
Snap Tools

A snap tool adds magnetic points to a drawn object. Snap points provide a precise way to start and stop a line. Snap points can be added to the end or middle of a line, at the intersection of two lines or at the center of an arc or circle. The beauty of a snap tool is that you only need to get close to the point where you want to start or end the line; the program will pull the end of the line to the point and lock it there. Snap tools are standard in most CAD programs and you will come to love them
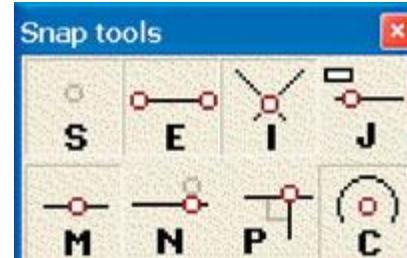
Alignment Tools

The alignment tool allows you to align objects along their bottoms, tops, sides or middles. It's a useful tool when you want to center a piece of hardware on a drawer front or line up a set of doors on a cabinet. More than half of the programs we tested have this tool.
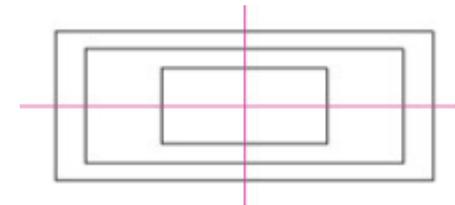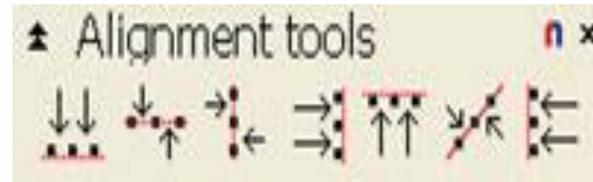
Trim Tools

CAD trim tools act as electronic erasers. They remove unwanted sections of lines. One type of trim tool will remove the end of a line, while another will divide a line into two parts. There's also one for dividing a circle into even sections. Our favorite trim tool creates a perfect corner from two overlapping lines with just a couple mouse clicks (shown at right). Too bad cutting plywood isn't this simple.
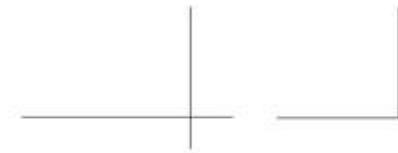
Boolean Tools

These are a special kind of trim tool. The term Boolean comes from the world of algebra, but simply put, a Boolean tool adds or subtracts one object from another. It's a very powerful and fun tool to use. There are three basic types of Boolean tools: One joins two shapes together; the second subtracts one shape from another (shown at right); the third type subtracts everything except the space where shapes overlap.
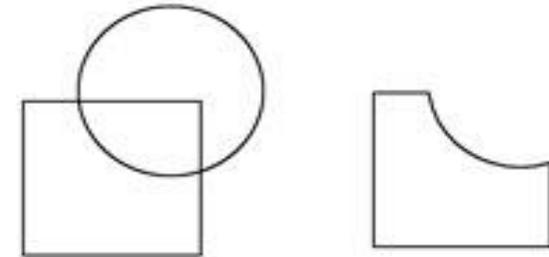
Easy-to-Modify Curves

All programs have curve-drawing tools. The one we liked best is called a spline curve. We like it because it is the easiest to modify in most programs. This is important, because let's face it, if there's one shape that requires finessing after it's drawn, it's a curve. It takes a little practice to master the spline curve tool, but when you learn how to use it, you'll be able to quickly produce smooth, flowing curves.
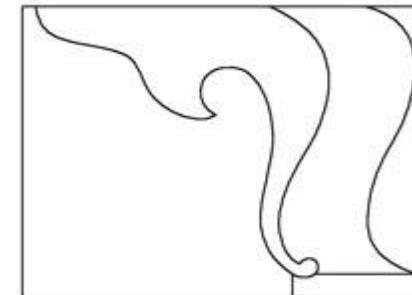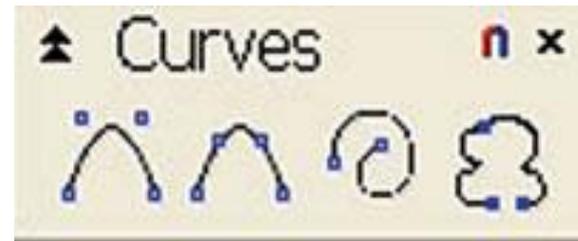
Associative Dimensioning

Associative dimensioning is a feature that links the dimension to the object. If you resize the object, the dimension will change with it, and the new size will automatically display. Only a few programs have this useful feature.
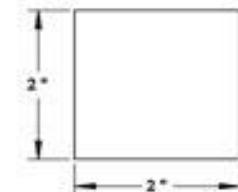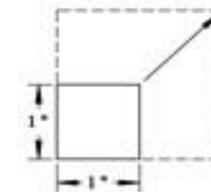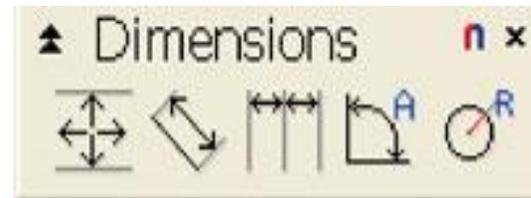
3D Drawing Tools

The CAD module allows to carry out the following major functions:

- generation of 2D drawings with relevant dimensions - determination of the 3D working volume of the piece - determination of any working plane inside the generated 3D volume - management of a 2D drawing created on the selected working plane, no matter how it is oriented in the space - import of drawings in DXF and DWG format from external CAD or template detectors - positioning of the pieces to be produced directly on the image of the slab, so as to utilize its surface to the full - automatic programming and display of the vacuum cup arrangement on the worktable - interface with the software of a possible laser projector for arranging the vacuum cups on the worktable - interface with the software of a possible bas-relief digitizer - generation of 3D models of the pieces - import of surfaces and solid models in IGES, STL, STEP and 3DM format - generation of surfaces and bas-reliefs from image processing - generation of 2D drawings of vanity and kitchen tops, whose dimensions are set starting from a basic template	
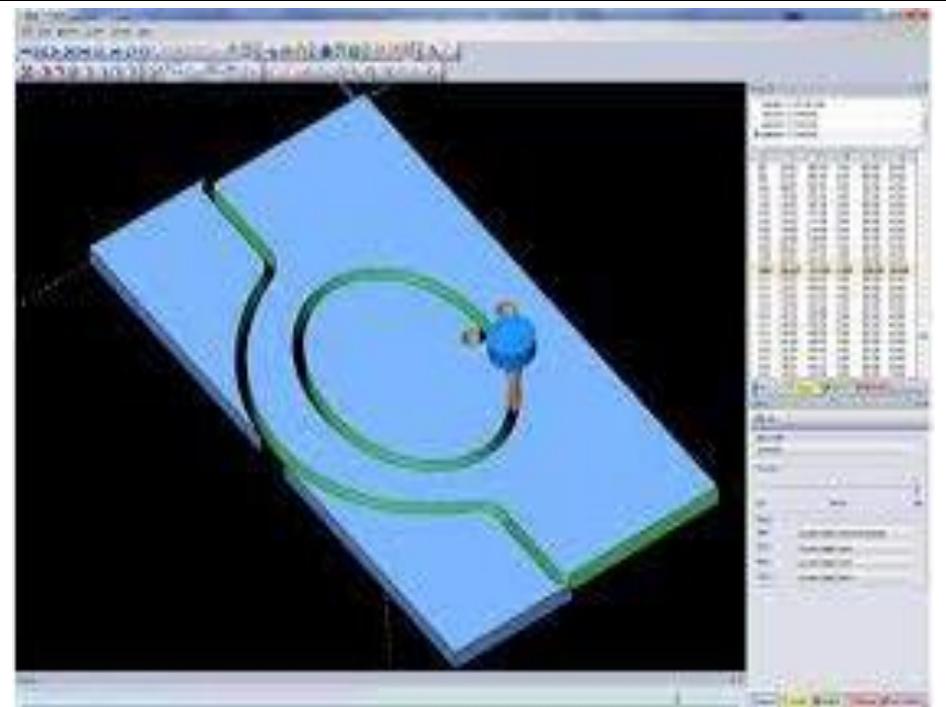
Tools that Stay Selected

To use a CAD tool, you click on it, just as you do with most computer program tools. For example, clicking on the rectangular drawing tool allows you to draw a rectangle. It's particularly helpful if the drawing tool stays selected, allowing you to continue using it, eliminating the need to click on it every time you want to draw another rectangular or similar shape. Snap, trim and dimensioning tools are also more convenient to use if they stay selected.

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Module-14

Module 14: Ensure Quality

Objective: This module covers the skills and knowledge required to Adopt standard atmosphere at work place, Ensure safe environmental concerns, Check quality of marble on receiving, Adopt accuracy in machining, Check quality of cutting, Ensure Quality of Polishing, Implement quality standards, Adopt quality of workmanship and Ensure quality at dispatching

Duration: 150 Hours   **Theory: 20 Hours**   **Practice: 130 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1. Adopt standard atmosphere at work place	**Trainee will be able to:** • Assess proper lighting at workplace • Assess appropriate ventilation • Ensure good housekeeping	• Knowing about specification • Checking techniques of marble	
LU2. Ensure safe environmental concerns	**Trainee will be able to:** • Dispose-off waste chemicals as per environmental standards • Dispose-off marble waste as per SOP. • Follow hazardous instructions	• Knowing about Quality standards	
LU3. Check quality of marble on receiving	**Trainee will be able to:** • Pay visit to the storing place • Check physical condition of Marbles • Segregate the damaged marbles	• Use of polishing materials • Techniques of safe handling of marble • Buffing materials and uses	
LU4. Adopt accuracy in machining	**Trainee will be able to:** • Calibrate measuring instruments • Ensure precise measuring instruments • Check accuracy of machine	• Understand Market demand	
LU5. Check quality of cutting	**Trainee will be able to:** • Enlist specification as per demand • Match length and width of marble with specification • Inspect edges of marble	Knowledge of precision measurements	

LU6. Ensure Quality of Polishing	*Trainee will be able to:* • Check smoothness of marbles surface • Check shine of marble • Check quality of polishing materials	Checking techniques of smooth and shine surface.	
LU7. Implement quality standards	*Trainee will be able to:* • Interpret national and international standards • Adopt national standard • Adopt international standard	Knowledge of national and International Marbles standards.	
LU8. Adopt quality of workmanship	*Trainee will be able to:* • Appoint skilled worker • Appoint right man for the right job • Provide adequate training	Knowledge of Job Descriptions for different skilled worker. Knowledge of Skill Assessment.	
LU9. Ensure quality at dispatching	*Trainee will be able to:* • Ensure segregation of damaged marbles • Ensure safe handling of marbles during dispatch	Knowledge of damaged marbles Knowledge of safe handling of Tiles and slab.	

Example and Illustrations:

The importance of quality control throughout the natural stone quarrying, crushing, and fabricating process can't be overstated. In fact, all quality stone products require a certain level of testing and oversight during their manufacturing process. Why? Because in order to create reliable, manufactured aggregates and other stone products.

Here's why it's so important to monitor and control the quality of stone products.

Steps for Marble Tiles Quality Assurance

http://www.ganistone.com/new/4-Steps-for-Marble-Tiles-Quality-Assurance.html

A through rigorous Quality Control standards for marble tiles production need to be followed to ensure a perfect look and feel that can fit for home or

business needs. Here're the **4 steps** quality assurance system for our marble tiles.

Step 1: Block and Slab Selecting

The step-1 is to select the marble blocks and slabs with suitable color, pattern and size to meet with our clients' design and minimize the material wastage meanwhile.

Step 2: Production Process Inspection

The 2nd step is about the whole production process inspection and guidance like cutting direction, grinding, edging, mounting, polishing, cut-to-size, etc.

Step 3: Finished Product Quality Control by Checking the Tiles Piece by Piece

The 3rd Step is for quality checking by inspecting the **marble tiles piece** by piece. We'll do flatness measurement, thickness measurement, diagonal measurement, goniometry checking, polishing degree inspection. Unqualified marble tiles with defects, wrong sizes, etc. will be picked out, and tiles with minor problems will be fixed properly

Step 4: Dry Layout and Color Classification

The last step for **marble tiles quality** assurance before packing is dry layout at our workshop, in this way, we can do the color classification and pack marble with different color range into different crates. If client request vein matching for irregular shape cut-to-size project, then we'll mark numbers on the back or side to easy the installation at the jobsite. During this process, marble tiles with scratches, cracks, etc. will be picked out too.
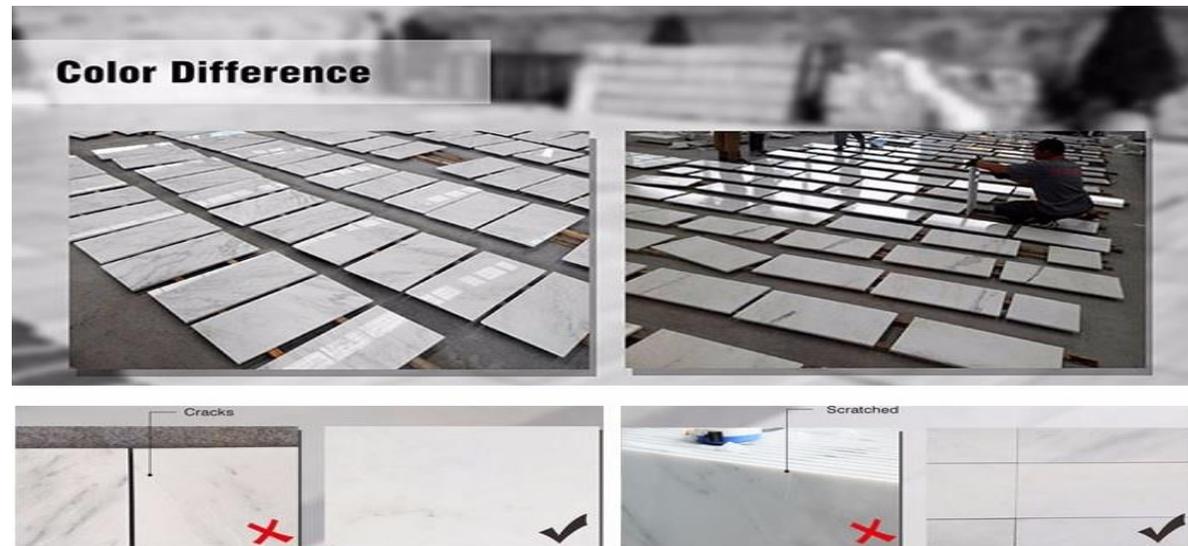
Best practices to check quality of marble

➢ We inspect slab orders piece by piece at the end of production before packing. We pay close attention to the following points during the slab inspection:

➢ Selection of color

➢ Polishing quality

➢ Cracks, repairing quality on surface

➢ Slab measurement

➢ Epoxy quality (in order to prevent color changing)

➢ Epoxy and net application quality

➢ Bundle/packing quality

SOME PRACTICES TO CHECK QUALITY OF MARBLE ON SITE

https://www.veriquality.net/case-study/Stone-and-Marble-Stone-Inspection

1. Check all pieces for uniformity in color, size and quality as specified.

2. One face of the marble should be polished and all four sides machine cut. The polishing quality and cutting quality.

3. It should be straight and uniform in thickness. Remember the thickness of marble should be checked for each piece.

4. Along with front surface, also check the back side of the marble slab. To check back surface wire mesh quality.

5. On examining the marble's surface under light at an angle of 45 degrees, if you find any dull surfaces and patches, then it indicates poor quality. These dull areas are due to cracks filled with the chips. This type of marble cannot be used for heavy traffic area.

6. Veins on the surface of marble should always be checked. While buying, flip the stone over and check for cracks or fissures. Sometimes small cracks are located along with the veins on the marble surface. Slabs with small cracks can be used in low traffic area. If wide cracks are there, then it is not good- quality marble.

7. Also you can check if artificial colors are added to marble by scratching its surface. If it resists scratches, then the marble is artificial and color can fade after installation.

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Module-15

Module 15: Develop Professionalism

Objective: This module covers the skills and knowledge required to Resolve problems or disagreements with others, Demonstrate work ethics, Work with others, Work independently, Communicate with signals and Interpret documentation

Duration: 100 Hours　　　　　　　　　**Theory: 28 Hours**　　　　　　　　　**Practice: 72 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1. Resolve problems or disagreements with others	*Trainee will be able to* • Communicate effectively • Adopt peaceful approach • Determine cause of problem or disagreement • Discuss and resolve issues	• Knowledge of effectively communication • Conflict resolution techniques • Common causes of problem/ disagreement and their solutions • Importance of effective communication	Nil
LU2. Demonstrate work ethics	*Trainee will be able to* • Follow principles of work ethics in all situations • Adopt professional behavior	• Principles of work ethics and expectations, such as be truthful, punctual, prepared for work, cooperative, honest, productive and respectful • Professional knowledge, skills and attitude and how to practice	Nil
LU3. Work with others	*Trainee will be able to* • Work as a team member to achieve common goals • Keep open mind • Participate in work place meetings	• Importance of team work to achieve common goals • Roles of individuals on job site, such as supervisor, inspector, other trades people	Nil

	• Communicate accurately and clearly • Co-ordinate job related activities • Cooperate with others	• Importance of work place meetings, coordination and accurate communication	
LU4. Work independently	*Trainee will be able to* • Confirm and clarify assignment • Take initiative, anticipate and prepare for next steps in job • Identify and resolve potential and actual problems • Communicate with other site personnel • Complete assignment	• Clear assignment and responsibilities of each individual • Importance of initiative, anticipate and prepare for next steps in job • Work place problems and how to resolve them • Clarity in communication	Nil
LU5. Communicate with signals	*Trainee will be able to:* • Identify and work with signals • Communicate with audible signals, such as back-up alarm, and site emergency horn • Communicate with hand signals	• Role and responsibilities of signaler	
LU6. Interpret documentation	*Trainee will be able to:* • Access and maintain documents • Provide complete, legible and accurate information in documents • Interpret equipment inspection documentation from previous shifts before conducting pre-operational inspection	• Types of documentation required, such as log books, safety reports, maintenance reports, inspection reports, time cards • Importance of complete, legible, and accurate documentation	Nil

Definition of Workplace Ethics:

Workplace ethics are nothing but the rules and procedures that should be carried out in an office by the employer and the employees to maintain a professional company culture and to build a better relationship with their customers by providing better services. Workplace ethics plays an important role in company growth and development.

Work Place Ethics for Employer

Rules and regulations ought to be same for everyone.
Everyone needs to attend office on time irrespective of their designation, distance of their home from the workplace, salary or status. An individual cannot come to office late just because he is the team leader and his team is already present and working on his behalf. If a day's salary of a clerk is deducted for coming late to work, it should be the same for the marketing manager as well.

Company's policies need to be communicated clearly to each and every one.
There should be transparency at all levels of hierarchy. Employees are the backbone of any organization and thus they must have a say in company's goals and objectives.

An organization ought to respect its employees to expect the same in return.
Rules and regulations should not be too rigid. Don't expect an employee to attend office two days before his marriage date. If an employee is not keeping well, please do not ask him/her to attend office unless and until there is an emergency.
Management must not forget that money is a strong motivator for employees. Everything is important, be it career, growth, job satisfaction but what is most important is employee's salaries. Do not unnecessary hold their salaries for a long time unless and until there is really shortage of funds. In case of marketing and sales employees, conveyance and mobile bills must be cleared at the earliest. Do not ask for unnecessary bills and documents.

Organization should not expect employees to attend office 365 days a year.

It is the responsibility of human resource professionals to prepare the holiday calendar at the beginning of the year and circulate the same among all employees. Let employees enjoy their respective festivals and come back to work with positive energy and smile. In fact, allow them to go in the festive mood two days prior to the D day. Ask them to organize pre festival bashes at the workplace. Let them dress in colourful attires and have fun. Trust me, work never suffers this way. Rather, employees feel attached to the organization and strive hard to deliver their level best every time.

Give employees the space they require.

Key responsibility areas need to be communicated to the employees on the very first day of their joining. Roles and responsibilities need to be assigned as per an individual's expertise and experience. Do not expect an employee with one-year experience to head the marketing team. Employees need to be trained well. Organizations need to give at least six months' time to the new employees to adjust in the new environment.

It has been observed that most of the times employees' crib when they are underpaid. Make sure employees get what they deserve. **Salaries should be decided in the presence of the employee and also keeping in mind an individual's role in the organization, his/her gross salary in the previous organization, responsibilities within the current system and of course his/her years of experience**. One of the major reasons as to why employees quit their jobs after a year or so is poor appraisal system. Increments ought to be directly proportional to the amount of hard work an employee puts in throughout the year and also his/her performance. Unnecessary favours are against the workplace ethics.

Do not be too strict with your employees. Do not block all social networking sites. Blocking face book and Orkut is not the ideal way to ensure employees are working and not wasting their time. Even a 24 * 7 check would not prevent employees from wasting their time unless and until they realize it themselves. The moment, you are strict with something, people would tend to do the same more.

Work Place Ethics for Employee

1. Values:

The values of a person can be defined as the acts and actions which we make in our daily life. The true values of a person are devotion, respect, hard work and love. These acts of values make a person more valuable. These values tell more about a person's behavior and responsive qualities which he can possess during work.

2. Morals:

Morals are the certain duties which he needs to do for the betterment of society. Moreover, these are certain duties which make society work in a synchronized manner. These morals apply to every single human being of the society and they can't be judged in a specific manner, because the things in moral are either right or wrong.

3. Integrity:

Integrity means to be always honest and sincere under any circumstances. When any individual shows integrity in a professional environment and his work, it means that the person can be trusted as well as he is an honest man to rely on. The person who is honest and sincere always sustains for a longer duration in the company as compared to others.

4. Character:

The character is one of the most important ethics which in short describes a person. It tells about your behavior towards others and your reactions towards the different situations. A bad thinking mind can destroy your character and a positive attitude and healthy mind always keep you with a good character.

6. Dedication:

This is also a person defining ethic. The stronger dedication in work, the greater the output and results. Dedication in work makes a man stronger for tough situations and he also becomes a key player in motivating the others during the hard times.

7. Accountability of responsibility:

The more a person is responsible in nature, the more efficiently and responsibly he will do the given task. Responsibility towards everything such as parents, family, society, nature, works, office, etc. are certain things which not only should be kept in mind but also these must be followed by every human being for a healthier environment.

These were the 7 ethical principles which matter the most in a professional environment and these ethics must be present in every human being so that he leads towards a successful and life.

Benefits of Ethics in the Workplace:

The following mentioned are few advantages of ethics in the workplace.

1. Asset Protection and Assurance:

When your workers possess an ethical working environment and ethical behavior in the workplace, your company's maintenance cost decreases to a remarkable extent because they are well aware of their duties and responsibilities towards the company. They also realize that they should not do any damage to any of the machines and equipment are given to them as they are very valuable for the company and doing damage to these things will be a wrong act, so automatically things will be taken care of and everything will work systematically.

2. Productivity will increase:

When the working staff and the workers value the work given to them and then they will do all the given work in time and achieve their set targets, this will greatly affect the sales and the productivity of the company. Due to this, it is assured that you will have a group of people who will sail your business even in the worst of the downfall of the market, and keep the growth of the company and business consistent.

3. Team Work will develop:

When all the workers do their jobs in a responsible way, then a time comes when they have achieved the target way before the given deadline, then a question arises What Next? So the situation automatically bonds up all the individuals into a team. These individuals now work as a team and work in the benefit of the company for which they will be getting or achieving their incentives. This mutual understanding of the employees is a positive signal that the company will sustain for a very long period in the variable market conditions.

4. Public Image and Brand Value Increases:

Yes, if all the members of the company are dedicated to work as well as figure out their values and responsibility towards the environment, then it is for sure that the type of cleanliness and the disposal of the waste product of the company will be unbeatable in the market, hence resulting in attracting a bigger customer base due to the clean and quality of the services or products.

Moreover, an increase in the public image and an increase in the customer base is directly proportional to an increase in the brand value. In simpler words when you gain popularity amongst your customers you start to develop your company into a brand.

5. Adaptive to changes:

Workers with professional ethics in the workplace are definitely the master key to the lock of success. The team of understanding, trustworthy, reliable, motivate, concern and responsible people will defiantly adapt themselves into any kind of position and work they are filled with.

Moreover, in general, it has been seen worldwide that in the digressive market conditions, if the company asks for any changes in the production or changes in the kind of work then the workers oppose.

In some situations, the company is left empty-handed falling short of workers as they leave the company due to changes, but things are just opposite when you have a trustworthy and responsible bunch of people as they themselves demand changes according to the company's situation and let the company run even in the hard market situations.

6. Decision making and implementing is always easy:

Whenever there is a need to take a big decision then the best one made is by the advice of the employees of the company, and what will be better than every single employ respecting the decision and supporting the company to go ahead with their decision. This is the power of ethics in the employers who respect the decision of the company and let it go along with the flow. This is very rare in the big companies but where this scene happens; the company turns big brands over the night.

7. Trouble-free working environment:

Generally, where everyone is unknown and moreover no one wants to know each other there are higher chances of great trouble and where there is a friendly, respectful and understanding environment between the employees there are fewer chances of least troubles from the employee's end.

If in case, a situation arises where there is some little misunderstanding between the employees, it gets solved within them due to better and strong understanding between all the employees. Even the management does not have to bother about those small little things as they know that the employees will take better care of themselves.

8. The company will Touch New level of Success:

When everything is so managed and systematic along with the understanding of the employees because of their strong ethics, the company will surely touch new heights of success and even the growth of your business will be assured.

When your employees become expert in their respective works and respective fields, then their dedication and will, to do the work will show true colors and give more fruitful results.

What Is Conflict Resolution?

Conflict resolution is the process by which two or more parties reach a peaceful resolution to a dispute. Conflict may occur between co-workers, or between supervisors and subordinates, or between service providers and their clients or customers. Conflict can also occur between groups, such as management and the labor force, or between whole departments.

The Conflict Resolution Process

The resolution of conflicts in the workplace typically involves some or all of the following processes:

1. Recognition by the parties involved that a problem exists.
2. Mutual agreement to address the issue and find some resolution.
3. An effort to understand the perspective and concerns of the opposing individual or group.
4. Identifying changes in attitude, behavior, and approaches to work by both sides that will lessen negative feelings.
5. Recognizing triggers to episodes of conflict.
6. Interventions by third parties such as Human Resources representatives or higher-level managers to mediate.
7. A willingness by one or both parties to compromise.

Team Work:

"*Coming together is a beginning. Keeping together is progress. Working together is Success-Henry Ford*"

The above proverb by Henry Ford can very well highlight the importance of working together in teams

What is a team?

A team is a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable

Benefits of team work

- Realistic, achievable goals can be established for the team and individual members.
- Team members commit to support each other.
- Team members understand one another's priorities.
- Communication is open.
- Problem solving is more effective.
- Performance feedback is more meaningful.
- Conflict is understood as normal.
- Balance is maintained between group productivity.
- The team is recognized for outstanding results.
- Members are encouraged to test their abilities and try out ideas.
- Team members recognize the importance of disciplined work habits.
- Learning to work effectively as a team in one unit is good preparation for working as a team with other units.

Work Independently.

Independence is being able to complete your duties without always having a supervisor planning your next moves. Initiative is being able to plan and organize your next steps in a process to ensure your job is complete.

Document Management system.

Invoices, payment reminder letters, sales brochures, email, balance sheets, spreadsheets, reports—all businesses create a variety of documents in the course of doing and keeping track of business. And to keep things organized, all businesses need to establish rules for creating documents.

For many businesses, the focus of a document management system is on the organization and storage of documents. They want to be able to store documents in an organized and secure way that still allows documents to be found easily. Document management is the process of handling documents in such a way that information can be created, shared, organized, and stored efficiently and appropriately. As such, learning how to create a document management system is critical for businesses.

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There are 5 methods of filing:

- Filing by Subject / Category
- Filing in Alphabetical order
- Filing by Numbers / Numerical order
- Filing by Places / Geographical order
- Filing by Dates / Chronological order

How can we make and keep our documents secure?

The first line of defense for document security is physically securing the business premises themselves. All businesses, even home-based ones, need to have security systems installed.

Businesses may also need or want to invest in other security devices, such as window bars, security cameras, or patrol services. You can spend all the time you want creating passwords and encrypting files in an attempt to protect your electronic files, but it doesn't matter much if someone can just wander in and steal your computer.

Additional document security measures include:

- Locking all filing cabinets after business hours (and during lunch if no one reliable is present)
- Backing up electronic documents regularly, preferably off-site to guard against having your business data wiped out by natural disasters
- Restricting user access to certain documents, applications, and folders on any shared computers
- Preventing employee theft by conducting background and reference checks as a part of your hiring process

MARBLE TECHNICIAN

Learner Guide

National Vocational
Certificate Level 4

Version 1 - JULY 2020

Module-16

Module 16: Develop Entrepreneurial skills

Objective: This module covers the skills and knowledge required to Conduct Market survey, Develop basic marketing skills, Identify needs of the market, Prepare Business plan, Implement marketing activities, Evaluate marketing performance, Develop Business promotion technique and Develop Business competition Skills.

Duration: 150 Hours   **Theory: 86 Hours**   **Practice:64 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Materials Required
LU1. Conduct Market survey	***Trainee will be able to:*** • Collect information regarding market size and potential from appropriate sources • Investigate market trends and developments to identify market needs relative to business ideas • Gather market information from primary and secondary sources to identify possible market needs in relation to business ideas • Identify ethical and cultural requirements of the market and their impact on business ideas • Identify new and emerging markets and document their features • Identify and organise information on expected market growth or decline and associated risk factors	• Knowledge of Entrepreneurship • Market & marketing • Procedure for assessing the market size and demand • Knowledge of Market survey • Market survey and its tools e.g.: questionnaire, interview, observation etc.	
LU2. Develop basic marketing skills	***Trainee will be able to:***	• Knowledge of Business opportunities.	Nil

	• Present a design to the client as per requirement • Finalize the business deal • Purchase the equipment/tools and consumables as per agreed design • Adopt correct means of transportation • Select promotional means, according to target needs of clients	• Transport requirements for the enterprise •	
LU3. Identify needs of the market.	*Trainee will be able to:* • Analyse upcoming market trends. • Develop Professional network. • Demonstrate behavioural skills. • Develop sound interpersonal skills • Develop new designs.	• Financial analysis techniques •	Nil
LU4. Prepare Business plan	*Trainee will be able to:* • Develop operational goals and targets to meet the enterprise strategic plan. • Identify and incorporate supply chains into the business plan. • Identify risk management needs are within the business plan. • Incorporate trial systems in order to test budgetary impact and operational potential prior to full implementation of the business plan. • Set clear and measureable indicators of operational performance to allow for realistic analysis of performance.	• Feasibility for a business idea • Knowledge of Business plan	Nil
LU5. Implement marketing activities	*Trainee will be able to:*	• life cycle of product	Nil

	• Schedule planned marketing activities within appropriate timeframes • Develop measurable performance targets that meet business plan objectives • Organize distribution channels and ensure product and service information is accurate and readily available to clients • Implement marketing activities within budgetary constraints to meet legal, ethical and enterprise requirements	• various ways of selecting suppliers • inventory management of stock, raw material and finished goods etc.	
LU6. Evaluate marketing performance.	*Trainee will be able to:* • Review the established marketing objectives to ensure they remain viable • Assess product, pricing and distribution policies in relation to market changes, marketing objectives and enterprise requirements • Identify areas of positive marketing performance and take corrective action to remedy poor marketing performance areas	• Importance of financial record keeping in a small business. • Balance sheet for a small enterprise •	Nil
LU7. Develop Business promotion technique	*Trainee will be able to:* • Establish marketing objectives based on current and potential product specifications • Select appropriate production processes to ensure product specifications are met	• Business promotion technique • operating cycle concept	Nil

		• Select selling strategies to ensure required prices are achieved • Select appropriate distribution channel options to ensure access to target markets is achieved efficiently and appropriately • Establish time-frames for distribution and selling activities • Develop a gross margin budget to demonstrate the cost effectiveness of the marketing plan • Develop partial gross margin budgets to account for market variability		
LU8. Develop Business competition Skills		***Trainee will be able to:*** • Prepare and record detailed plans for promotional activities • Outline objectives, level of exposure and available markets • Ensure strategies take account of time management and scheduling issues, and resource constraints • Create promotional materials that enhance the product and commercial presentation • Record and communicate priorities, responsibilities, timelines and budgets for promotional activities.	• Essential financial reports. • Techniques of detailed plans for promotional activities	Nil

Illustration and Examples:

Importance of a Market analysis.

"Market analysis is one of the crucial components to help business with all the required information and making wise business decisions,"

- **Great help in understanding your customers:**

Market analysis is a technique through which the comprehensive profile of an ideal customer for your business can be collected. It can help in ascertaining the size of the market for your business. Also, it will also help in gaining insights on their location, age, income, and gender that can lead the way for making specific marketing campaigns.

- **Analyze your competitors:**

To evaluate your competitors, market analysis is the most significant weapon. It can also help in examining the new competitors, if any, who are trying to gain power in the market. It also helps in measuring the reaction of competitors when you introduce any new product or service. Weaknesses of competitors' strategy are one of the most significant things that this analysis helps to identify.

- **Test before launch:**

  Once your product gets to the final stage, refrain from jumping directly into its marketing. Rather test the product or service before introduction and then market analysis will help you plan the most suitable strategy to market the product

What is a Business Plan?

A business plan is a written document that describes in detail how a business—usually a new one—is going to achieve its goals. A business plan lays out a written plan from a marketing, financial and operational viewpoint.

- A business plan is a written document describing how businesses—both new and established—plan to achieve their goals.
- Businesses may come up with a lengthier traditional business plan or a shorter lean startup business plan.

- Good business plans should include an executive summary, products and services, financial planning, marketing strategy and analysis, financial planning, and a budget.

Whether you're starting a small business or exploring ways to expand an existing one, a business plan is an important tool to help guide your decisions. Think of it as a roadmap to success, providing greater clarity on all aspects of your business, from marketing and finance to operations and product/service details

Financial Planning

Financial Planning is the process of estimating the capital required and determining its competition. It is the process of framing financial policies in relation to procurement, investment and administration of funds of an enterprise.

Objectives of Financial Planning

Financial Planning has got many objectives to look forward to:

a. **Determining capital requirements-** This will depend upon factors like cost of current and fixed assets, promotional expenses and long-range planning. Capital requirements have to be looked with both aspects: short- term and long- term requirements.

b. **Determining capital structure-** The capital structure is the composition of capital, i.e., the relative kind and proportion of capital required in the business. This includes decisions of debt- equity ratio- both short-term and long- term.

c. **Framing financial policies** with regards to cash control, lending, borrowings, etc.

d. A finance manager **ensures that the scarce financial resources are maximally utilized in the best possible manner** at least cost in order to get maximum returns on investment.

Importance of Financial Planning

Financial Planning is process of framing objectives, policies, procedures, programs and budgets regarding the financial activities of a concern. This ensures effective and adequate financial and investment policies. The importance can be outlined as-

1. Adequate funds have to be ensured.
2. Financial Planning helps in ensuring a reasonable balance between outflow and inflow of funds so that stability is maintained.
3. Financial Planning ensures that the suppliers of funds are easily investing in companies which exercise financial planning.
4. Financial Planning helps in making growth and expansion programs which helps in long-run survival of the company.
5. Financial Planning reduces uncertainties with regards to changing market trends which can be faced easily through enough funds.

Business Communication:

<u>"Organizational communication is the way in which members of an organization interact with each other and the people they serve."</u>

Communication is the cornerstone of any organization's success; business comprises of continuous interactions with multiple parties i.e. managers, employees and clients. Types of organizational communication can include superior to subordinate, co-worker to co-worker, and frontline to customer/client/guest, to name a few. These interactions can happen face-to-face, over the phone, or electronically

Effective communication ensures the flowing of information between all relevant parties, reducing the potential for misunderstanding, dissatisfaction and lack of trust

7 C's of Effective Communication

The 7 C's of effective communication, also known as the seven principles of communication are a useful way to ensure good and business communication. The 7 C's of Effective Communication provide a useful check list as a result of which both written and verbal communication pass off in a clear, plain, target group-oriented and well-structured manner.

1. **<u>Completeness</u>**

The message must be complete and geared to the receiver's perception of the world. The message must be based on facts and a complex message needs additional information and / or explanation. A good subdivision of subjects will clarify the message as a result of which there will be a complete overview of what is said.

2. **<u>Concreteness</u>**

Concrete business communication is also about a clear message. This is often supported by factual material such as research data and figures. The words used as well as the sentence structure can be interpreted uni-vocally. Nothing is left to the imagination.

3. **<u>Courtesy</u>**

In addition to considering the feelings and points of view of the target group, it is also important to approach the audience in a friendly and courteous manner. Use of terms that show respect for the receiver contribute towards effective communication. The same goes for the manner in which you address someone. Not everyone will be charmed if you use a familiar form of address and use of a formal address could come across as too distant. By using the word 'they' a larger audience is immediately addressed.

4. Correctness

A correct use of language has the preference. In written business communication, grammatical errors must be avoided and stylistic lapses or a wrong use of verbs are not sufficient either in verbal communication. A correct use of language increases trustworthiness and the receiver will feel that they are taken seriously.

5. Clarity

Clear or plain language is characterized by explicitness, short sentences and concrete words. Fuzzy language is absolutely forbidden, as are formal language and cliché expressions. By avoiding parentheses and keeping to the point, the receiver will get a clear picture of the content of the message. Briefly-worded information emphasizes the essence of the message.

6. Consideration

Communicating with the target group (Consideration). In order to communicate well, it is important to relate to the target group and be involved. By taking the audience into account, the message can be geared towards them. Factors that play a role in this are for example: professional knowledge, level of education, age and interests.

7. Conciseness

A message is clear when the storyline is consistent and when this does not contain any inconsistencies. When facts are mentioned, it is important that there is consistent, supporting information. Systematically implementing a certain statement or notation also contributes to clear business communication. When statements are varied, they will confuse the receiver.

Marketing Plan

A business must have a marketing plan in order to produce, communicate, and sell products and services. Using research on segments of the target audience, a marketing plan is written. Once the plan has been developed, a budget is set for the promotional campaign.

The goal of promotion strategies in marketing is to make the public aware of your product, to influence them to purchase it, and to establish a long-term relationship that will make them repeat customers. Some methods of communication include advertising, digital marketing, sales promotions, and public relations.

Marketing Communications

Advertising is just one method of marketing communications, which is the umbrella for many methods.

TYPES OF ADVERTISING –

MASS MEDIA	SALES PROMOTION	PERSONAL SELLING	DIRECT MARKETING	DIGITAL MARKETING – The Internet is here to stay!
• Outdoor Ads • Business Directories • Magazines and/or Newspapers • Television and/or Movies • Radio • Infomercials	• Coupons • Discounts • Referral Programs • Loyalty Incentives	• Salesmen • Showrooms • Exhibitions • Trade shows	• Mail Order Catalogues • Bulk Mailers • E-mail • Telemarketing • Point of Sale Displays and Signs • Packaging	• Company Websites • Social Media - Facebook or Twitter • Blogging • Mobile Phone Promotions • YouTube

Frequently Asked Questions

1.	What is Competency Based Training (CBT) and how is it different from currently offered trainings in institutes?	Competency-based training (CBT) is an approach to vocational education and training that places emphasis on what a person can do in the workplace as a result of completing a program of training. Compared to conventional programs, the competency-based training is not primarily content based; it rather focuses on the competence requirement of the envisaged job role. The whole qualification refers to certain industry standard criterion and is modularized in nature rather than being course oriented.
2.	What is the passing criterion for CBT certificate?	You shall be required to be declared "Competent" in the summative assessment to attain the certificate.
3.	What are the entry requirements for this course?	The entry requirement for this course is 8th Grade or equivalent.
4.	How can I progress in my educational career after attaining this certificate?	You shall be eligible to take admission in the National Vocational Certificate Level-3 in Leather Products Development Technician (Pattern Maker). You shall be able to progress further to National Vocational Certificate Level-4 in Heavy Construction Machinery Operator Course; and take admission in a level-5, DAE or equivalent course (if applicable). In certain case, you may be required to attain an equivalence certificate from The Inter Board Committee of Chairmen (IBCC).
5.	If I have the experience and skills mentioned in the competency standards, do I still need to attend the course to attain this certificate?	You can opt to take part in the Recognition of Prior Learning (RPL) program by contacting the relevant training institute and getting assessed by providing the required evidences.

6.	What is the entry requirement for Recognition of Prior Learning program (RPL)?	There is no general entry requirement. The institute shall assess you, identify your competence gaps and offer you courses to cover the gaps; after which you can take up the final assessment.
7.	Is there any age restriction for entry in this course or Recognition of Prior Learning program (RPL)?	There are no age restrictions to enter this course or take up the Recognition of Prior Learning program
8.	What is the duration of this course?	The duration of the course work is 1,510 hrs. (11 months)
9.	What are the class timings?	The classes are normally offered 25 days a month from 08:00am to 01:30pm. These may vary according to the practices of certain institutes.
10.	What is equivalence of this certificate with other qualifications?	As per the national vocational qualifications framework, the level-4 certificate is equivalent to Matriculation. The equivalence certificate can be obtained from The Inter Board Committee of Chairmen (IBCC).
11.	What is the importance of this certificate in National and International job market?	This certificate is based on the nationally standardized and notified competency standards by National Vocational and Technical Training Commission (NAVTTC). These standards are also recognized worldwide as all the standards are coded using international methodology and are accessible to the employers worldwide through NAVTTC website.
12.	Which jobs can I get after attaining this certificate? Are there job for this certificate in public sector as well?	You shall be able to take up jobs in the local or overseas construction companies in heavy machinery operator job profile.
13.	What are possible career progressions in industry after attaining this certificate?	You shall be able to progress up to the level of supervisor after attaining sufficient experience, knowledge and skills during the job. Attaining additional relevant qualifications may aid your career advancement to even higher levels.
14.	Is this certificate recognized by any competent authority in Pakistan?	This certificate is based on the nationally standardized and notified competency standards by National Vocational and Technical Training Commission (NAVTTC). The official certificates shall be awarded by the relevant certificate awarding body.

15. Is on-the-job training mandatory for this certificate? If yes, what is the duration of on-the-job training?	On-the-job training is not a requirement for final / summative assessment of this certificate. However, taking up on-the-job training after or during the course work may add your chances to get a job afterwards.
16. How much salary can I get on job after attaining this certificate?	The minimum wages announced by the Government of Pakistan in 2019 are PKR 17,500. This may vary in subsequent years and different regions of the country. Progressive employers may pay more than the mentioned amount. The heavy Machinery Operator normally earns 20,000 to 25,000 in the start.
17. Are there any alternative certificates which I can take up?	There are some short courses offered by some training institutes on this subject. Some institutes may still be offering conventional certificate courses in the field.
18. What is the teaching language of this course?	The leaching language of this course is Urdu and English.
19. Is it possible to switch to other certificate programs during the course?	There are some short courses offered by some training institutes on this subject. Some institutes may still be offering conventional certificate courses in the field.
20. What is the examination / assessment system in this program?	Competency based assessments are organized by training institutes during the course which serve the purpose of assessing the progress and preparedness of each student. Final / summative assessments are organized by the relevant qualification awarding bodies at the end of the certificate program. You shall be required to be declared "Competent" in the summative assessment to attain the certificate.
21. Does this certificate enable me to work as freelancer?	You can start your small business by purchasing your own heavy construction machine and can start earning 50,000 per month. You may need additional skills on entrepreneurship to support your initiative.

National Vocational and Technical Training Commission (NAVTTC)

Plot 38, Kirthar Road, Sector H-9/4, Islamabad, Pakistan

+92 51 9044 322

+92 51 9044 322

info@navttc.org

www.navttc.org