ARCHITECTURE DRAFTING

CBT Curriculum

National Vocational Certificate Level 2

Version 1 - July 2015

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Contents:

1. Introduction

The Architecture Drafting course has been designed for architecture and construction industries. This course is for those learners who want to start their career in architecture industry. Those workers who are already working in construction or architecture industry can benefit from this course by improving their skills. In this course drafting skills regarding architecture field has been covered with an emphasis on gaining competencies required to perform the job as a Draftsperson.

Overall objective of course

The course is developed on the philosophy of competency-based training which enables a learner to acquire competencies required to perform his/her job efficiently. However, the course has the following objectives:

- Develop skills of architecture drafting to new entrants in the industry.
- Improve skills of those who are already working in the industry.
- Eradicate unemployment from the country by providing them skills and competencies.

Competencies gained after completion of course

The competencies covered in this course are as under:

- Apply Drafting Fundamentals
- Perform Technical mathematics
- Apply Computer Aided Design/Drafting
- Manage the Architectural Project
- Develop Professionalism

Job opportunities available immediately and in the future

After completion of this course the person may have the following career opportunities:

- Draftsperson
- CAD Operator

- Can work as a free lancer

Trainee entry level

- Minimum Matric (with basic Computer Skills)

Minimum qualification of trainer

- Bachelor of Architecture
- Diploma in Architecture (DAE)/ Civil Technology with 3 years' experience.

Medium of Instructions

- English/Urdu

Scheme of studies

Sr.	Modules	Theory Hrs	Practical Hrs	Total Hrs
1	**A:** **Apply Drafting Fundamentals**	50	256	306

2	**B:** **Perform Technical mathematics**	26	44	70
3	**C:** **Apply Computer Aided Design/Drafting**	70	270	340
4	**D:** **Manage the Architectural Project**	19	23	42
5	**E:** **Develop Professionalism**	28	14	42
	Grand Total	**193**	**607**	**800**

Sequence of the modules

S.no. Name of Module

1	Apply Drafting Fundamentals
2	Perform Technical Mathematics
3	Apply Computer Aided Design/Drafting
4	Manage the Architectural Project
5	Develop Professionalism

Time-frame of assessment (recommendation)

- Assessments should be scheduled during modules and at the completion of modules, depending on the exercises assigned
- Informal critiques which do not entail grading should be conducted frequently so that students can learn from each other's mistakes.

2. Overview about the program –Curriculum for (Architecture Drafting)

Module Title and Aim	Learning Units	Theory[1] Days/hours	Workplace[2] Days/hours
Module 1 Apply Drafting Fundamentals **Aim:** This Module identifies the competencies required to apply drafting fundamentals at workplace by an architect in accordance with the organization's approved guidelines and procedures. You will be expected to Create geometrical construction, single view drawings and orthographic projections, either manually or computerized at workplace. Your underpinning knowledge regarding drafting fundamentals will be sufficient to provide you the basis for your work.	LU1. Introduction to free-hand drawings/ basic sketching LU2. Create geometrical construction LU3. Create single view drawing LU 4. Create orthographic projections LU5. Develop drawing format & read technical drawings	08 hours 12 hours 16 hours 16 hours 12 hours	36 hours 50 hours 74 hours 78 hours 36 hours
Module 2 **Perform Technical mathematics**. **Aim**: This module identifies the competencies required to perform technical mathematics at workplace by an architect in accordance with the organization's approved guidelines and procedures. You will be expected to Calculate decimals and fractions, Apply unit conversion in system of measurement, Apply ratio/proportion using scales, Calculate perimeter, area and volume of objects and Derive area and perimeter using trigonometric formula, either manually or computerized at workplace. Your underpinning knowledge regarding technical	LU1. Calculate decimals and fractions LU2. Apply unit conversion in system of measurement LU3. Apply ratio/proportion using scales LU4. Calculate perimeter, area and volume of objects	06 hours 04 hours 06 hours 04 hours	12 hours 06 hours 06 hours 10 hours

[1] Learning hours in training provider premises
[2] Training workshop, laboratory and on-the-job workplace

mathematics will be sufficient to provide you the basis for your work.	LU5. Derive area and perimeter using trigonometric formula	06 hours	10 hours
Module 3 **Apply Computer Aided Design/Drafting** **Aim**: This Module identifies the competencies required to apply Computer Aided Design/drafting at workplace by an architect in accordance with the organization's approved guidelines and procedures. You will be expected to Apply Auto-CAD fundamentals, Apply CAD draw tools to make a sketch, Apply Auto CAD modify tools, Apply layer, text and dimension tools, Build and use library of components (blocks), Create working set of drawings and submission drawing, Apply plotting/printing to design and Create 3D model (presentation) of architect's concept at workplace. Your underpinning knowledge regarding Computer Aided Design/drafting will be sufficient to provide you the basis for your work.	LU1. Apply Auto-CAD fundamentals LU2. Apply CAD draw toolbar to make a sketch LU3. Apply Auto CAD modify toolbar LU4. Apply layer, text and dimension toolbar LU5. Build and use library of components (blocks) LU6. Create working set of drawings, submission drawing LU7. Apply plotting/printing to design LU8. Create 3D model (presentation) of architect's concept	08 hours 10 hours 10 hours 10 hours 08 hours 10 hours 08 hours 06 hours	32 hours 34 hours 34 hours 26 hours 40 hours 38 hours 34 hours 32 hours
Module 4 **Manage the Architectural Project** **Aim**: This Module identifies the competencies required to manage the Architectural Project at workplace by an architect in accordance with the organization's approved guidelines and procedures. You will be expected to	LU1. Steps involved in completion of an Architectural Project LU2. Manage work flow of an architectural project LU3. Maintain documentation of	05 hours 08 hours	05 hours 14 hours

manage work flow and maintain documentation of architectural projects at workplace. Your underpinning knowledge regarding management of Architectural Project will be sufficient to provide you the basis for your work.	architectural project	06 hours	09 hours
Module 5 **Develop Professionalism** **Aim**: Module identifies the competencies required to develop professionalism at workplace by an architect in accordance with the organization's approved guidelines and procedures. You will be expected to perform communication in an architectural organization, upgrade professional skills, work in a team and apply health and safety at workplace. Your underpinning knowledge regarding management of Architectural Project will be sufficient to provide you the basis for your work.	LU1. Perform Communication in an architectural organization LU2. Upgrade professional skills LU3. Work in a team LU4. Apply health and safety precautions	08 hours 08 hours 06 hours 06 hours	04 hours 04 hours 01 hours 05 hours

Curriculum Contents (Teaching and Learning Guide)

Module 1: Apply Drafting Fundamentals

Objective of the Module: This Module identifies the competencies required to apply drafting fundamentals at workplace by an architect in accordance with the organization's approved guidelines and procedures. Trainee will be expected to create geometrical construction, single view drawings and orthographic projections, either manually or computerized at workplace. Your under pinning knowledge regarding drafting fundamentals will be sufficient to provide you the basis for your work.
Duration: **306** hours Theory: **50** hours Practice: **256** hours

Learning Unit	Learning Outcomes	Learning Elements	Duration (Hrs) TH PR	Materials Required	Learning Place

Learning Unit	Learning Outcomes	Learning Elements	Duration (Hrs) TH PR	Materials Required	Learning Place
LU1: Know free-hand drawings/ sketching & basic lines	**Trainee will be able to:** • Draw rough lines in different angles • Draw lines in different direction using grades of pencils • Draw (free hand) basic shapes • Familiarize with the use of T-scale & Set-square • Handle drafting tools appropriately	• Demonstrate methodology of stretching of sheet for drawing. • Describe division of sheet • Describe drawing different lines (Free hand, Straight, Angular And Curves) • Demonstrate Construction of Seal / Title Strip • Demonstrate flow of pencil and line joinery	04 32	**Manual:** • A-3 sketchbook • Various grades of soft & hard lead pencil • Eraser • Sharpener	• Class Room • Drawing Lab
LU 2: Draw basic geometric shapes	**Trainee will be able to:** • Identify drafting tools required for the job • Select scale required for the given shapes according to drawing requirements • Draw the given geometric shapes according to the required	• Describe usage of drafting tools for this job • Explain the concept of geometric construction: a. Triangle b. Square/rectangle c. Circle d. polygon	10 46	▪ Drafting table ▪ Architectural triangular scale ▪ Stationary items (pencil,	▪ Class Room ▪ Drawing Lab

Learning Unit	Learning Outcomes	Learning Elements	Duration (Hrs) TH PR	Materials Required	Learning Place
	specifications • Mark dimensions of the whole object as per drawn sizes	• Describe the use of scale for the assignment • Describe dimensioning standards		rubber, paper) ▪ Professional Geometry box (compass, divider, attachments, protractor) ▪ T-Scale ▪ Set Square	
LU 3: Create single view drawings	**Trainee will be able to:** • Identify tools required for the job • Select scale required for the given object according to the view required • Draw construction lines according to object sizes • Convert construction lines into object lines as per view requirement, to represent actual	• Describe usage of drafting tools for this job • Explain the concept of single view drawing • Describe the use of scale & dimensioning standards for the given assignment • Describe the concept and types of projection	10 60	▪ B pencils ▪ HB pencils ▪ Drawing sheet ▪ Pencil/ eraser/sharpener ▪ Set square ▪ Drafting table ▪ Different scales ▪ Compass	▪ Class Room ▪ Drawing lab

Learning Unit	Learning Outcomes	Learning Elements	Duration (Hrs) TH PR	Materials Required	Learning Place
	object • Mark dimensions of the whole object as per drawn sizes			▪ T- scale	
LU4: **Create orthographic projections**	**Trainee will be able to:** • Identify tools required for the job • Specify given object details as per assignment • Select scale required for the given object according to the view required • Draw construction lines according to object sizes • Convert construction lines into object lines as per view requirement • Mark dimensions of the whole object as per drawn sizes	• Describe the use of tools for this job • Explain the concept of orthographic projections • Describe the use of scale & dimensioning standards for the given assignment • Describe the following • First angle projection method • Third Angle projection method	12 70	**Manual:** ▪ Drafting table ▪ Architectural triangular scale ▪ Stationary items ▪ Geometry box (compass, divider, attachments, protector)	▪ Class Room ▪ Drawing Lab
LU5: **Develop drawing format & read technical**	**Trainee will be able to:** • Format the drawings according to the following specifications: • Required scale &	• Describe drawing format for the particular assignment including: • Required scale & dimensioning • Required labeling and	2 12		• Class room/ Drawing lab

Learning Unit	Learning Outcomes	Learning Elements	Duration (Hrs) TH PR	Materials Required	Learning Place
drawings	dimensioning • Required labeling and symbols • Specified title block (seal) • Read and analyze technical drawings as per standards • Communicate technical drawings as per standards	symbols • Specified title block (seal) • Describe how to read and analyze technical drawings • Describe how to communicate technical drawings			

Module 2: Perform Technical Mathematics

Objective of the Module: This Module identifies the competencies required to perform technical mathematics at workplace by an architect in accordance with the organization's approved guidelines and procedures. You will be expected to calculate decimals and fractions, Apply unit conversion in system of measurement, Apply ratio/proportion using scales, Calculate perimeter, area and volume of objects and Derive area and perimeter using trigonometric formula, either manually or computerized at workplace. Your underpinning knowledge regarding technical mathematics will be sufficient to provide you the basis for your work.

Duration: **70** hours Theory: **26** hours Practical: **44** hours

Learning Unit	Learning Outcomes	Learning Elements	Duration (Hrs) TH PR	Materials Required	Learning Place
LU 1:	**Trainee will be able to:**	• Describe the usage of tools	04 12	▪ Computer	

Calculate decimals and fractions	• Identify tools required for the job • Apply tools to calculate mathematical fractions • Read and understand on-scale drawings • Calculate areas of various types	required for this job • Identify the symbols of mathematical fractions • Describe the FPS (foot pound second) and MKS (meter, kilogram, second) systems of measurement		▪ Calculator ▪ Stationary items ▪ Professional Geometry box	• Class Room • Drawing lab
LU2: Apply unit conversion in system of measurement	**Trainee will be able to:** • Arrange tools/ gadgets required for the job • Use tools to calculate mathematical conversion factors • Apply conversion systems from metric to English and vice versa	• Describe the usage of tools required for this job • Explain conversion systems from Metric to English and vice versa	02 06	▪ Scientific Calculator ▪ Stationary items ▪ Note book	• Class Room
LU3: Apply ratio/proportion using scales	**Trainee will be able to:** • Select scales required for the job • Select the scale ratio appropriate to draw larger object into a smaller one and vice versa	• Describe the various types of scale used in architecture • Describe the usage of scale required for this job • Describe the concept of ratio of scale (e.g: 1/96 to a foot) • Describe the concept of proportion and different proportion systems used in architecture	04 06	▪ Architectural triangular scale ▪ Measuring tape ▪ Stationary items ▪ Graph paper ▪ Professional geometry	• Class Room • Drawing lab

				box	
LU 4: Calculate perimeter, area and volume of objects	**Trainee will be able to:** • Identify tools required for mathematical calculation • Calculate area of square, rectangle, triangle and circle, polygons etc. using formula • Calculate perimeter of square, rectangle, triangle, circle, polygons etc. using formula • Calculate volume of cube, slab, prism, sphere etc. using formula • Add standard units to the derived quantity (e.g.: Square foot s.ft etc.)	• Describe the usage of tools required for this job • Explain the standard units for area, perimeter and volume • Describe the geometrical figures • Describe the formula for calculating area • Describe the formula for calculating perimeter • Describe the formula for calculating volume • Describe alternate methods to calculate area and perimeters	02 06	▪ Scientific Calculator ▪ Stationary items ▪ Note book	
LU 5: **Derive area and perimeter using trigonometric formulae**	**Trainee will be able to:** • Identify tools required for calculation • Calculate area of triangle by using trigonometric formula • Calculate perimeters of triangle using trigonometric formula • Add standard units to the derived quantity (e.g: Square foot Sft etc.)	• Describe the usage of tools required for this job • Explain use of trigonometric table • Describe formulas for derivation of perimeter and area using trignometry • Explain the standard units for area, perimeter and volume	04 10	▪ Scientific Calculator ▪ Stationary item ▪ Trigonometric table ▪ Note book	Class room

Module 3: Apply Computer Aided Design/Drafting

Objective of the Module: This Module identifies the competencies required to apply Computer Aided Design/drafting at workplace by an architect in accordance with the organization's approved guidelines and procedures. You will be expected to Apply Auto-CAD fundamentals, Apply CAD draw tools to make a sketch, Apply Auto CAD modify tools, Apply layer, text and dimension tools, Build and use library of components (blocks), Create working set of drawings and submission drawing, Apply plotting/printing to design and Create 3D model (presentation) of architect's concept at workplace. Your underpinning knowledge regarding Computer Aided Design/drafting will be sufficient to provide you the basis for your work.

Duration: **340** hours Theory: **70** hours Practice: **270** hours

Learning Unit	Learning Outcomes	Learning Elements	Duration (Hrs) TH PR	Materials Required	Learning Place
LU 1: Introduction to Auto-CAD Fundamentals	**Trainee will be able to:** • Familiarize with the uses of the software Auto-CAD • Install Auto-CAD software	• Explain the uses and implications of Auto-CAD Software • Explain the procedure to install and un-install Auto Cad	6 30	▪ Compatible Computer system with latest AutoCAD installed	• Class room • Computer lab

	• Introduction to screen • Introduction to limits and units • Install the Auto-CAD on the system following installation instructions • Specify the unit (scale), precision, drawing limits in the model space for a specific drawing assignment • Specify grid, snap and selection tool for specific drawing assignment • Prepare backup file for the assignment to avoid data loss	• Describe the features of drawing window including: a. Main menu b. Down drop menu, sub menu c. Tool bar d. Task bar e. Command area f. User coordinate system (UCS) • Explain the following: a. Unit b. Drawing limits c. Grid d. Snap e. Selection • Describe the file saving and backup method			
LU 2: **Apply Auto-CAD draw toolbar to make a sketch**	**Trainee will be able to:** • Draw following lines, as per assignment requirement: a. Construction line b. Ray line c. Line d. Poly line • Draw following geometric objects, as per assignment	• Describe the usage of tools required for this job • Demonstrate the following lines: a. Construction line b. Ray line c. Line d. Poly line • Demonstrate the following objects:	08 28	▪ Compatible Computer system with latest AutoCAD installed	• Class Room • Computer Lab

	requirement: a. Rectangle/square b. Circle/arc c. Ellipse/ elliptical arc d. Polygon • Divide and measure specific space using point command • Apply boundary and hatch command for filling space, with specific symbols and solid colors	a. Rectangle/square b. Circle/arc c. Ellipse/ elliptical arc d. Polygon • Describe how to divide and measure a line or object with the help of point command • Describe how to fill up space with specific material symbol and color			
LU3: **Apply Auto CAD modify toolbar**	**Trainee will be able to:** • Apply following tools to modify drawings in Auto CAD: a. Erase b. Trim c. Chamfer d. Fillet e. Break/join • Apply following tools to modify objects in Auto CAD: a. Off set / mirror b. Copy c. Extend d. Array e. Move f. Rotate g. Scale	• Describe the usage of tools required for this job • Demonstrate the following tools to modify drawings in Auto CAD: a. Erase b. Trim c. Chamfer d. Fillet e. Break/join • Demonstrate the following tools to modify objects in Auto CAD: a. Off set / mirror b. Copy c. Extend d. Array e. Move f. Rotate	08 30	▪ Compatible Computer system with latest AutoCAD installed	• Class Room • Computer Lab

	h. Stretch i. Align	g. Scale h. Stretch i. Align			
LU 4: **Apply layer, text and dimension toolbar**	**Trainee will be able to:** • Create layers for an object in Auto CAD as per assignment's requirement (e.g: line, boundary, hatch, text, dimension, fixture etc) • Prepare text style and create text as per assignment's requirement • Prepare dimensional style and create following dimensions: a. Linear b. Aligned c. Base line d. Continuous e. Oblique f. Diameter/radius g. Angular • Create and modify dimensions as per assignment a. Align text	• Describe the concept of layers and its application: a. Line weight b. Line type c. Color d. Def-point layer • Describe working of layer a. Freeze/thaw b. Lock/unlock c. Current d. Filter e. Layer match f. Layer delete • Describe text type and style • Explain dimension style as per following: a. Linear b. Aligned c. Base line d. Continuous e. Oblique f. Diameter/radius g. Angular	08 26	▪ Compatible Computer system with latest Auto-CAD installed	• Class Room • Computer Lab

	b. Update dimensions				
LU 5: **Build and use library of components (blocks)**	**Trainee will be able to:** • Create a specific small object (symbols etc.) to be used in a drawing as per assignment's requirement 1. Door 2. Window 3. Ventilator 4. Furniture / interior items 5. Fixtures 6. Landscape • Insert block in a drawing as per assignment • Modify blocks required for a specific drawing	• Explain block creation for the following a. Door b. Window c. Ventilator d. Furniture / interior items e. Fixtures f. Landscape • Describe method of insertion of a block • Explain how to modify a block for specific requirement in a drawing	08 36	▪ Compatible Computer system with latest Auto-CAD installed	• Class Room • Computer lab
LU 6: **Create working set of drawings, submission drawing**	**Trainee will be able to:** • Create working set of drawings as per assignment: a. Layout plan b. Working plan c. Elevation d. Section e. block diagram • Create working details of	• Explain working set of drawing as per following: a. Layout plan b. Working plan c. Elevation d. Section e. block diagram • Describe detail working drawing including a. Doors /windows	08 32	▪ Compatible Computer system with latest Auto-CAD installed	• Class Room • Computer Lab

	following as per assignment: a. Doors /windows b. Kitchen/bath c. Foundation d. Stair e. Tanks (septic, water storage) f. Floor finishing	b. Kitchen/bath c. Foundation d. Stair e. Tanks (septic, water storage) f. Floor finishing			
LU 7: **Apply plotting/printing to design**	**Trainee will be able to:** • Install/select the printer/ plotter software as per installation manual • Set up printing/plotting detail for a particular drawing/assignment a. Paper size b. Orientation c. Scale d. Color / monochrome • Apply printing/plotting command in different formats: a. Hard copy b. Raster image c. PDF	• Define printing/plotting process and its importance • Explain set up procedure for printing/plotting a drawing a. Paper size b. Orientation c. Scale d. Color / monochrome • Describe printing/plotting command for the following output: a. Hard copy b. Raster image c. PDF	06 34	▪ Compatible Computer system with latest Auto-CAD installed ▪ Printer ▪ Plotter ▪ Scanner	• Class Room • Computer Lab
LU 8: **Create 3D model (presentation) of**	**Trainee will be able to:**	• Explain extrude command • Explain 3D model (wireframe)	06 22	▪ Compatible Computer system with	• Class Room • Computer Lab

architect's concept	• Apply extrude command • Create 3D model (wireframe) of an architectural assignment as per requirement • Apply following commands to the wireframe model: a. Material application b. Light application c. Camera as per view requirement • Apply render command and create raster image of the assigned model	for an architectural assignment • Describe how to prepare 3D model including the following commands: a. Material application b. Light application c. Camera as per view requirement • Explain how to render and create raster image of 3D model		latest Auto-CAD installed	

Module 4: Manage Architectural Projects

Objective of the Module: This module identifies the competencies required to manage the Architectural Project at workplace by an architect in accordance with the organization's approved guidelines and procedures. You will be expected to manage work flow and maintain documentation of architectural projects at workplace. Your underpinning knowledge regarding management of Architectural Project will be sufficient to provide you the basis for your work.

Duration: **42** hours Theory: **19** hours Practice: **23** hours

Learning Unit	Learning Outcomes	Learning Elements	Duration (Hrs) TH PR	Materials Required	Learning Place
LU1: Steps involved in completion of an Architectural Project	**Trainee will be able to:** • Familiarize with the steps involved in an architectural project from conception to completion • Familiarize with the requirements and implications of individual steps involved • Familiarize with the timeline required for each step involved	• Explain the steps involved in an architectural project from conception to completion • Explain with the requirements and implications of individual steps involved • Explain with the timeline required for each step involved	1 5	• Stationery items • Notebook	• Class room • Drawing lab

LU 2: Manage work flow of an architectural project	**Trainee will be able to:**
	• Perform basic quality control of drawings as per architectural organization's policy:
	  • Printing (size etc)
	  • Hierarchy wise signature
	  • Date/revised date
	  • Sheet number/record number
		• Explain the process of developing an architectural project
		• Highlight the importance of timeframe for different activities in an architectural project
		• Define basic quality control for an architectural project regarding
		  a. Printing (size etc)
			04 11	▪ Computer
				▪ Printer
				▪ Stationary items
					• Class Room
					• Computer lab

	• Scale • Scheme number/project	b. Hierarchy wise signature c. Date/revised date d. Sheet number/record number e. Scale f. Scheme number/project			
LU 3: Maintain documentation of architectural project	**Trainee will be able to:** • Perform basic record keeping for the projects following the organizational instructions • Maintain the following records of architectural project: a. Agreement b. Correspondence c. Approval d. Design data e. Delivery data f. Revised data	• Describe organizational record keeping procedure • Explain the maintenance of the following records of architectural project for basic understanding: g. Agreement h. Correspondence i. Approval j. Design data k. Delivery data l. Revised data	02 07	▪ Computer ▪ Stationary items ▪ Notebook	• Class Room • Drawing lab

Module 5: Develop Professionalism

Objective of the Module: This module identifies the competencies required to develop professionalism at workplace by an architect in accordance with the organization's approved guidelines and procedures. You will be expected to perform communication in an architectural organization, upgrade professional skills, work in a team and apply health and safety at workplace. Your underpinning knowledge regarding management of Architectural Project will be sufficient to provide you the basis for your work.

Duration: **42** hours Theory: **28** hours Practice: **14** hours

Learning Unit	Learning Outcomes	Learning Elements	Duration (Hrs) TH PR	Materials Required	Learning Place

LU 1: Perform Communication in an architectural organization	**Trainee will be able to:**
	• Communicate with the following:
	  • Office/ Project Supervisor
	  • Other departments
	  • Vendors/contractors
	• Use media to communicate effectively (e.g.: email, telephone etc.)
		• Explain Procedure required to communicate effectively and precisely within organisation
		• Explain procedure required to deal with vendors and contractors
		• Justify the appropriate use of electronic and relative media as per need
			02 04	▪ Computer
				▪ Internet facility
				▪ Telephone
					• Class Room
					• computer lab

LU 2: Upgrade professional skills	**Trainee will be able to:** • Participate in skill tests for professional development • Attend seminars / workshops related to architectural developments • Perform market research for professional growth • Adopt upcoming market trends in architectural field	• Describe the importance of trends and market research. • Identify the need of skills sets by getting involved in seminars, workshops and competitions.	02 04	▪ Computer ▪ Internet facility	➢ Class Room ➢ computer lab
LU 3:	**Trainee will be able to:**	• Identify the importance of being		▪ Computer	➢ Class

Work in a team	• Demonstrate good team skills including • Cooperation/coordination • Work ethics • Etiquettes/manners • Carry an appropriate appearance • Show comfort and tolerance • Present and observe good work ethics	a good team player .including • Cooperation/coordination • Work ethics • Etiquettes/manners	02 01	▪ Internet facility	Room ➢ computer lab
LU 4: **Apply health and safety precautions**	**Trainee will be able to:** • Follow safety precautions for different types of tools and equipment • Follow operating instructions to use tools properly • Use following protective measures while working on computer a. Protective screen b. Maintain position/posture and distance from monitor c. Ergonomics	• Define the importance to follow operating instructions given for tools • Describe the importance of ergonomics in using computers	02 03	▪ Computer ▪ Personal protective equipment (PPE) including Hand rest, foot rest, back rest adjustable chairs ▪ Proper lighting in the room ▪ Screen filters ▪ Adjustable keyboard and mouse etc.	➢ Class Room ➢ computer lab

Assessment

Module 1 (Apply Drafting Fundamentals)

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
A1: Introduction to free-hand drawings/ basic sketching	2 hours	4 hours	• Describe Sketching rules • List down the Materials which we use for sketching • Illustrate the different sketching techniques	• Quiz • Illustrative Test	
A2:Create geometrical construction	2 Hours	4 hours	• Describe uses of tools • Convert construction lines into object lines • Draw geometrical shapes	• Quiz • Illustrative Test	
A3: Create single view drawing	2 hours	4 hours	• Describe different tools used in drafting • Select scale for the required drawing • Describe the types of projection	• Quiz • Performance test	
A4: Create orthographic projections	2 hrs	4 hours	• Explain the concept		

			of orthographic projections • Explain the method used to draw orthographic projections • Draw orthographic projections using first angle projection method • Draw orthographic projections using third angle projection method	• Tests/Quiz • Drawing test	
A5: Develop drawing format & read technical drawings	2	4	• Produce drawings with given specifications of scale and dimensions • Produce drawings according to given specifications and label them accordingly, and prepare appropriate title	• Tests/Quiz Drawing test	

Module 2 (Perform technical mathematics)

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates

B1: **Calculate decimals and fractions**	02 hrs.	Nil hr. PR	• Describe various tools used for calculating decimals and fractions • Explain the systems of measurement (FPS, MKS) used to make these calculations • Explain different symbols of mathematical fractions	• White board • Quiz	
B2: **Apply unit conversion in system of measurement**	02 hrs.	Nil hr. PR	Explain the method used to convert one measurement system into another	• White board • Test/Quiz	
B3: **Apply ratio/ proportion using scale**	02 hrs.	Nil hr. PR	• Describe the concept of ratio of scale • Describe the appropriate scale to draw a larger object into smaller and vice versa	• White board • Test/Quiz	
B4: Calculate perimeter, area and volume of objects	02 hrs.	4 hrs.	• Describe and draw various different geometrical figures • Describe different formulas to calculate areas of different figures	• White board • Test/Quiz	

			• Describe the formula for calculating volume of different figures		
B5: Derive area and perimeter using trigonometric formulae	02 hrs.	Nil hr. PR	• Explain the use of trigonometric table • Describe formulae for derivation of perimeter and area • Explain the standard units for area perimeter and volume	• White boar • Test/Quiz	

Module 3(Apply Computer Aided Design/Drafting)

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
C1: Apply Auto-CAD fundamentals	2 hrs.	2 hrs.	• Describe the features of Auto-CAD screen • Describe and demonstrate the file saving and back-up method • Limits and units	• Information sheets/Hand outs • White board • Test/Quiz • Computer	
C2: Apply Auto-CAD "draw tool Bar" to make a sketch	2 hrs.	6 hrs.	• Demonstrate the various line types (construction line, ray line, line, polyline) • Demonstrate objects such as: a. Circle/arc b. Elipse elyptical arc c. Polygon	• Information sheets/Hand outs • White board • Test/Quiz • Computer	
C3: Auto-CAD "modify toolbar "	2 hrs	4 hrs	• Explain modify tools and their uses • Apply various tools to modify drawings using: Erase, trim, chamfer, fillet, extend, aray atc.	• White board • Test/Quiz • Computer	

C4: Apply layer, text and dimension tools	2 hrs	Nil Pr. hrs	• Explain the concept of layers and its application • Explain text types and styles • Explain methods used to mark dimensions	• Information sheets/Hand outs • White board • Test/Quiz	
C5: Build and use library of components (blocks)	0 Th. hrs	4 hrs	• Demonstrate block creation for door, window, landscape etc. • Demonstrate the method of inserting a block using the library	• Information sheets/Hand outs • White board • Test/Quiz • Computer	
C6: Create working set of drawings, submission drawings	2 hrs.	6 hrs.	• Explain working set of drawings and its uses • Prepare a detailed working drawing of a small unit such as kitchen, bathroom etc.	• Information sheets/Hand outs • White board • Test/Quiz • Computer	
C7: Apply plotting/ printing to Design	2 hrs.	Nil Pr. hrs.	• Explain the importance and use of various paper sizes and orientation, scale • Explain printing and plotting procedure and its importance		

C8: Create 3-D model (presentation of Architect's concept)	Nil th. hrs	10 hrs	• Create a 3-D model in wireframe of various objects • Apply extrude command • Apply material and apply light on a previously made wireframe model		

Module 4 (Project Coordination)

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
D1: Steps involved in completion of an Architectural Project	4 hrs	Nil Pr. hrs	• Explain the steps involved in an architectural project with their timeline	• Task sheet • Test/Quiz	
D2: Manage workflow/ timeline of an Architectural Project	4 hrs	Nil Pr. hrs	• Explain the process of developing an architectural project • Highlight the importance of timeframe for different phases of an architectural project • Define the ways in which quality of an architectural project can be maintained	• Task sheet • Test/Quiz	
D3: Maintain Documentation of Architectural Project	4 hrs	Nil pr. hrs	• Describe the various phases of record keeping while documenting an architectural project	• Task sheet • Performance test • Test/Quiz	

Module 5 (Develop Professionalism)

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
E1: Perform communication in an architectural organization	6 hrs.	Nil pr. hrs.	• Identify factors involved in effective communication in an organization • Explain different dealing procedures while dealing with various vendors and contractors	• Test/Quiz	
E2: Upgrade Professional Skills	6 hrs.	Nil Pr. hrs	• Describe the importance of professional development • Describe the ways through which you can improve your professional skills for changing trends	• Test/Quiz	
E3: Work in a team	4 hrs	Nil Pr. hrs	• Explain why team work is important for a successful completion of an architectural project • Explain how comfort and tolerance effect a	• Test/Quiz	

			team work		
E4: Apply health and Safety	4 hrs	2 hrs	▪ Explain and demonstrate various important safety precautions necessary to carry out in an organization	• Test/Quiz	

List of Tools, Machinery & Equipment

Name of Trade	Basic Architecture Drafting
Duration	06 Months

Sr. No.	Name of Item/ Equipment / Tools	Qty.
1.	Drafting tables with drawer	25
2.	Set squares	25
3.	Architectural Scale (Triangular/ Tape)	25
4.	T-Scale	25
5.	Geometric sets/instruments sets	25
6.	Student chair	25
7.	Desktop Computers (minimum core i3)	25
8.	Laser Printers Colour A3	02
9.	Scanner	02
10.	Multimedia Projector	01
11.	Multimedia Projector screen (Standard Size)	01
12.	White Boards	03
13.	Stools for students	01
14.	French Curves set	25
15.	Photocopy Machine upto A3	01
16.	Sharpener machine	02
17.	Laptop for instructor (min- core I5)	01
18.	Auto CAD Software (updated version)	--
19.	Anti-virus Software	--

List of Consumable Supplies

Name of Trade	Basic Architecture Drafting

Duration	06 months

S.#	Name of Consumable Supplies
1.	A4 size sketchbook
2.	Drafting/ Drawing sheets (Imperial Size 90 Gram)
5.	Ivory cards/chart sheet
7	Graph papers
9	Furniture templates
10	Circle templates
11	Pencils in different grades (2B, B, HB, H, 2H)
12	Erasers
15	Sharpeners
17	Scotch tape
19	UHU gum Stick
20	Board markers (Black,Blue,Red)
21	Highlighter
22	Stapler, thumb pins,
23	Sheet Folder 32” x 22”
24	Colour pencils
25	Dust Bins

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