

CURRICULUM

FOR THE TRADE OF

Architectural Assistant

UNDER

APPRENTICESHIP TRAINING SCHEME



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENURESHIP
DIRECTORATE GENERAL OF TRAINING

CONTENTS

Sl. No.	Topics	Page No.
1.	Acknowledgement	03
2.	Background 2.1 Apprenticeship Training under Apprentice Act 1961 2.2 Changes in Industrial Scenario 2.3 Reformation	04
3.	Rationale	06
4.	Job roles: reference NCO	07
5.	General Information	08
6.	Course structure	09
7.	Syllabus 7.1 Basic Training 7.1.1 Detail syllabus of Core Skill A. Block-I (Engg. drawing & W/ Cal. & Sc.) B. Block-II (Engg. drawing & W/ Cal. & Sc.) 7.1.2 Detail syllabus of Professional Skill & Professional Knowledge A. Block – I B. Block – II 7.1.3 Employability Skill 7.1.3.1 Syllabus of Employability skill A. Block – I B. Block – II 7.2 Practical Training (On-Job Training) 7.2.1 Broad Skill Component to be covered during on-job training. A. Block – I B. Block – II	11
8.	Assessment Standard 8.1 Assessment Guideline 8.2 Final assessment-All India trade Test (Summative assessment)	30
9.	Further Learning Pathways	33
10.	Annexure-I – Tools & Equipment for Basic Training	34
11.	Annexure-II – Infrastructure for On-Job Training	39
12.	Annexure-III - Guidelines for Instructors & Paper setter	40

1. ACKNOWLEDGEMENT

The DGT sincerely express appreciation for the contribution of the Industry, State Directorate, Trade Experts and all others who contributed in revising the curriculum. Special acknowledgement to the following industries/organizations who have contributed valuable inputs in revising the curricula through their expert members:

1. ShapoorjiPallonji& Co. Pvt. Ltd.
2. Regional Vocational Training Institute, Kolkata
3. Central Staff Training & Research Institute, Kolkata

Special acknowledgement is extended by DGT to the following expert members who had contributed immensely in this curriculum.

Coordinator for the course: R.N.MANNA, Training Officer, CSTARI, Kolkata

Sl. No.	Name Sh./Mr./Ms.	Organization	Expert Group Designation
1.	Ar. Avijit Banerjee	ShapoorjiPallonji& Co. Pvt. Ltd.	Architect
2.	Himanish Bhattacharya, Instructor, Architectural Assistant	Regional Vocational Training Institute, Kolkata	Expert
3.	Mrs. Soma Das, Training Officer	Regional Vocational Training Institute, Kolkata	Expert
4.	PrasoonGhosh, Sr. Draughtsman	Central Staff Training & Research Institute , Kolkata	Expert
5.	NirmalyaNath, Astd. Dir. of Trg.	Central Staff Training & Research Institute , Kolkata	Expert
6.	R.N.Manna, Training Officer	Central Staff Training & Research Institute , Kolkata	Expert

2. BACKGROUND

2.1 Apprenticeship Training Scheme under Apprentice Act 1961

The Apprentices Act, 1961 was enacted with the objective of regulating the programme of training of apprentices in the industry by utilizing the facilities available therein for imparting on-the-job training. The Act makes it obligatory for employers in specified industries to engage apprentices in designated trades to impart Apprenticeship Training on the job in industry to school leavers and person having National Trade Certificate(ITI pass-outs) issued by National Council for Vocational Training (NCVT) to develop skilled manpower for the industry. There are four categories of apprentices namely; **trade apprentice, graduate, technician and technician (vocational) apprentices.**

Qualifications and period of apprenticeship training of **trade apprentices** vary from trade to trade. The apprenticeship training for trade apprentices consists of basic training followed by practical training. At the end of the training, the apprentices are required to appear in a trade test conducted by NCVT and those successful in the trade tests are awarded the National Apprenticeship Certificate.

The period of apprenticeship training for graduate (engineers), technician (diploma holders and technician (vocational) apprentices is one year. Certificates are awarded on completion of training by the Department of Education, Ministry of Human Resource Development.

2.2 Changes in Industrial Scenario

Recently we have seen huge changes in the Indian industry. The Indian Industry registered an impressive growth during the last decade and half. The number of industries in India have increased manifold in the last fifteen years especially in services and manufacturing sectors. It has been realized that India would become a prosperous and a modern state by raising skill levels, including by engaging a larger proportion of apprentices, will be critical to success; as will stronger collaboration between industry and the trainees to ensure the supply of skilled workforce and drive development through employment. Various initiatives to build up an adequate infrastructure for rapid industrialization and improve the industrial scenario in India have been taken.

2.3 Reformation

The Apprentices Act, 1961 has been amended and brought into effect from 22nd December, 2014 to make it more responsive to industry and youth. Key amendments are as given below:

- Prescription of number of apprentices to be engaged at establishment level instead of trade-wise.
- Establishment can also engage apprentices in optional trades which are not designated, with the discretion of entry level qualification and syllabus.
- Scope has been extended also to non-engineering occupations.
- Establishments have been permitted to outsource basic training in an institute of their choice.
- The burden of compliance on industry has been reduced significantly.

3. RATIONALE

(Need for Apprenticeship in Architectural Assistant (ATS) Trade)

1. The greater degree of relevance of the training with latest advancements of the industry will enhance the employability opportunities.
2. Able to prepare and design preliminary drawings, plans, elevations and sections for a variety of building, construction and maintenance projects which shall include calculating dimensions, developing component parts, plans, elevations and sections utilizing established architectural practices, symbols and drafting techniques.
3. It will enhance the ability to use IT in design and project management, specifically using computer-aided design software.
4. Perform visits to project sites and makes routine field observations to verify that conditions conform to contract documents and shop drawings; takes field measurements and documents existing conditions.
5. Able to assist in the preparation of contract specifications, documents and preliminary cost estimates for the construction or conversion of buildings and similar projects.
6. Enhance to assist in the coordination and review of architectural, structural, electrical and mechanical drawings in order to assure that drawing components of a project meet with design, programming, and legal requirements.
7. Ability to participate in meetings with design professionals, consultant engineers, contractors and agencies to discuss and resolve issues relative to projects.
8. It will enhance to prepare written reports, summaries and correspondence related to architectural activities.

4. JOB ROLES: REFERENCE NCO

Brief description of Job roles:

At the end of course the trainee will be able to:

- **Work in architectural firm as draftsman**
- **Work In Interior office as interior designer**
- **Work as site supervisor and surveyor**

- **Work In showroom dealing in architectural materials**
- **Work In offices dealing in civil work like making of structure drawings.**
- **Work in manufacturing units of architectural materials like tiles, modular kitchen, and readymade doors etc.**
- **Work in structural firm as draftsman**

Reference NCO:3118.10

5. GENERAL INFORMATION

1. Name of the Trade : Architectural Assistant

2. N.C.O. Code No. :3118.10

3.Duration of Apprenticeship Training (Basic Training + Practical Training): 02 Years

4.Duration of Basic Training: -

a) Block –I : 3 months

b) Block – II : 3 months

Total duration of Basic Training: 6 months

5.Duration of Practical Training (On -job Training): -

a) Block–I: 9 months

b) Block–II : 9 months

Total duration of Practical Training: 18 months

6.Entry Qualification : Passed in 10th Class Examination under 10 + 2 system of Education or its equivalent.

7.Selection of Apprentices: The apprentices will be selected as per Apprenticeship Act amended time to time.

8. Rebate to ITI Passed out Trainees:One year for the trade of Architectural Assistant.

Note: Industry may impart training as per above time schedule for different block, however this is not fixed. The industry may adjust the duration of training considering the fact that all the components under the syllabus must be covered. However the flexibility should be given keeping in view that no safety aspects is compromised.

6. COURSE STRUCTURE

Training duration details: -

Time (in months)	1-3	4-12	13-15	16-24
Basic Training	Block– I	-----	Block – II	-----
Practical Training (On - job training)	----	Block – I	-----	Block – II

[Please do not make any changes in the course structure]

Components of Training ↓	Duration of Training in Months →																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Basic Training Block - I	█	█	█																						
Practical Training Block - I				█	█	█	█	█	█	█	█	█													
Basic Training Block - II													█	█	█										
Practical Training Block - II																█	█	█	█	█	█	█	█	█	█

7. SYLLABUS
7.1 BASIC TRAINING
(BLOCK – I & II)
DURATION: 06 MONTHS

GENERAL INFORMATION

- 1) **Name of the Trade** : Architectural Assistant(ATS)
2) **Hours of Instruction** : 1000 Hrs. (500 hrs. in each block)
3) **Batch size** : 20 Trainees Per Unit
4) **Power Norms** : Drawing hall: 4 kw (25000 lumen)
5) **Space Norms** : Drawing Hall: 100 Sqm.
Computer Lab: 80 sqm.
6) **Examination** : The internal assessment will be held on completion of each Block.
7) **Instructor Qualification** :

i) Degree/Diploma in Architecture from recognized university/Board with one/two year post qualification experience respectively in the relevant field.

OR

ii) NTC/NAC in the trade of Architectural Draughtsman with three year post qualification experience in the relevant field.

Preference will be given to a candidate with Craft Instructor Certificate (CIC)

- 8) **Tools, Equipments & Machinery required** : - As per Annexure – I

7.1.1 DETAILSYLLABUS OF CORE SKILL

A. Block– I Basic Training

Topic No.	a) Engineering Drawing	Duration (in hours)	b) Workshop Science & Calculation	Duration (in hours)
1	Familiarization with engineering drawing tools and equipments. Lettering - basics, vertical and inclined, types of lettering strokes.	30	UNITS AND DIMENSIONS Fundamental and derived units in SI System, Accuracy, Precision and errors in Measuring Instruments.	20
2	Dimensioning – basic system of measurement, dimensioning techniques, location, dimensioning of different objects like lines, circle, curves, angles.		Concept of gravity, gravitational force, centroid and center of gravity for regular solids.	
3	Scale and proportion of measurements in drawing Drawing of Furniture bytaking measurements.		Heat and temperature, their units, difference between heat and temperature, boiling point, melting point, scale of temperature, relation between different scales of temperature.	
4	Methods of Bisecting a line or arc or angle (e.g. line parallel to another line passing through a given point or at a given distance, a line tangent to a curve at a given point etc)		ALGEBRA Indices, Concept and rules, Examples on indices. Application of Quadratic equations.	
5	Free hand drawing of simple geometric surfaces, sketching of dimensional geometric objects, sketching a set of objects.		MENSURETION: Determination of area of sectors, segments, ellipse irregular figures, figures, surface area.	
6	Geometrical construction (using different methods) like square, triangle, pentagon,hexagon,ellipse,		TRIGNOMETRY Concept of angles, measurement of angles in degrees.Review of ratios of	

	parabola		some standard angles (0, 30,45,60,90 degrees)	
7	Orthographic Projection of solids (prisms or pyramids with various shaped bases) use of 1 st angle projection & 3 rd angle projection			
8	Fundamentals of isometric projections (Theoretical Projections) Isometric views from 2 to 3 given orthographic views. Preparation of simple working drawing of Furniture items like table, stool and any job prepared in the workshop.			
9	Free hand conceptual drawing: (viz. Lizard's eye view of a drawing room, ant's eye view in a geometry box, dog's eye view of a bed room, etc.)			

B. Block- II

Basic Training

Topic No.	a) Engineering Drawing	Duration (in hours)	b) Workshop Science & Calculation	Duration (in hours)
1	Drawing of Section of solids using sectional plane at different angles (generation of true shape of section is essential)	30	Determination of volumes of pyramids cone, sphere – their frusta including pyramidal formula.	20
2	Drawing of surface development of different solids		Solution of triangles and problems of height and distance.	
3	Perspective Projection: <ul style="list-style-type: none"> • General principles • Conception of Picture plane, Vanishing point, Station Point, Cone of vision, Eye level, Horizontal line, Height line etc. • One point perspective view of simple furniture (TV unit, table, sofa, book rack, chair etc) 		Calculation of moments, centre of gravity. Moment of inertia and modules of sections. Calculation and drawing of B.M. & S.F. diagram for simple supported beams and cantilevers with concentrated and uniformly distributed loads, section of steel joints from hand books for given loading.	
4	Different shapes of Brick bats, Plan & Isometric view of English Bond, Single / Double Flemish bond for One & one and half brick thick wall, Brick flooring patterns.		Elementary Hydraulics: Pressure of a fluid, pressure head of a fluid, total pressure in a surface-centre of pressure	
5	Anthropometrics - furniture design, its standard sizes and area required around for movement and height (living, bed room, kitchen, dining, toilet)		ELECTRICITY Ohm's law, Kirchhoffs law Simple Problems on series and parallel circuits.	
6	Preliminary drawing prepared in AUTOCAD based on a single project of G+1 residential building after			

	analyzing the requirement and area analysis Initial sketches / preliminary drawings in CAD a) Sketches of the plan b) Surrounding area and site landscaping c) Minimum front and 1 side elevation d) Section through toilet and stairs			
7	Architectural Sanction Drawing in CAD.			
8	Architectural Working Drawing in CAD			
9	Electrical & Plumbing Layout Drawing in CAD			

7.1.2 DETAIL SYLLABUS OF PROFESSIONAL SKILLS & PROFESSIONAL KNOWLEDGE

A. Block –I

Basic Training

Week No.	Professional Skills (275 Hrs.)	Professional Knowledge (120 Hrs.)
1	<p>Safety: - its importance, classification, personal, general, workshop and job safety. Occupational health and safety.</p> <p>Basic injury prevention, Basic first aid, Hazard identification and avoidance, safety signs for Danger, Warning, caution & personal safety message.</p> <p>Preventive measures for electrical accidents & steps to be taken in such accidents.</p> <p>Importance of housekeeping & good shop floor practices. Disposal procedure of waste materials like cotton waste, metal chips/burrs etc.</p> <p>Fire& safety: Use of Fire extinguishers.</p>	<p>Importance of safety and general precautions observed in the in the industry/shop floor. All necessary guidance to be provided to the new comers to become familiar with the working of Institute system including stores procedures.</p> <p>Introduction of First aid. Safety attitude development of the trainee by educating him to use Personal Protective Equipment (PPE). Response to emergencies eg; power failure, fire, and system failure. Accidents- Definition types and causes. First-Aid, nature and causes of injury and utilization of first-aid.</p> <p>Introduction to 5S concept & its application. Fire: - Types, causes and prevention methods. Fire Extinguisher, its types.</p> <p>Define environment, environment Pollution, Pollutants, type of Pollution (Air pollution, water pollution, soil pollution noise pollution, thermal pollution, radiation. Global warming its causes and remedies. Industrial Waste its types, sources and waste Management.</p>
2.	<p>Brick masonry</p> <ul style="list-style-type: none"> • Sizes of brick and brick tiles • English and Flemish bond- for half brick thick. and one brick thick. wall 	<p>Bricks</p> <ul style="list-style-type: none"> • Definition, classification, properties and uses of brick • Characteristics of good brick
3.	<p>Stone masonry</p> <ul style="list-style-type: none"> • Coarsed rubble, uncoarsed rubble masonry • Ashlar - chamfered masonry 	<p>Stones</p> <ul style="list-style-type: none"> • Uses of stone • Classification of rocks • Characteristics of good building stones

4.	Sketches of landscape/ monuments with water colors, pencil colors, crayons	Lime- Definition, classification, properties and uses of lime Surkhi- Definition and uses Sand- Definition, uses and classification
5.	Color schemes - monochromatic, tones and shades in any creative pattern.	Foundation –Definition, Types of foundation (pile, raft, spread mat, column, retaining wall)
6.	Detail sketches of various types of concrete masonry. Detail sketches of various types of carpentry joints. Composition of pattern using different textures using different grade of pencils (H, HB, B, 2B etc)	Concrete masonry – openings, reinforced and mortar for concrete masonry Carpentry Joints - Technical terms & Classification of joints.
7.	Detail at plinth level, on terrace and basement floor.	Damp proof course : Damp proof treatments in building
8.	Detail of Wooden lintel, stone lintel, brick lintel, steel lintel, RCC lintel, chajjas.	Lintels - Purpose and types Arches :Classification of arches and Materials used for construction.
9.	Details of Paneled door, flush door, batten and ledged door, Glazed door, sliding door, revolving door.	Doors -Size of doors, Door frame, Types of doors.
10.	Casement window, louvered window, ventilator and its details.	Windows -Size of window & Classification of windows
11.	Creating detailed Auto-CAD drawing of building components, rooms with fully dimensioned and specifications.	HOA - elements and features Indian architecture.
12.	Project on Total station survey, use, method of plotting, checks and adjustment of errors, setting out of building, centre line of building.	Bye laws - General terminology used in buildings.
13.	Internal Assessment 03days	

B. Block –II

Basic Training

Week No.	Professional Skills (275 Hrs.) in CAD (Building construction + Architectural design)	Professional Knowledge (120 Hrs.)
1.	<p>Introduction to design</p> <ul style="list-style-type: none"> • Design topic - Residential • Concept and visualization of design-able to understand the process of designing. • Case study of similar project to be done 	<p>Aesthetic components of design -Texture, color, direction, tone, proportion, scale, balance, symmetry.</p>
2.	<p>Drawing of Stairs:Plan and elevation construction details of different types of stairs, railings.</p>	<p>Stairs - Technical terms used</p> <ul style="list-style-type: none"> • Materials used for different types of stairs • Planning and design of a stair • Details of construction of various stairs • Factors considered in Architectural design
3.	<p>Drawing of Floors and flooring Sub floor and floor finish details, types of brick floors, timber floors. Construction details of mosaic, terrazzo, PVC, rubber, brick, granite or marble, wooden flooring</p>	<p>Floors</p> <ul style="list-style-type: none"> • Components of floor • Suspended floor • Floor coverings • Ground and basement floor <p>Flooring</p> <ul style="list-style-type: none"> • Types and its laying process (terrazzo, concrete, granite, marble, tiles, rubber, wooden)
4.	<p>Drawing of Roof and roof coverings</p> <ul style="list-style-type: none"> • Pitched roof details • Flat roof details • Lean to roof details 	<p>Roof and roof coverings -Technical terms</p> <p>- Pitched roof , flat roof, lean to roof, Materials used for roofing like asbestos sheet, terracotta tiles, AC sheets, corrugated sheets etc.</p>
5 to 7	<p>Working Drawing:</p> <ul style="list-style-type: none"> • All floor plans showing all dimensions and column grids with door window schedule. • All four Elevations with floor heights, lintel heights, sill heights and details if any. • Section through staircase with complete details. • Kitchen details with complete detailed plans with above and below counter, elevations with details of cupboard heights and design 	<p>Rate analysis and Specifications</p> <ul style="list-style-type: none"> • Specifications - importance, objectives • Rate analysis of items (concrete, brick work, wood work, plastering, flooring) including rates of Labour and materials, sundries, contractors profit etc as per standards.

	<ul style="list-style-type: none"> Toilet details with complete detailed plan, all four elevations with fixture and fitting details. 	
8.	<p>Electrical Layout Drawing All floors Electrical plan with complete wiring and all fittings and switch board connections indicated in the drawing.</p>	<p>Fire protection</p> <ul style="list-style-type: none"> •Definitions •Fire resisting properties of materials •Fire resistant construction •Fire fighting equipments and detection(alarm, sprinklers systems etc) •Means of escape, staircase, lifts etc
9.	<p>Sanitation and drainage</p> <ul style="list-style-type: none"> • System of sewerage - one pipe system, two pipe system, single stack system, anti syphonage pipe •Types of traps • Sanitary fitting - wash basin, urinals, sinks, WCs etc 	<p>Rain water harvesting</p> <ul style="list-style-type: none"> • Purpose, advantages, system set up and various process • Today's need for rain water harvesting and its implications
10 & 11	<p>Final design</p> <ul style="list-style-type: none"> • All floor plans rendered with furniture layout • Front elevation and one side elevation rendered • Section through toilet / staircase rendered • Site plan with all landscape elements <p>Drawing Sheet should be provided with Title Block: Subject of drawing, scale, date, job no, address, north indication, sheet no., Revision note to be mentioned in all the sheets. Drawing produced should be well readable and self explanatory.</p>	<p>Knowledge of Local Labour Rate and Labour Availability</p>
12.	<p>Creating & submission of drawing and layout development plan as per local municipal bye laws or State Urban Development Authority. Preparation of detailed Estimate as per PWD/ CPWD Schedule</p>	
13.	Internal Assessment 03 days	

7.1.3 EMPLOYABILITY SKILLS

GENERAL INFORMATION

1) **Name of the subject** : **EMPLOYABILITY SKILLS**

2) **Applicability** : **ATS- Mandatory for fresher only**

3) **Hours of Instruction** : **110 Hrs. (55 hrs. in each block)**

4) **Examination** : The examination will be held at the end of two years Training by NCVT

5) **Instructor Qualification** :

i) MBA/BBA with two years experience or graduate in sociology/social welfare/Economics with two years experience and trained in Employability skill from DGET Institute.

And

Must have studied in English/Communication Skill and Basic Computer at 12th /diploma level

OR

ii) Existing Social Study Instructor duly trained in Employability Skill from DGET Institute.

7.1.3.1 SYLLABUS OF EMPLOYABILITY SKILLS

A. Block – I Basic Training

Topic No.	Topic	Duration (in hours)
	English Literacy	15
1	Pronunciation : Accentuation (mode of pronunciation) on simple words, Diction (use of word and speech)	
2	Functional Grammar Transformation of sentences, Voice change, Change of tense, Spellings.	
3	Reading Reading and understanding simple sentences about self, work and environment	
4	Writing Construction of simple sentences Writing simple English	
5	Speaking / Spoken English Speaking with preparation on self, on family, on friends/ classmates, on know, picture reading gain confidence through role-playing and discussions on current happening job description, asking about someone's job habitual actions. Cardinal (fundamental) numbers ordinal numbers. Taking messages, passing messages on and filling in message forms Greeting and introductions office hospitality, Resumes or curriculum vita essential parts, letters of application reference to previous communication.	
	I.T. Literacy	15
1	Basics of Computer Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of	

	computer.	
2	<p>Computer Operating System Basics of Operating System, WINDOWS, The user interface of Windows OS, Create, Copy, Move and delete Files and Folders, Use of External memory like pen drive, CD, DVD etc, Use of Common applications.</p>	
3	<p>Word processing and Worksheet Basic operating of Word Processing, Creating, opening and closing Documents, use of shortcuts, Creating and Editing of Text, Formatting the Text, Insertion & creation of Tables. Printing document. Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets</p>	
4	<p>Computer Networking and INTERNET Basic of computer Networks (using real life examples), Definitions of Local Area Network (LAN), Wide Area Network (WAN), Internet, Concept of Internet (Network of Networks), Meaning of World Wide Web (WWW), Web Browser, Web Site, Web page and Search Engines. Accessing the Internet using Web Browser, Downloading and Printing Web Pages, Opening an email account and use of email. Social media sites and its implication. Information Security and antivirus tools, Do's and Don'ts in Information Security, Awareness of IT - ACT, types of cyber crimes.</p>	
	Communication Skill	25
1	<p>Introduction to Communication Skills Communication and its importance Principles of Effective communication Types of communication - verbal, non verbal, written,</p>	

	<p>email, talking on phone.</p> <p>Non verbal communication -characteristics, components- Para-language Body - language Barriers to communication and dealing with barriers. Handling nervousness/ discomfort. Case study/Exercise</p>	
2	<p>Listening Skills</p> <p>Listening-hearing and listening, effective listening, barriers to effective listening guidelines for effective listening. Triple- A Listening - Attitude, Attention & Adjustment. Active Listening Skills.</p>	
3	<p>Motivational Training</p> <p>Characteristics Essential to Achieving Success The Power of Positive Attitude Self awareness Importance of Commitment Ethics and Values Ways to Motivate Oneself Personal Goal setting and Employability Planning. Case study/Exercise</p>	
4	<p>Facing Interviews</p> <p>Manners, Etiquettes, Dress code for an interview Do's & Don'ts for an interview</p>	
5	<p>Behavioral Skills</p> <p>Organizational Behavior Problem Solving Confidence Building Attitude Decision making Case study/Exercise</p>	

B. Block-II

Basic Training

Topic No.	Topic	Duration (in hours)
	Entrepreneurship skill	10
1	Concept of Entrepreneurship Entrepreneurship- Entrepreneurship - Enterprises:- Conceptual issue Entrepreneurship vs. Management, Entrepreneurial motivation. Performance & Record, Role & Function of entrepreneurs in relation to the enterprise & relation to the economy, Source of business ideas, Entrepreneurial opportunities, The process of setting up a business.	
2	Project Preparation & Marketing analysis Qualities of a good Entrepreneur, SWOT and Risk Analysis. Concept & application of Product Life Cycle (PLC), Sales & distribution Management. Different Between Small Scale & Large Scale Business, Market Survey, Method of marketing, Publicity and advertisement, Marketing Mix.	
3	Institutions Support Preparation of Project. Role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmes& procedure & the available scheme.	
4	Investment Procurement Project formation, Feasibility, Legal formalities i.e., Shop Act, Estimation & Costing, Investment procedure - Loan procurement - Banking Processes.	

	Productivity	10
1	Productivity Definition, Necessity, Meaning of GDP.	
2	Affecting Factors Skills, Working Aids, Automation, Environment, Motivation How improves or slows down.	
3	Comparison with developed countries Comparative productivity in developed countries (viz. Germany, Japan and Australia) in selected industries e.g. Manufacturing, Steel, Mining, Construction etc. Living standards of those countries, wages.	
4	Personal Finance Management Banking processes, Handling ATM, KYC registration, safe cash handling, Personal risk and Insurance.	
	Occupational Safety, Health & Environment Education	10
1	Safety & Health Introduction to Occupational Safety and Health importance of safety and health at workplace.	
2	Occupational Hazards Basic Hazards, Chemical Hazards, Vibro-acoustic Hazards, Mechanical Hazards, Electrical Hazards, Thermal Hazards. Occupational health, Occupational hygienic, Occupational Diseases/ Disorders & its prevention.	
3	Accident & safety Basic principles for protective equipment. Accident Prevention techniques - control of accidents and safety measures.	
4	First Aid Care of injured & Sick at the workplaces, First-Aid & Transportation of sick person	
5	Basic Provisions Idea of basic provision legislation of India. of safety, health, welfare under legislation of India.	

6	Ecosystem Introduction to Environment. Relationship between Society and Environment, Ecosystem and Factors causing imbalance.	
7	Pollution Pollution and pollutants including liquid, gaseous, solid and hazardous waste.	
8	Energy Conservation Conservation of Energy, re-use and recycle.	
9	Global warming Global warming, climate change and Ozone layer depletion.	
10	Ground Water Hydrological cycle, ground and surface water, Conservation and Harvesting of water	
11	Environment Right attitude towards environment, Maintenance of in -house environment	
	Labour Welfare Legislation	5
1	Welfare Acts Benefits guaranteed under various acts- Factories Act, Apprenticeship Act, Employees State Insurance Act (ESI), Payment Wages Act, Employees Provident Fund Act, The Workmen's compensation Act.	
	Quality Tools	5
1	Quality Consciousness : Meaning of quality, Quality Characteristic	
2	Quality Circles : Definition, Advantage of small group activity, objectives of quality Circle, Roles and function of Quality Circles in Organization, Operation of Quality circle. Approaches to starting Quality Circles, Steps for continuation Quality Circles.	
3	Quality Management System : Idea of ISO 9000 and BIS systems and its importance in maintaining qualities.	

4	House Keeping : Purpose of Housekeeping, Practice of good Housekeeping.	
5	Quality Tools Basic quality tools with a few examples	
	Leadership and Team Building skills.	5
	Leadership Discipline and Morale Team Work Case Study/ Exercise	
	Meet the Mentor Role - play as a Supervisor	5
	Organizing and Planning.	5
	Time Management Group Dynamics Case Study/ Exercise	

7.2 PRACTICAL TRAINING (ON-JOB TRAINING)
(BLOCK – I & II)

DURATION: 18 MONTHS (9 months in each block)

GENERAL INFORMATION

- 1) **Name of the Trade** : Architectural Assistant
- 2) **Duration of On-Job Training** : As per Apprentices Act amended time to time.
- 3) **Batch size** : 20 Trainees Per Unit
- 4) **Examination** : i) The internal assessment will be held on completion of each block
ii) NCVT exam will be conducted at the end of 2nd year.
- 5) **Instructor Qualification** :

i) Degree/Diploma in Architecture from recognized university/Board with one/two year post qualification experience respectively in the relevant field.

OR

ii) NTC/NAC in the trade of Architectural Assistant with three year post qualification experience in the relevant field.

Preference will be given to a candidate with Craft Instructor Certificate (CIC)

- 6) **Tools, Equipments & Machinery required** : - As per Annexure – II

7.2.1 BROAD SKILL COMPONENT TO BE COVERED DURING ON-JOB TRAINING

A. BLOCK – I

- 1. Different type of Scales.**
- 2. Different type of Prints**
- 3. Materials used in building**
- 4. CAD Drafting**
- 5. Schematic plan preparation.**

B. BLOCK – II

- 1. Sanction drawing preparation**
- 2. Working Drawing**
- 3. Plumbing layout**
- 4. Electrical layout**
- 5. Local rates & availability of materials**
- 6. Local rates & availability of labors**
- 7. Preparation of Estimates**

8. ASSESSMENT STANDARD

8.1 Assessment Guideline:

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking assessment. Due consideration to be given while assessing for team work, avoidance/reduction of scrape/wastage and disposal of scarp/wastage as per procedure, behavioral attitude and regularity in training.

The following marking pattern to be adopted while assessing:

a)Weightage in the range of 60-75% to be allotted during assessment under following performance level:

For this grade, the candidate with occasional guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of an acceptable standard of craftsmanship.

In this work there is evidence of:

- good skill levels in the use of hand tools, machine tools and workshop equipment
- Many tolerances while undertaking different work are in line with those demanded by the component/job.
- A fairly good level of neatness and consistency in the finish
- Occasional support in completing the project/job.

b)Weightage in the range of above75%- 90% to be allotted during assessment under following performance level:

For this grade, the candidate, with little guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of a reasonable standard of craftsmanship.

In this work there is evidence of:

- Good skill levels in the use of hand tools, machine tools and workshop equipment
- The majority of tolerances while undertaking different work are in line with those demanded by the component/job.
- a good level of neatness and consistency in the finish
- little support in completing the project/job

c) Weightage in the range of above 90% to be allotted during assessment under following performance level:

For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.

In this work there is evidence of:

- high skill levels in the use of hand tools, machine tools and workshop equipment
- tolerances while undertaking different work being substantially in line with those demanded by the component/job.
- a high level of neatness and consistency in the finish.
- minimal or no support in completing the project

8.2 FINAL ASSESSMENT- ALL INDIA TRADE TEST (SUMMATIVE ASSESSMENT)

SUBJECTS	Marks	Sessional Marks	Full Marks	Pass Marks	Duration of Exam.
Practical	300	100	400	240	08 hrs.
Trade Theory	100	20	120	48	3 hrs.
Workshop Cal. & Sc.	50	10	60	24	3 hrs.
Engineering Drawing	50	20	70	28	4 hrs.
Employability Skill	50		50	17	2 hrs.
Grand Total	550	150	700	-	

Note: - The candidate pass in each subject conducted under all India trade test.

9. FURTHER LEARNING PATHWAYS

- On successful completion of the course trainees can opt for Diploma course

(Lateral entry). [Applicable for candidates only who undergone ATS after CTS]

- On successful completion of the course trainees can opt for CITS course.

Employment opportunities:

On successful completion of this course, the candidates shall be gainfully employed in the following industries:

1. Architectural Consultancy
2. Interior Design Consultancy
3. Landscaping Design Consultancy
4. Land Survey and Estimation Consultancy
5. Furniture Industry
6. Ship Builders Company
7. Real Estate Industry
8. In public sector (Central and State) and private industries of related field in India & abroad.
9. Self employment

ANNEXURE – I

10. TOOLS & EQUIPMENT FOR BASIC TRAINING

INFRASTRUCTURE FOR PROFESSIONAL SKILL & PROFESSIONAL KNOWLEDGE

TRADE: Architectural Assistant (ATS)

LIST OF TOOLS & EQUIPMENTS FOR Twenty APPRENTICES

A: TRAINEES TOOL KIT:-

Sl. No.	Name of the items	Quantity (indicative)
1.	Adjustable sets square with beveled edge – 30cm	20+1 sets
2.	Compass with Long arm & penholder	20+1 No.
3.	Protractor – 15cm	20+1 No.
4.	Graphic Pens	As per requirement
5.	Triangular Scale 30cm (feet/inch, metric)	20+1 No.
6.	Clutch pencil – 0.5mm, 0.2mm, 2mm.	20+1 No.
7.	Parallel Bar / T scale – 1250mm long	20+1 No.
8.	Plastic French curve with ink edge – set of 12	3 sets
9.	Flexi curve – 80cm	4 No.
10.	Furniture template 1:50, 1:100, 1:200	20+1 Nos.
11.	Circular and oval template	20+1 Nos.
12.	Metric Tape – 5M	20+1 Nos.
13.	Calculator	05 nos
14.	Beam Compass with penholder (rotting/steadler made)	02 No.
15.	Pen Drive	As per requirement

Note:

1. All the hand tools mentioned under Sl.No. 1 to 7 would be issued to Trainees

- once during their course and to be treated as consumables.
2. The quantities of hand Tools may be increased accordingly based on the No. of Trainees on roll (including the Strength of Additional Unit, if any).
 3. In addition to the list, small measuring tapes, Drawing Sheet, Tracing Paper, Butter Sheet, Color Pencils, Pencil (of various grades), Pencil Leads, Cello tape, Eraser and any other Raw Materials would be issued as per the requirement and will be considered as consumable items.
 4. For faculty members Raw Materials like Pen Drive, Pocket Hard Disk, Memory Card, Re-writable CDs & DVD etc., may be provided.

B: TOOLS INSTRUMENTS AND GENERAL SHOP OUTFITS

Sl. No.	Name of the items	Quantity (indicative)
1.	DualDesk	
2.	DrawingBoards measuring1250mm x900mm fixed over adjustable stand	**20+1Sets
3.	Draughtsmanstoolwithback(revolvingtype)	**24No.
4.	StudentsLockers–with8compartments	3No.
5.	WoodenChestofDrawers	4No.
6.	Steelbookcase(withlockableglassshutters)	1No.
7.	Instructor’sstablewithglasstop	2No.
8.	RevolvingChairforClassroom	2No.
9.	Instructor’srevolvingwitharmchair	2No.
10.	Visitor’srevolvingchair	2No.
11.	SteelAlmirah	
12.	MagneticWhiteBoard	
13.	Pin-upboard(withorwithoutstand)	6No.
14.	Workingtablesize1250x950	2nos
15.	TracingTablewith Plain glass 1250x900	1 no
16.	Air conditioner2.0 tons (split unit)fortheoryandpracticalroom	4 nos.

**Numbers may be increased depending on on-roll trainee's strength and additional Unit (if any)

C:GENERAL MACHINERY INSTALLATIONS:-

Sl. No.	Name & Description of Machines	Quantity (indicative)
1.	Personal Computer with LCD monitor & DVD re-writer along with Latest compatible OS	**20No.
2.	Notebook PC	2No.
3.	Drafting Software like AutoCAD, or equiv.	**20No.
4.	3D modeling software like Max, Revit etc.	**20No.
5.	Plotter (A0 size)	1No.
6.	Laser Jet color printer (A4 size)	1No.
7.	Inkjet/Laser Jet Printer (A3 size)	1No.
8.	Color Scanner/printer with Latest Configuration	1No.
9.	700VA or higher Offline UPS	**20No.
10.	Computer workstation (module type)	**20Nos.
11.	Printer Table (module type)	1No.
12.	Operator's revolving chair	22No.
13.	Instructor's Lab table	1No.
14.	Instructor's revolving chair with arm	3No.
15.	Bookshelf with glass shutters	1No.
16.	Air conditioner 2.0 tons (split type) for CAD lab	4No.
17.	LAN connectivity	As per requirement

18.	Internetconnection	1No.
19.	Visualizer	1No.
20.	VacuumCleaner	1No.
21.	Computerworkstation(moduletype)	**20Nos.
22.	LCDProjector	1No.
23.	InteractiveBoard	1No.

**it may be as per requirement i.e. equal to number of trainees.

Mouse & Keyboard should be treated as Raw Material.

Note: In case of basic training setup by the industry the tools, equipment and machinery available in the industry may also be used for imparting basic training.

INFRASTRUCTURE FOR WORKSHOP CALCULATION & SCIENCE
AND ENGINEERING DRAWING
TRADE: Architectural Assistant (ATS)

LIST OF TOOLS& EQUIPMENTS FOR Twenty APPRENTICES

- 1) **Space Norms** : 45 Sq. m.(For Engineering Drawing)
2) **Infrastructure:**

A: TRAINEES TOOL KIT:-

Sl. No.	Name of the items	Quantity (indicative)
1.	Draughtsman drawing instrument box	20
2.	Set square celluloid 45 ⁰ (250 X 1.5 mm)	20
3.	Set square celluloid 30 ⁰ -60 ⁰ (250 X 1.5 mm)	20
4.	Mini drafter	05
5.	Drawing board (700mm x500 mm) IS: 1444	20

B: FURNITURE REQUIRED

Sl. No.	Name of the items	Quantity (indicative)
1	Drawing Board	20
2	Models : Solid & cut section	as required
3	Drawing Table for trainees	as required
4	Stool for trainees	as required
5	Cupboard (big)	01
6	White Board (size: 8ft. x 4ft.)	01
7	Trainer's Table	01
8	Trainer's Chair	01

ANNEXURE – II

11.INFRASTRUCTURE FOR ON-JOB TRAINING

TRADE: Architectural Assistant (ATS)

For Batch of Twenty APPRENTICES

Actual training will depend on the existing facilities available in the establishment. However, the industry should ensure that the broad skills defined against On-Job–Training part (i.e. 9 months + 9 months) are imparted. In case of any short fall the concerned industry may impart the training in cluster mode / in any other industry / at ITI.

12. GUIDELINES FOR INSTRUCTORS AND PAPER SETTERS

1. Due care to be taken for proper & inclusive delivery among the batch. Some of the following method of delivery may be adopted:

- A) LECTURE
- B) LESSON
- C) DEMONSTRATION
- D) PRACTICE
- E) GROUP DISCUSSION
- F) DISCUSSION WITH PEER GROUP
- G) PROJECT WORK
- H) INDUSTRIAL VISIT

2. Maximum utilization of latest form of training viz., audio visual aids, integration of IT, etc. may be adopted.

3. The total hours to be devoted against each topic may be decided with due diligence to safety & with prioritizing transfer of required skills.