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**SYLLABUS OF SEMESTER SYSTEM
FOR THE TRADE OF**

ARCHITECTURAL ASSISTANT

Under

**Craftsmen Training Scheme (CTS)
(One year/Two Semesters)**

**Redesigned in
2014**

**By
Government of India
Ministry of Labour & Employment (DGE&T)**

FORMAT FOR CTS

- 1. Cover Page**
- 2. Title**
- 3. General Information**
- 4. Week wise contents of TT and TP (In tabular form)**
- 5. Week wise contents of WSC (In tabular form)**
- 6. Week wise contents of ED (In tabular form)**
- 7. Tools and Equipments list - broad specification**
- 8. List of the consumable**
- 9. Trade testing and certification**
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- 11. List of Trade Committee Members**

GENERAL INFORMATION

1. Name of the trade : ARCHITECTURAL ASSISTANT
2. N.C.O. Code : 3118.10, 3118.20
3. Duration of training : Twelve months (Two semesters of six Months each)
4. Entry Qualification : Passed class X under 10+2 system with minimum of 40% independently in Science and Mathematics
5. Unit Strength : 20 trainees / unit (Two units – each unit of 20 trainees)
6. Space Norms : a) Class room: 30 sq.mt
b) Drawing hall: 100 sq.mt
c) Computer lab: 80 sq.mt
7. Power Norms : a) Class room:
b) Drawing hall:
c) Computer lab:
8. Job role : 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
9. Instructor's Qualification : Training officer/Instuctor – 2 nos
Lab and studio attendant – 1 no
10. Instructor's/Trainer's Qualification : Degree in Architecture from recognized engg./Architecture College/university with 1 years post qualification experience respectively

Or

Diploma in Architecture from recognized board of technical education with 3 years post qualification experience in relevant field

Or

NTC/NAC in the relevant trade with 3 years post qualification experience in the relevant field

Note : Degree / diploma holder instructors should be provided orientation programme having duration of six months in training methodology within two years of their appointment.

SEMESTER 01 - INDEX

Syllabus for TP 01 and TT 01

S.No	Week No.	Contents Heading	Duration
1.	01	Introduction	01 week
2.	02 - 03	Lettering	02 weeks
3.	04 - 05	Brick masonry	02 weeks
4.	06 - 07	Stone masonry	02 weeks
5.	08 - 09	Foundation	02 weeks
6.	10 - 11	Colour wheel and colour scheme	02 weeks
7.	12 - 13	DPC / carpentry joints	02 weeks
8.	14 - 15	Doors	02 weeks
9.	16 - 17	Windows	02 weeks
10.	18 - 21	Surveying	02 weeks
11.	22 - 23	Project work / site visit	02 weeks
12.	24	Revision	01 week
13.	25 - 26	Examination	02 weeks

Syllabus for Workshop science and calculation

S.No	Week No.	Contents Heading	Duration
1.	01	Introduction	01 week
2.	02 - 03	Applied trade problems	02 weeks
3.	04 - 05	Algebra	02 weeks
4.	06 - 07	Units and simple problems	02 weeks
5.	08 - 09	Mensuration	02 weeks
6.	10 - 11	Trigonometrical ratios and functions	02 weeks
7.	12 - 13	Calculation on volume and weight	02 weeks
8.	14 - 15	Bricks and stones	02 weeks
9.	16 - 17	Lime, Surkhi and sand	02 weeks
10.	18 - 19	Cement, mortar and concrete	02 weeks
11.	20 - 21	Timber, Paint and polishing	02 weeks
12.	22 - 23	-	-
13.	24	Revision	01 week
14.	25 - 26	Examination	02 weeks

Syllabus for Engineering drawing

S.No	Week No.	Contents Heading	Duration
1.	01	Introduction	01 week
2.	02 - 03	Construction of plain geometrical figures	02 weeks
3.	04 - 05	Projection of solids in simple positions	02 weeks
4.	06 - 07	Projection of solids in inclined positions	02 weeks
5.	08 - 10	Isometric projections	03 weeks
6.	11 - 13	Orthographic projections	03 weeks
7.	14 - 15	Anthropometrics	02 weeks
8.	16 - 18	One point perspective	03 weeks
9.	19 - 21	Two point perspective	03 weeks
12.	22 - 23	-	-
13.	24	Revision	01 week
14.	25 - 26	Examination	02 weeks

Syllabus for the trade of Architectural Assistant under CTS

First semester (Semester code no. 01)

Duration: six months

Syllabus for TP 01 and TT 01

Week no	Trade Practical 01 (Building construction + Graphic presentation)	Trade Theory 01 (Building construction + Surveying)
01	<ul style="list-style-type: none"> ● Importance of safety and general precautions observed in the institute and in the section ● Importance of the trade in the development of the country's infrastructure ● All necessary guidance to be provided to the new comers to become familiar, with the working of training institute 	<ul style="list-style-type: none"> ● Familiarization with the institute ● Importance of trade training ● Introduction to the trade and professional prospects ● Recreational medical facilities and other extracurricular activities of the institute ● Types of jobs made by the trainees in the trade
02 - 03	<p>GP</p> <ul style="list-style-type: none"> ● Lettering – basics, vertical and inclined, forms and proportions, types of lettering strokes, composition, fonts (Gothic, Roman etc), writing sentence ● Sketches of landscape / monuments with water colours, pencil colours, crayons 	<ul style="list-style-type: none"> ● Importance of lettering, writing of letters and figures, sizes, proportion, etc. as per IS code ● Free hand sketching
04 - 05	<p>Brick masonry</p> <ul style="list-style-type: none"> ● Sizes of brick and brick tiles ● English and Flemish bond- for half brick thk. and one brick thk. wall 	<p>BC – Brick masonry</p> <ul style="list-style-type: none"> ● Technical terms used ● Principle of construction of bonds ● Scaffolding ● Tools and equipments used
06 - 07	<p>Stone masonry</p> <ul style="list-style-type: none"> ● Coarsed and uncoarsed rubble and random rubble masonry ● Ashlar - chamfered masonry 	<p>BC - Stone masonry</p> <ul style="list-style-type: none"> ● Technical terms ● Principles of stone masonry ● Classification of stone masonry
08 - 09	<p>Foundation</p> <ul style="list-style-type: none"> ● Types of foundation (pile, raft, spread, mat, column, retaining wall) 	<p>BC – Foundation</p> <ul style="list-style-type: none"> ● Purpose, causes of failure of foundation, bearing capacity of soils, dead load, live load ● Types of foundation (pile, raft, spread, mat, column, retaining wall) ● Setting out of building on ground

		excavation, shoring and simple machine
10 - 11	<p>GP</p> <ul style="list-style-type: none"> •Color wheel – primary, secondary, tertiary colors •Color schemes – monochromatic, tones and shades in any creative pattern •Composition of pattern using different textures using different grade of pencils (H,HB,B,2B etc) 	<p>Carpentry Joints</p> <ul style="list-style-type: none"> •Technical terms •Classification of joints (lengthening spliced or longitudinal joints, bearing joints, angle or corner joints, oblique – shouldered joints, widening or side joints) and its uses in wood work <p>GP</p> <ul style="list-style-type: none"> •Definition of color •Qualities of color •Color wheel •Properties of color •Methods of pencil use •Pencil grades
12 - 13	<p>DPC</p> <ul style="list-style-type: none"> •Detail at plinth level, on terrace and basement floor <p>Carpentry joints</p> <ul style="list-style-type: none"> •Detail sketches of various types of carpentry joints 	<p>Damp proof course</p> <ul style="list-style-type: none"> •Sources of dampness •Effects of dampness •Method of prevention of dampness in building • Periodic repair and care for prevention • Anti termite treatment
14 - 15	<p>Doors</p> <ul style="list-style-type: none"> •Details of Paneled door, flush door, batten and ledged door <p>Visit to any Construction site for better exposure to details</p>	<p>Doors</p> <ul style="list-style-type: none"> • Size of doors •Door frame •Types of doors <p>Windows</p> <ul style="list-style-type: none"> •Size of window •Classification of windows
16 - 17	<p>Windows</p> <ul style="list-style-type: none"> •Casement window, louvered window, ventilator and its details 	<p>Surveying</p> <ul style="list-style-type: none"> • Introduction • Classifications •plane survey •Purpose of survey - instruments used
18 - 21	<p>Surveying</p> <ul style="list-style-type: none"> • Drawing of conventional signs used in engineering survey, cadastral survey •Topography and building drawing • Practice in unfolding and folding chain, errors and adjustment of chains, alignment of chain / error chaining lines – measurements of distance between given points and their entry in field book •Practice in chaining and taking off 	<p>Chain Survey</p> <ul style="list-style-type: none"> •Testing of chain, direct ranging, indirect ranging, degree of accuracy <p>Compass surveying</p> <ul style="list-style-type: none"> •Prismatic compass, surveyors compass, advantages and disadvantages <p>Plane table survey</p> <ul style="list-style-type: none"> •General, instrument used, advantages and disadvantages, orientation, methods used <p>Levelling</p>

	<p>- set, use of optical square and cross staff setting out right angles - booking of measurements testing of chain , tape, optical square and cross staff.</p> <p>Compass survey</p> <ul style="list-style-type: none"> ●Determining the bearings of a given line <p>Observe the bearings of a given triangular plot</p> <p>Plane table surveying</p> <ul style="list-style-type: none"> ●Practice on plane tabling by radiation method ●Practice on plane tabling by intersection method <p>Levelling</p> <ul style="list-style-type: none"> ●Determine the RL of a given two visible points from the given BM by simple levelling ●Determine the RL of a given points from a single instrument position 	<ul style="list-style-type: none"> ●Introduction in levelling ●Types of levelling and levelling staff ●Terms used in levelling <p>Booking and reduction levels</p> <p>Total survey station</p> <ul style="list-style-type: none"> ●Components used in total survey station ●Advantages of total survey station ●Electronic notebook
22 - 23	<p>Project work / site visit</p> <ul style="list-style-type: none"> ● Project work on a single floor residence with furniture layout – plan, front elevation and section (Single line diagram to be made available) ● Site visit to any of the construction site to observe the details 	
24	Revision	
25 - 26	exam	

SEMESTER 02 - INDEX

Syllabus for TP 02 and TT 02

S.No	Week No.	Contents Heading	Duration
1.	01 - 02	Introduction to design	02 week
2.	03 - 04	Arches and lintels	02 weeks
3.	05 - 06	Stairs	02 weeks
4.	07 - 08	Floors	02 weeks
5.	09 - 10	Floors and floorings	02 weeks
6.	11 - 12	Roof and roof coverings	02 weeks
7.	13 - 14	Water supply	02 weeks
8.	15 - 18	Presentation drawings / Sanitation and drainage	04 weeks
9.	19 - 21	sections / mechanical services	03 weeks
11.	22 - 23	Project work / On the job training	02 weeks
12.	24	Revision	01 week
13.	25 - 26	Examination	02 weeks

Syllabus for Workshop science and calculation

S.No	Week No.	Contents Heading	Duration
1.	01 - 02	Bye laws	02 week
2.	03 - 04	Estimation	02 weeks
3.	05 - 10	Preparation of detailed estimation	06 weeks
4.	11 - 12	Rate analysis and specifications	02 weeks
5.	13 - 14	Bending moment and shear force	02 weeks
6.	15 - 16	Theory of RCC beams - singly reinforced	02 weeks
7.	17 - 18	Bonds in RCC beams / slabs	02 weeks
8.	19 - 21	Design of beams and columns	02 weeks
12.	22 - 23	-	-
13.	24	Revision	01 week
14.	25 - 26	Examination	02 weeks

Syllabus for Engineering drawing

S.No	Week No.	Contents Heading	Duration
1.	01 - 05	Design process	05 week
2.	06 - 07	All floor plans	02 weeks
3.	08 - 09	All elevations	02 weeks
4.	10 - 11	Sections	02 weeks
5.	12 - 13	Kitchen details	02 weeks
6.	14 - 15	Toilet details	02 weeks
7.	16 - 17	All floor electrical plan	02 weeks
8.	18 - 19	Plumbing details	02 weeks
9.	20 - 21	Details of RCC members	02 weeks
12.	22 - 23	-	-
13.	24	Revision	01 week
14.	25 - 26	Examination	02 weeks

Syllabus for the trade of Architectural Assistant under CTS

Second semester (Semester code no. 02)

Duration: six months

Syllabus for TP 02 and TT 02

Week no	Trade Practical TP 02 in CAD (Building construction + Architectural design)	Trade Theory TT 02 (Building construction + Building services)
01 - 02	<p>Introduction to design</p> <ul style="list-style-type: none"> ● Design topic – residential ● Concept and visualization of design. students should be able to understand the process of designing and the design project will go throughout the semester <p>Preliminary drawing will be prepared by the students in AUTOCAD based on a single project of G+1 residential building after analyzing the requirement and area analysis</p> <ul style="list-style-type: none"> ● Initial sketches/preliminary drawings in CAD <ol style="list-style-type: none"> a) Sketches of the plan b) surrounding area and site landscaping c) minimum front and 1 side elevation d) section through toilet and stairs 	<p>Factors considered in architectural design</p> <ul style="list-style-type: none"> ● Requirements ● The diagrammatic representation ● Environmental factors ● Aesthetic components of design
03 - 04	<p>Arches</p> <ul style="list-style-type: none"> ● Semicircular arch, flat arch, segmental arch, Venetian arch <p>Lintels</p> <ul style="list-style-type: none"> ● Wooden lintel, stone lintel, brick lintel, steel lintel, RCC lintel, chajjas 	<p>Arches</p> <ul style="list-style-type: none"> ● Types of arches (flat arch, semi circular arch, segmental arch, venetian arch) ● Technical terms ● Classification of arches ● Materials used for construction <p>Lintels</p> <ul style="list-style-type: none"> ● Purpose and types (wooden lintels, brick lintel, stone lintel, reinforced concrete lintel, steel lintel)
05 - 06	<p>Stairs</p> <ul style="list-style-type: none"> ● Plan and elevation of different types of stairs 	<p>Stairs</p> <ul style="list-style-type: none"> ● Technical terms used ● Materials used for different types of stairs

		<ul style="list-style-type: none"> ● Planning and design of a stair ● Details of construction of various stairs
07 - 08	<ul style="list-style-type: none"> ● Construction details of dog legged stairs, baluster details, railing, nosing, tread and riser calculation 	Floors <ul style="list-style-type: none"> ● Components of floor ● Suspended floor ● Ground and basement floor
09 - 10	Floors and flooring <ul style="list-style-type: none"> ● Sub floor and floor finish details, types of brick floors, timber floors ● Construction details of mosaic, terrazzo, granite or marble, wooden flooring 	Flooring <ul style="list-style-type: none"> ● Types and its laying process (terrazzo, concrete, granite, marble, tiles, rubber, wooden)
11 - 12	Roof and roof coverings <ul style="list-style-type: none"> ● Pitched roof details ● Flat roof details ● Lean to roof details 	Roof and roof coverings <ul style="list-style-type: none"> ● Technical terms ● Pitched roof , flat roof, lean to roof ● Materials used for roofing like asbestos sheet, terracotta tiles, AC sheets, corrugated sheets etc
13 - 14	<ul style="list-style-type: none"> ● Detailed drawing of single wooden and steel roof truss showing details of connections 	Water supply system <ul style="list-style-type: none"> ● Average water consumption for various building ● Water distribution in a domestic building, sanitation ● Terms used in Public health Engineering
15 - 18	Final design <ul style="list-style-type: none"> ● All floor plans rendered with furniture layout ● Front elevation and one side elevation rendered 	Sanitation and drainage <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 – WV, urinals, sinks, WCs ● Septic tank and storm water drainage ● Sewage treatment – primary treatment, secondary treatment
19 - 21	<ul style="list-style-type: none"> ● Section through toilet / staircase rendered ● Site plan with all landscape elements <p>Note: Subject of drawing, scale, date, Ex.no, address, ph.no, north, sheet no to be mentioned in all the sheets. Drawing produced should be well readable and self explanatory</p>	Mechanical services <ul style="list-style-type: none"> ● HVAC – window unit, split unit, duct able unit, chilled beam system ● Lifts and escalators ● Fire fighting services Rain water harvesting <ul style="list-style-type: none"> ● Purpose, advantages, system set up and various process ● Today's need for rain water harvesting and its implications
22 - 23	Project work / On the job training <ul style="list-style-type: none"> ● On the job training in any of the Architect's office or project work 	
24	Revision	
25 - 26	Exam	

Objectives:

At the end of the training of two semesters of architecture Assistant under CTS, the trainees will be able to:

- **Know the building materials used in building construction**

- **Draw and design wall, doors, windows, floor, roof, stairs and many more details which are essential for a Architectural assistant to know.**

- **Draw plans, elevation, sections and views of the residential.**

- **Draw furniture layout of the Interior spaces with colour schemes.**

- **Draw isometric view and perspective views of the building.**

- **Calculate the estimate of the building before construction.**

- **Work on CAD software and develop drawing (presentation as well as working drawings) on computer.**

- **Know about structure of column, beam, RCC slab and lintel.**

ARCHITECTURE ASSISTANT

LIST OF TOOLS AND EQUIPEMENTS

(Note: latest configuration to be achieved while procuring all Tools & Equipments)

No. of Unit / Batch : 2 units / batch
Strength : 20 trainees / unit

Furniture for Theory and Practical /unit

SNo.	Name of the Item	Quantity
1.	Dual Desk	**12 No.
2.	Drawing Boards measuring 1250mm x900mm fixed over adjustable stand	**20+1Sets
3.	Draughtsman stool with back (revolving type)	**24 No.
4.	Students Lockers - with 8 compartments	2 No.
5.	Wooden Chest of Drawers	2 No.
6.	Steel book case (with lockable glass shutters)	1 No.
7.	Instructor's table with glass top	1 No.
8.	Revolving Chair for Class room	2 No.
9.	Instructor's revolving with arm chair	1 No.
10.	Visitor's revolving chair	2 No.
11.	Steel Almirah	2 No.
12.	Magnetic White Board	1 Nos.
13.	Pin-up board (with or without stand)	3 No.
14.	Working table size 1250x950	2nos
15.	Tracing Table with Plain glass 1250x900	1 no

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

Furniture for CAD Lab / batch

S No.	Name of the Item	Quantity
1.	Personal Computer with LCD monitor & DVD re-writer along with Latest compatible OS	**10 No.
2.	Drafting Software like AutoCAD, or equiv.	**10 No.
3.	3D modeling software like Max, Revit etc.	**10 No.
4.	Plotter (A0 size)	1 No.
5.	Inkjet/ Laser Jet Printer (A3 size)	1 No.
6.	Color Scanner/printer with Latest Configuration	1 No.



7.	700VA or higher Offline UPS	**10 No.
8.	Computer work station (module type)	**10 Nos.
9.	Printer Table (module type)	1 No.
10.	Operator's revolving chair	20 No.
11.	Instructor 's Lab table	1 No.
12.	Instructor's revolving chair with arm	2 No.
13.	Air conditioner 2.0 tons (split type) for CAD lab	3 No.
14.	LAN connectivity	As per requirement
15.	Internet connection	1 No.

**it may be as per requirement i.e. equal to no of trainees.
 Mouse & Keyboard should be treated as Raw Material

Survey Equipments / batchs

Sl no.	Name of the item	Quantity
1.	Tapes : Metallic tapes 30mts	5 No.
2.	Metric chains 20m	5 No.
3.	Ranging rod	20 No.
4.	Steel arrows	30 No.
5.	Optical square	5 No.
6.	Cross staff	5 No.
7.	Prismatic compass	4 No.
8.	Prismatic compass stand	4 No.
9.	Spirit level	4 No.
10.	Plane table with canvass cover	4 No.
11.	Alidades (plane)	4 No.
12.	Plumbing fork	4 No.
13.	Plumb bob	4 No.
14.	Dumpy level with tripod	2 no
15.	Levelling staff	2 no

ARCHITECTURE ASSISTANT
LIST OF CONSUMABLES

No. of Unit / Batch : 2 units / batch
Strength : 20 trainees / unit

Hand Tools (to be treated as consumables) / unit

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

Note:

1. All the hand tools mentioned under SI.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.

