

TRAINING OBJECTIVES:

This curriculum is designed / developed to make the Primary dropouts as useful citizen by imparting for ever valuable skill which is known / recognized as Mason in our society. It is one of the major skills regarding construction industry, which is still ignored for formal training. The current practice is that they learn this skill from senior artisans by working under them for many years.

This training program will provide opportunity to those who wants to get the skill of Mason Trade within few months instead of working as helper for years enabling to help for reducing the shortage of skilled workers in job market rapidly.

This curriculum is developed by considering the need of the area and enabling the pass outs of this course to meet the need of job market demand, having the understanding of the methodology of construction works in scientific manners.

CURRICULUM SALIENTS:

Entry Level:	Illiterate / Preferably Primary Pass
Duration of Course:	3-Month
Training Strategies:	420 hrs 42 hrs / week
Training Methodology:	Theory (Oral)10% Practical 90%
Medium of Instruction:	Urdu / Local Language

SKILL PROFICIENCY DETAILS: -

On successful completion of this course, the trainee should be able to: -

1. Cut and trim bricks according to required size / shape
2. Perform masonry work in foundation plinth and superstructure by using English and Flemish bonds.
3. Erect mason scaffolding to any height properly for construction and repair works.
4. Erect doors and windows frames at their proper location and alignment.
5. Seal foundation with damp proofing materials.
6. Construct circular wall and walls with acute and obtuse angles.
7. Erect centering for arches and construct semi circular & segmental brick arches.
8. Perform surface rendering (plastering and pointing) on masonry work.
9. Place different types of brick floor bonds.
10. Construct different types of concrete floors.
11. Erect shuttering for lintals and sunshade etc.
12. Construct simple single flight stair.
13. Demark foundation layout plan (two room quarter) at exact construction location
14. Construct drainage works for residential building such as laying open drains, sewer line, manhole & septic tank etc.
15. Repair cracked walls, floors and replace defective portions etc.

KNOWLEDGE PROFICIENCY DETAILS: -

On successful completion of this course, the trainee should be able to: -

1. Apply occupational health and safety measures to prevent any chance of accident.
2. Describe building components and sequence of their construction.
3. Explain properties of various building materials e.g. brick, aggregates, Cement & Stone etc.
4. Understand construction bonds and their appropriate selections as per situation
5. Describe constituent, ratio and mixing of mortar, plaster and concrete.
6. Explain foundation and their method of construction.
7. Describe various type of arches their method of construction.
8. Understand various methods of insulating roof & walls from heat and dampness respectively.
9. Express reading and interpreting drawings.
10. Understand Area and volume calculation of different geometrical figures.
11. Describe Thumb rules of estimating materials for brickwork, plastering pointing concreting and flooring.

SCHEME OF STUDIES**Mason****(3 – Month Course)**

Sr. No.	Main Topics	Theory Hrs.	Practical Hrs.	Total Hrs.
1.	Masonry Work	12	167	179
2.	Surface Rendering	02	37	39
3.	Flooring	02	48	50
4.	Roof and Stair Case	04	60	64
5.	Waste Water Disposal	02	32	34
6.	Basic Arithmetic & Reading Drawing	14	34	48
7	Soft Skills	06	-	06
Total		42	378	420

DETAIL OF COURSE CONTENTS**Mason
(3 - Month Course)**

Sr. No.	Detail of Topics	Theory Hours	Practical Hours
1.	Masonry Works		
	1.1. Introduction of Mason Tools	1	
	1.1.1. Uses, care & maintenance of tools		
	1.2. Occupational health and safety	2	
	1.2.1. Personal safety, safety helmet, dongri, safety shoes, goggles and safety belt.		
	1.2.2. Safety measures at work for, excavation, scaffolding, ladders formwork etc.		
	1.2.3. First aid	3	
	1.3. Introduction of Building Materials		
	1.3.1. Burnt Clay Bricks		
	1.3.2. Types & properties, sizes of brick & tiles, brick positioningcutting shapes	-	3
	1.1.1. Practice to cut brick in required shapes		
	1.1.2. Mortar types and ratio according to situation		
	1.1.3. Cement sand plaster and its ratio		
	1.1.4. Cement concrete types & ratios		
	1.1.5. Properties of sand, aggregate & cement	-	1
	1.1.6. Water cements ratio and its effects on concrete quality.	-	1
	1.1.7. After Practical wastage material proper dispose off in disposal box for green environment.		
	1.1.8. Practice to prepare mortar (1: 6)		

	1.3.1 By hand 1.3.2 By machine 1.3.3 Maintaining the platform for preparation of mortar for green environment. 1.3.4 After practicals performing the mixture machine should be clean for green environment. 1.1.8. Practice to prepare cement concrete (1:4:8) 1.3.3.1 Mix by hand 1.3.3.2 Machine mix 1.1.9 Advance masonry cutting and shaping methods		
--	--	--	--

	1.4. Masonry	1	
	1.4.1. Types of masonry bonds: English, Flamish & Stretcher		
	1.4.2 Practice to construct 4½", 9", 13½", 18" thick walls (without mortar) straight wall with stoped end and toothing	-	12
	1.4.3 Practice to construct 4½", 9", 13½", 18" thick wall with corners & Tee shapes without mortar	-	12
	1.4.4 Repeat the above two practices by using mortar		18
	1.1.9. After Practical wastage material proper dispose off in disposal box for green environment.		
	1.5. Special Shaps of Walls	1	
	1.5.1. Pillar, piers		
	1.5.2. Curved walls		
	1.5.3. Cavity walls		
	1.5.4. Practice to construct curved wall (with mortar)	-	9
	1.5.5. Practice to construct wall with acute and abtuse angles.	-	6
	1.5.6. Practice to construct pillars of different sizes 9"x 9", 9"x13½, 13½"x18"	-	9
	1.5.7. Practice to construct brick cavity Wall	-	9
	1.5.8 High precision wall construction		

	1.6. Masonry Work in Foundation and Plinth	1	
	1.6.1. Excavation, leveling & compaction, timbering.		
	1.6.2. Offsets & steps		
	1.6.3. Lean concrete preparation & placing		6
	1.6.4. Practice to perform brick works in foundation (spread foundation)		12
	1.6.5. Extra Back filling soil material dispose of disposal area for green environment.		
	1.7. Damp Proof Course	1	
	1.7.1. Horizontal DPC: components & methods		
	1.7.2. Vertical DPC: components & method		
	1.7.3. Damp proofing of basement		
	1.7.4. Practice to lay horizontal DPC on constructed foundation		2
	1.8. Masonry Work In Super Structure		1
	1.8.1. Demarkation of door & window openings lintal & sill levels etc.		
	1.8.2. Practice to construct wall in super structure with opening for door & window etc.		18
	1.8.3. Advanced brick laying techniques		4
	1.8.4. Practice to fix door & window frame in the wall		
	1.9. Mason Scaffolding	1	
	1.9.1. Bamboo scaffolding		
	1.9.2. Types of knots		
	1.9.3. Tubular scaffolding		
	1.9.4. Joints / coupling		
	1.9.5. Practice to make different types of knots		1

	1.9.6. Practice to erect bamboo scaffolding for walls	-	4
	1.9.7. Practice to erect tubular scaffolding for construction of wall.	-	8

3

	1.10. Arches	1	
	1.10.1 Define the arch and types , parts of arches	-	6
	1.10.2 Practice to erect centering for small semicircular and segmental arches		9
	1.10.3 Practice to construct, cut and set brick as required for semicircular and segmental arches		
	1.10.4 Energy efficient construction techniques		
	1.11. Building Renovation		
	1.11.1 Applying facing tiles on front wall		4
	1.11.2.Repairing cracked wall and replacing defective materials as required		6
	1.11.3.Making, opening in existing walls		3
	1.11.4.Replacement of doors & window Frames Old doors and windows shifting in court yard		3
2.	Surface Rendering		
	2.1. Plastering	1	
	2.1.1. Plastering: mix ratio, tools etc.		2
	2.1.2. Practice in preparation of wall for cement plastering		8
	2.1.3. Practice in plastering straight walls		9
	2.1.4. Practice of plastering edges corners, jambs and reveals		6
	2.1.5. Practice in making soffit plaster		
	2.1.6. Automated mortar mixing techniques		
	2.2. Pointing	1	
	2.2.1. Define and types of Pointing		3
	2.2.2. Materials, ratio and tools		9
	2.2.3. Preparing surface for pointing		
	2.2.4. Preparing mix for pointing and making deep struck pointing for face wall		

3.	Flooring		
	3.1 Brick Flooring / Brick soling	1	
	3.1.1. Types of brick floors bond		
	3.1.2. Preparation of floor bed		
	3.1.3. Practice in laying bricks floor using different types of floor bonds		16
	3.1.4. Preparation of Bed Leveling		

	3.2 Concrete flooring 3.2.1. Types & components of concrete floor (granolithic / conglomerate) 3.2.2. Terrazo & mosaic flooring 3.2.3. Grinding and polishing 3.2.4. Practice in preparing floor bed 3.2.5. Practice in dividing into panels & fixing strip 3.2.6. Practice in placing concrete in floor panels & finishing 3.2.7. preparation of bed and laying tuff tiles 3.2.8. Practice in preparing mix for terrazzo / chips floor, placing & grinding	1 - - - - -	 4 8 8 4 8
4.	Roof & Stair Case 4.1. Shuttering (form work) 4.1.1. Lintel; bearing, concrete cover, reinforcement etc. 4.1.2. RCC lintel and sunshade shuttering 4.1.3. Shuttering for column 4.1.4. Shuttering for slab & beams 4.1.5. Practice to erect shuttering for lintel and sunshade 4.1.6. Practice to erect shuttering for small roof slab 4.2. Roofs 4.2.1. Define and Types of flate roofs, Batton roof, R. B roof & R.C.C roof etc. 4.2.2. Practice to erect girder battons & tiles, for batton roof 4.2.3. Types of slopy roofs; components & method of construction 4.2.4. Practice to construct wooden slopy roof for a small room. 4.2.5. Concreting practice on prepared form work for roof slab	1 1	 4 8 9 12 3

	4.3. Roof Treatment 4.3.1. Types of treatment 4.3.2. Material used & methods 4.3.3. Roof khura & rain water down pipe 4.3.4. Practice in making treatment for a roof 4.3.5. Practice in laying roof tiles alongwith grouting. 4.3.6. Practice in construction of roof khura, khassi parnala and erection of rain water down pipe	1	
	4.4. Stair Case 4.4.1. Define the staircase and its types, parts of stairs 4.4.2. Preparation of shuttering for single flight stair 4.4.3. Practice in making steps with bricks for straight flight stair	1	4 6 2
5.	Waste Water Desposal Works 5.1. Waste Water Desposal Works 5.1.1. Define drain and types of open drain 5.1.2. Sewer pipe, sizes & shapes 5.1.3. Manhole, sizes and shapes 5.1.4. Septic tank: dimension and components 5.1.5. Gradient / slope for sewer line 5.1.6. Excavation of trench for sewer line and marking of slope / gradient 5.1.7. Practice in laying sewer pipe in trench and jointing 5.1.8. Construction of small man holes, square and circular types 5.1.9. Construction of domestic septic tank 5.1.10. Contruction of open drain	2 - - - - - - -	 4 4 6 12 6
6.	Basic Arithmetics & Reading Drawing 6.1. Basic Arithmetic	3	-

	6.2 Digital blueprint interpretation		
--	---	--	--

	6.1.1. Addition & subtraction of whole numbers		
	6.1.2 Multiplication and division of whole numbers	-	
	6.1.3 Practice in addition, subtraction, multiplication and division.		4
	6.2. Measurement system	1	-
	6.2.1. Foot pound system of measurement		
	6.2.2. Parts / fractions of inch and foot		
	6.2.3. Metric system of measurement		
	6.2.4. Exercise to solve problems regarding, addition & subtraction of measurements.	-	3
	6.3. Area	1	
	6.3.1. Area of rectilinear plane geometrical figures (square, rectangle & triangle etc.		
	6.3.2. Area of circle		
	6.3.3. Practice in calculating areas of different plane geometrical figures	-	3
	6.4. Volume	1	-
	6.4.1. Volume and units of volume		
	6.4.2. Volume of simple solid geometrical figures		
	6.4.3. Practice in calculating volume of different geometrical solids.	-	3

	6.5. Free Hand Sketching	1	-
	6.5.1. Sketching of lines, curves and geometrical figures		
	6.5.2. Exercise to draw different lines, circle, ellipse, triangle, rectangle & polygone		3
	6.6 Building Drawing Symbols	1	
	6.6.1. Materials, door & windows symbols		
	6.6.2. Plumbing and electrical symbols		
	6.7. Technical Term Used in Building	1	
	6.7.1. Structural terms		
	6.7.2. House planning terms (cooridore, annexee, balcony, patio, pantry etc.)		
	6.8. Building Components	1	
	6.8.1. Foundation & plinth		
	6.8.2. Basement		
	6.8.3 Walls		
	6.8.4 Arches & lintel		
	6.8.5 Roof		
	6.8.6 Floor		
	6.8.7 Stair		
	6.8.8 Plinth protection		
	6.9. Building Drawing	1	
	6.9.1. Brief introduction to plan, elevation & section etc.		
	6.9.2 Reading excersice of working drawing of different buildings		4

	6.10. Layout of a Residential Building 6.10.1 Parts of spread foundation; trench, lean concrete & foundation masonry etc. 6.10.2 Off sets in foundation 6.10.3. Methods of layout of building 6.10.4. Perform layout of single room 6.10.5. Perform layout of two room quarter 6.11 Estimation 6.11.1 Thumb rules for estimation of materials for bricks work, concreting, flooring & plastering etc. 6.11.2 Practice in calculating materials for different items of works, brick work, concreting plastering, flooring etc. Prefer to use digital tools for paperless approaches for green environment	1	
	Soft Skills Communication Skills Attitude Team Work Networking Problem Solving Professionalism	06	
Total		42	378

List of Machinery / Equipment / Tools Etc.

(For a Class of 25 Students)

Trade : MASON

#Sr.	Nomenclature of Equipment / Tool	Specifications	Qty	Unit
1	Trowel with Handle	<u>Mason Trowel</u> * Tampered and hardened Carbon Steel Blade * Square tip blade 20-28cm long * Wooden handle	25	Nos.
2	Chisel Set (9" - 12" - 18")	<u>CHISEL Set</u> . High carbon hardens steel . Hexagonal/octagonal shank chisels, chrome/black finish, polished cutting edge. 200 mm shank 20 mm wide on cut (Approximate) 300 mm shank 25 mm wide on cut 450 mm shank 36 mm wide on cut Chisel Set (9" - 12" - 18")	5	Set
3	Bricks Hammer with wooden Handle	<u>Brick Hammer</u> Forged steel rectangle head and tapered tip weight = 250-400gm Wooden handle (30cm long) with moulded vinyl grip	25	Nos.
4	Hammer (1 Kg, 1½ kg, 3 kg)	<u>Hammer</u> Forged steel rectangle head and tapered tip weight = 1,1.5,3 Kg Wooden handle (60cm long) with moulded vinyl grip	5	Set
5	Plumb Bob	<u>Plumb Bob</u> * Weight = 100-130gm * Screwed Cap * Strup indicator	25	Nos.
6	Shovels with Handle	<u>Shovels with handle</u> Hardened and tempered steel blade, rounded point D-shape handle (wooden) 75cm long	10	Nos.
7	Kassi (plies) with Handle	<u>Kassi (Plies) with handle</u> Tampered and hardened steel square blade	5	Nos.
8	Spirit level (Aluminium 2ft)	Spirit Level (Aluminium 2 ft. length)	25	Nos.

	length)			
9	Straight edge (Deodar wood) small (4 feet)	<u>Straight Edge</u> Deodar Wood = thickness Size = 3"x1.5"x48"	25	Nos.
10	Straight edge large (aluminum)	<u>Straight Edge</u> Aluminium Tube = 2mm thickness Size = 7 cm x3 cm length = 1 m	5	Nos.
11	Mason Square	24"x12" 4mm thick with marking on both sides	3	Nos.
12	Hand Measuring Tape (5m)	<u>Steel Tape</u> * Slide Lock * Automatic Returns * Metallic / plastic case * 5 meter * Graduation on both side in feet & meter	25	Nos.
13	Measuring Tape 100 feet (30m)	<u>STEEL TAPE</u> • Length 30 m, 13 mm wide • stainless steel with vinyl coating • Both face marking, one in m (0.1, 0.01, and 0.005m) and other in ft	5	Nos.
14	Striker for Vertical joint (pointing)	<u>Striker for vertical joint (pointing)</u> Tampered and hardened steel	25	Nos.
15	Striker for Horizontal joint (pointing)	<u>Striker for horizontal joint (pointing)</u> Tampered and hardened steel	25	Nos.
16	Trowel Pointing	<u>Pointing Trowel</u> * Tampered and hardened Carbon Steel Blade * Square tupe blade = 10-18cm long	25	Nos.
17	Pointing Tray	<u>Pointing Tray</u> Tampered and hardened steel plate with Wooden handle underneath * Size = 400x400xthickness 3 m	25	Nos.
18	Wheel barrow	<u>Wheel Barrow:</u> Capacity: 75-100 Ltr. Size: 130x60x80 cm (approx) Frame: Angle Iron (1.5 x 1.5 x 0.25 inches) / body M.S sheet (6 SWG) Wheel: Rubber (tubeless tyre)	5	Nos.
19	Pick Axe with Wooden handle	<u>Pick Axe</u> Hardened and tamper steel, Shape: Chiesel end point Wight = 4 Kg, Wooden handle= 75 cm long	5	Nos.

20	Steel Float (small, medium, large)	Steel float Set (Small, medium, large) Wooden Handle	10	Set
21	Wooden Float (small, medium, large)	Wooden Float (small, medium, large) Wooden Handle	10	Set
22	Steel mould for DPC (6 feet) adjustable for (13½", 9", 4 ½) wall with overall length 6'	M.S. angle iron 1½"x 2"x ¼" welded with 1/2" Steel bar	3	Set
23	Mortar Pans GI (18"ø)	Mortar Pan GI Sheet (20 SWG) Size 18" dia	25	Nos.
24	Daungry	DANGARI cloth made of Cotton and Polyamide	25	Nos.
25	Safty shoes	minimum impact resistance of 200 Joules and compressive strength of at least 15 kN at the toe cap, in addition to other characteristics such as being antistatic.	25	Nos.
26	Mortar / concrete Mixer (one bag)	Concrete Mixer Machine(Drum Types,tilting) 1 Bag mixing capacity	1	No
27	Safety Helmet	Straps should be fitted such that minimum clearance be at least 30 mm and maximum clearance more than 80 mm. Chin strap should have minimum width of 19 mm and directly attached to shell. Nape strip should have minimum depth of 115 mm. The mass of helmet without attachments should be 400 g.	25	Nos.
28	Gloves	Rexine with Good Quality	25	Nos.
29	Safety Belt	Belt Width: up to 2" (51 mm). • Belt Connection: slotted. • Overall Size: 6-3/4" (171 mm) x 10" (254 mm). • Weight (lbs.): .56	10	Nos.
30	Water Tank	Plastic Water Tank 500 Liters Water storage Capacity	1	Nos.
31	Safety googles	Color: White, lens center thickness of 2.5 mm, weight 26 gr. Per piece in a plastic bag	25	Nos.
32	Dori cotton	Cotton	12	Nos

33	Tubular Scaffolding	Good quality		Nos
	Steel pipe 1 ½" (10 feet length)		20	
	Steel pipe 1 ½" (20 feet length)		20	
	Joint fixed		20	
	Joint universal		20	
34	Laser Level	Laser level with tripod	2	Nos
35	Water level pipe	Plastic transparent (50 feet)	2	Nos

LIST OF CONSUMEABLE MATERIAL

(For a Class of 25 Students)

MASONARY TRADE

Sr. No.	Nomenclature of Equipment / Tool	Specifications	Quantity	Unit
1	Concrete Block	Precast cement concrete solid or face blocks (1:2:4)12"x5"x"8"	1,000	Nos.
2	Bricks	1st Class Bricks	4,000	Nos.
3	Cement	Ordinary Portland Cement+ White	20+ 20= 40	bags
4	Sand(Fine Aggregate)	Pit Sand	500	cft
5	Crush(Course Aggregate)	Bajri ½ " Down Size	75	cft
6	Crush (Course Aggregate)	Bajri 1/4 " Down Size(Pan)	75	cft
7	Stone Blast	Bajjar 20-40 mm	300	cft
7	Polythene Sheet	Polythene Sheet 500 Gauge	3	kg
8	Wooden Pegs	Shisham Wooden Pegs 18" x 2" x 2"	9	Nos.
9	Nails Different Sizes	Iron(Driffernt Sizes)	1	kg
10	Fishing Net Rope	Plastic Doori	5	Packet
11	Door Frame (Angle Iron)	M.S. angle iron 1½"x 1½"x ¼" (40x40x6 mm) welded with M.S. flat 2"x ¼" (50 mm x 6 mm)	1	Nos.
12	Window Frame (Angle iron)	M.S. angle iron 1½"x 1½"x ¼" (40x40x6 mm) welded with M.S. flat 2"x ¼" (50 mm	1	Nos.

		x 6 mm)		
13	Brick ballert		500	cft
14	Bitumen	Locally available for DPC	5	kg
15	Brick tiles		1000	Nos
16	Wooden props		20	Nos
17	Rope (Jute)		40	kg
18	Red oxide	Red chemical	5	kg
19	Steel wire brush	Best quality	5	Nos

EMPLOYABILITY OF PASS-OUTS

The pass-outs in “Mason” can be easily adjusted in the following Industries / Establishments.

1. Communication and works department (building wing)
2. Civil contractors
3. Pak PWD
4. Military engineering service
5. Pakistan railways
6. OGDC
7. Govt. / Private Housing Societies
8. Govt. / Development Authorities.
9. Self employment

QUALIFICATION OF TEACHER / INSTRUCTOR

a. Instructor

Matric with 3 years Diploma of Associate Engineer (Civil) and 05- years' experience, preferably in the field.

b. 1st Class Mason / Shop Assistant

Experienced Mason with field working experience of 10-years, even illiterate

REFERENCE BOOKS

- | | | | |
|----|---|----|--|
| 1. | Building construction | By | Arora and Gupta
Published by: Malik Book Depot,
Urdu Bazar Lahore. |
| 2. | Building construction | By | Sharma and COAL |
| 2. | Construction technology
(Vol 1 to 4) | By | Chudley |
| 4. | Building construction
(Vol-1, 2, 3, 4) | By | Barry |
| 5. | Tameerat Ka Hunar | By | Naqi Bukhari
Published by: Malik Book Depot,
Urdu Bazar Lahore. |
| 6. | Building construction–I | By | Muhammad Asif
Published by: Malik Book Depot,
Urdu Bazar Lahore. |