



***National Vocational Certificate Level 2 in Construction Sector
(Assistant Steel Fixer)***



**National Vocational Certificate Level 2 in Construction Sector
(Assistant Steel Fixer)**



(Curriculum)

National Vocational and Technical Training Commission (NAVTTTC)

Government of Pakistan



National Vocational Certificate Level 2 in Construction Sector (Assistant Steel Fixer)



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Introduction

Definition/Description of training program (Assistant Steel Fixer)

Construction sector is one of the booming industries of Pakistan. There is an increasing demand of the Assistant Steel Fixer. Therefore, the skills are required to be inducted in the future generation. If an individual is planning to pursue a career in construction, this program will be helpful in targeting various commercial and non-commercial projects etc. If an individual is planning to take up Assistant Steel Fixer course, this course will help him weigh their choices better.

Keeping in view of the above the competency based national vocational qualifications have been developed by NAVTTTC to train the unskilled human resource on the technical and entrepreneurial skills to be employed / self-employed and inevitably set sustainable impact on their lives by increasing their livelihood income.

Training Course is based on competency standards which are defined by the industry and the traditional role of a trainer changes and shifts towards the facilitation of training. A trainer encourages and assists trainees to learn for themselves. Trainees are likely to work in groups (pairs) and all doing something different. Some are doing practical tasks in the workshop, some writing, some not even in the classroom or workshop but in another part of the building using special equipment. As trainees learn at different pace they might be at different stages in their learning, thus learning must be tailored to suit individual needs. The following facilitation methods (teaching strategies) are generally employed.

Purpose of the training program:

The purpose of the training is to provide skilled manpower to improve the existing construction industry. More than 96 % of the Pakistani manpower is working in GCC countries where Saudi Arabia (50.90%) and UAE (33.10%) are the largest destination countries followed by Oman (7.26%), Kuwait (1.90%), Bahrain (1.58%), and Qatar (1.41%). The overseas Pakistanis are playing a pivotal role to support the economy in the form of remittances. According to new labor



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laws, a large number of skilled labor is demanded by Saudi Government especially for the construction sector. For this purpose, new qualifications have been developed by NAVTTTC on CBT&A mode in order to train the unskilled human resource with employable skills and cater the demand of Saudi Government. Moreover, the availability of skilled professionals will bring socio-economic benefits to all stakeholders.

Overall objectives of training program:

The main objectives of the National Vocational Certificate Level 2 in Construction Sector (Assistant Steel Fixer) are as follows:

- Improve the professional competence of Steel Fixing work
- Capacitate the local community and trainers in modern CBT training, methodologies and processes as envisaged under NVQF
- Provide flexible pathways and progressions in the construction sector
- Enable the trainees to perform their duties in efficient manner
- Establish a standardized and sustainable system of training for Steel Fixing work across globe

Competencies to be gained after completion of course:

At the end of the course, the trainee has attained the following core competencies:

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1. Follow Safety Rules at Site
2. Perform Basic Communication Skills
3. Draw Basic Technical Drawings
4. Demonstrate Basic Numeracy Skills



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5. Maintain Steel Fixing & Erecting Tools, Equipment and Materials
6. Perform Cutting and Bending Rebar for Simple Shapes
7. Execute the Steel Work of Foundations
8. Execute steel work in Column for domestic building
9. Execute steel work in Beams for domestic building
10. Execute steel work in Roof slabs for domestic building
11. Execute steel work in Stairs for domestic building
12. Execute steel work in Arches

Possible available job opportunities, available immediately and later in the future:

Possible Career paths

- Assistant Steel Fixer
- Steel Fixer& Erector
- Steel Fixer/Erector Supervisor



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Trainee entry level:

The entry level for National Vocational Certificate Level 2 in Construction Sector (**Assistant Steel Fixer**) is given below:

Title	Entry requirements
National Vocational Certificate Level 2 in Construction Sector (Assistant Steel Fixer)	The entry requirement for this qualification would be Middle or equivalent

Minimum qualification of trainer:

A. Must be a holder of DAE/Level 5 Diploma in Civil Technology with at least 2 years relevant experience

OR

B. B.Sc Engineering Technology (Civil) / B.E Civil /BSc Civil Engineering

Recommended trainer: trainee ratio

The recommended maximum trainer: trainee ratio for this program is 1 trainer for 25 trainees.

Medium of instruction i.e. language of instruction:

Instructions will be in Urdu/ English/ Local language.



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Duration of the course (Total time, Theory & Practical time):

The distribution of contact hours is given below:

Total	-	600 hours
Theory	-	120hours (20%)
Practical	-	480 hours (80%)

Proposed Course Duration-6 Months

Sequence of modules:

1. Module 2.1:Follow Safety Rules at Site
2. Module 2.2 :Perform Basic Communication Skills
3. 0732CM01 :Draw Basic Technical Drawings
4. 0732CM02:Demonstrate Basic Numeracy Skills
5. 0732CM03:Maintain Steel Fixing & Erecting Tools, Equipment and Materials
6. 0732CM04:Perform Cutting and Bending Rebar for Simple Shapes
7. 0732CM05:Execute the Steel Work of Foundations
8. 0732CM06:Execute steel work in Column for domestic building
9. 0732CM07:Execute steel work in Beams for domestic building
10. 0732CM08:Execute steel work in Roof slabs for domestic building
11. 0732CM09:Execute steel work in Stairs for domestic building
12. 0732CM010:Execute steel work in Arches



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Summary template-overview of the curriculum:

Following is the structure of the course:

Sr No	Code	Competency Standards	Occupation	NVQF Level	Category	Estimated Contact Hours			Cr Hr
						Th	Pr	Total	
Level 2									
1	Module 2.1	Follow Safety Rules at Site	Assistant Steel Fixer	2	Generic	5	15	20	2
2	Module 2.2	Perform Basic Communication Skills		2	Generic	12	18	30	3
3	0732CM01	Draw Basic Technical Drawings		2	Functional	11	39	50	5
4	0732CM02	Demonstrate Basic Numeracy Skills		2	Functional	11	39	50	5
5	0732CM03	Maintain Steel Fixing & Erecting Tools, Equipment and Materials		2	Technical	9	21	30	3



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6	0732CM04	Perform Cutting and Bending Rebar for Simple Shapes		2	Technical	17	63	80	8
7	0732CM05	Execute the Steel Work of Foundations		2	Technical	10	60	70	7
8	0732CM06	Execute steel work in Column for domestic building		2	Technical	12	48	60	6
9	0732CM07	Execute steel work in Beams for domestic building		2	Technical	10	60	70	7
10	0732CM08	Execute steel work in Roof slabs for domestic building		2	Technical	7	33	40	4
11	0732CM09	Execute steel work in Stairs for domestic building		2	Technical	8	42	50	5
12	0732CM10	Execute steel work in Arches		2	Technical	8	42	50	5
		Total				120	480	600	60
		Percentage				20	80		



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Module 2.1: Follow Safety Rules at Site

Objective: The aim of this module to get knowledge, skills and understanding to maintain personal health, hygiene and safety

Duration: 20Hours

Theory: 5 Hours

Practice: 15 Hours

Credit Hours: 2

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Maintain occupational safety and health at workplace	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Identify the safety signs and symbols 2. Erect barricades, hoardings, signage in the hazardous areas 3. Maintain housekeeping 4. Report unsafe condition to immediate supervisor (shift person) 	<ul style="list-style-type: none"> • Knowledge of different types of hazards • Explain unsafe working conditions • Understanding of health and safety signs and symbols • Explain housekeeping • Understanding of different methods of dealing with hazard <p>Activity: Practice to identify the physical hazards in mock situation and apply control</p>	<p>Total 4hrs</p> <p>Theory: 1hrs</p> <p>Practical: 3 hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White Board • Marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Computer 	<ul style="list-style-type: none"> • Class Room • Simulated environment



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		measures, safety sign and barricade.			
LU2: Use Personal Protective and Safety Equipment (PPE)	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Identify risk associated with job to be done 2. Select PPE according to job 3. Wear PPE according to job 4. Store PPE at Designated place after use 	<ul style="list-style-type: none"> • Describe the types of Personal protective equipment (PPEs) • Describe the procedure to identify risk associated with job to be done • Importance of personal protective equipment • Describe the Maintenance and cleaning of PPEs • Describe the procedure to wear full body harness <p>Activity:</p> <ul style="list-style-type: none"> • Demonstrate to select PPEs for specific job. • Practice to wear full 	<p>Total: 4 hrs</p> <p>Theory: 1hrs</p> <p>Practical: 3hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White Board Marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Computer • PPEs (Safety glasses, Ear 	<ul style="list-style-type: none"> • Class Room • Simulated environment



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		body harness and anchorage		muffs/ear plugs, Protective Gloves, Cap, Safety shoes etc.)	
LU3:Perfrom communication signals	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Identify different types of communication hand signals. 2. Use appropriate hand signals as per situation 	<ul style="list-style-type: none"> • Understanding of different types of communication signals • Explain different types of hand signals • Explain the importance of hand signals <p>Activity: Demonstrate the hand signals for different activities</p>	<p>Total: 4 hrs</p> <p>Theory: 1hrs</p> <p>Practical: 3hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White Board Marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia 	<ul style="list-style-type: none"> • Class Room • Simulated environment



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> • Computer • Safety manuals 	
LU4: Manual handling of loads	The trainee will be able to: <ol style="list-style-type: none"> 1. Check the load's weight to be handles 2. Check the availability of broad stable base 3. Lift and place the load with proper posture 4. Lift the load as per given standards 	<ul style="list-style-type: none"> • Explain the importance of safely lifting loads • Describe types of loads • Explain basic ergonomics principles • State the load lifting procedures <p>Activity: Practice of shifting manually the load from ground to a designated location.</p>	Total: 4 hrs Theory: 1hrs Practical: 3hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White Board Marker • Duster Non Consumable <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system 	<ul style="list-style-type: none"> • Class Room • Simulated environment



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU 5 Carry out Basic first aid treatment	The trainee will be able to: <ol style="list-style-type: none"> 1. Follow COVID-19 SOP's 2. Identify basic elements for first aid kit 3. Maintain a fully stacked first aid kit 4. Check expiry date of medicines 5. Perform mock first aid treatment for minor injuries 	<ul style="list-style-type: none"> • Describe the ABC of first aid • Describe the first aid procedure for minor cut • Describe components of first aid kit Activity: Demonstrate mock exercise of first aid treatment for minor cut	Total: 4 hrs Theory: 1hrs Practical: 3hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners White board marker Duster Non Consumable <ul style="list-style-type: none"> • White board • Multimedia • Computer • PPEs (Safety glasses, Ear 	<ul style="list-style-type: none"> • Class Room • Simulated environment



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				muffs/ear plugs, Protective Gloves, Cap, Safety shoes etc.)	



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Module 2.2: Perform Basic Communication Skills

Objective of the module: The aim of this module to get knowledge, skills and understanding to perform basic communication.

Duration: 30 Hours

Theory: 12 Hours

Practice: 18 Hours

Credit Hours: 3

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Demonstrate the basic communication skills	The trainee will be able to: <ol style="list-style-type: none"> 1. Demonstrate the listening skills 2. Demonstrate the reading skills 3. Demonstrate the writing skills 4. Demonstrate the speaking skills 	<ul style="list-style-type: none"> • Knowledge of communication skills (7Cs of effective communication) • Describe verbal and non-verbal communication • Explain reporting techniques <p>Activity:</p> <ul style="list-style-type: none"> • Practice to listen to the audio and write down • Practice to note down the instructions given by the supervisor 	<p>Total: 15 hrs</p> <p>Theory: 6hrs</p> <p>Practical: 9hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Computer 	<ul style="list-style-type: none"> • Class Room



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU2. Follow Supervisor's instructions	The trainee will be able to: <ol style="list-style-type: none"> Carry out the instructions of the supervisor Report to the supervisor as per organizational SOP's given standards 	<ul style="list-style-type: none"> Explain the note taking procedure Understanding of the standard procedure to prepare the report <p>Activity:</p> <ul style="list-style-type: none"> Prepare different office reports 	<p>Total: 15 hrs</p> <p>Theory: 6hrs</p> <p>Practical: 9hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners White board marker Duster <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Computer 	<ul style="list-style-type: none"> Class Room



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0732CM01: Perform Basic Technical Drawing

Objective of the module: The aim of this module to get knowledge, skills and understanding to perform basic technical drawing

Duration: 50 Hours

Theory: 11 Hours

Practice: 39 Hours

Credit Hours: 5

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Explore Lettering, Lines and symbols	The trainee will be able to: <ol style="list-style-type: none"> 1. Draw different types of lettering 2. Draw different types of lines 3. Draw different drawing symbols 	<ul style="list-style-type: none"> • Knowledge of different types of lines • Knowledge of different lettering style. • Understanding of symbols used in technical drawings. • Knowledge of different scales. • Understanding of different drawing pencils (Clutch pencil Mechanical pencils, etc.) • Understanding of different grades of lead pencils(H,HB,B) • Knowledge of different drawing sheets (scholar sheet, chart paper, Canson Sheet, etc.) 	Total: 8hrs Theory: 2hrs Practical: 6hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Erasers • Sharpeners • White board marker • Duster • Drawing sheets • Drawing pen • Masking tape • Drawing pencils 	<ul style="list-style-type: none"> • Class Room/Drawing hall



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		Activity: <ul style="list-style-type: none"> Practice to draw of title block Practice to draw of different lines Practice to draw of different types of lettering Practice of drawing symbols 		<ul style="list-style-type: none"> Scale Duster Masking Tape Non Consumable White board Multimedia Internet Computer system Drawing board Drawing instruments 	
LU2. Draw Different Geometrical Shapes	<ol style="list-style-type: none"> Draw different geometrical figures Draw simple curve Create a pattern with simple shapes 	<ul style="list-style-type: none"> Understanding of types of geometry Explain plain geometry Explain solid geometry Activity:	Total:8hrs Theory:2hrs Practical:6hrs	Consumable <ul style="list-style-type: none"> Notebooks Erasers Sharpener White board marker 	<ul style="list-style-type: none"> Class Room/Drawing hall



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		<ul style="list-style-type: none">• Practice to draw different angles• Practice of plain geometrical figures• Practice of solid geometrical shapes		<ul style="list-style-type: none">• Duster• Drawing sheets• Drawing pen• Masking tape• Drawing pencils• Scale <p>Non Consumable</p> <ul style="list-style-type: none">• White board• Multimedia• Internet• Computer system• Drawing board	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> Drawing instruments 	
LU3. Explore Orthographic projection of simple pictorial views	The trainee will be able to: <ol style="list-style-type: none"> Draw first angle projection Draw third angle projection 	<ul style="list-style-type: none"> Knowledge of orthographic projection Explain the rules of 1st and 3rd angle projection Explain pictorial drawings Understanding of sectional views 	Total: 25hrs Theory: 4hrs Practical: 21hrs	Consumable <ul style="list-style-type: none"> Notebooks Erasers Sharpeners White board 	<ul style="list-style-type: none"> Class Room/Drawing hall



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>3. Draw missing views 4. Draw different section views</p>	<p>Activity:</p> <ul style="list-style-type: none">• Practice to draw first angle projection of simple object blocks.• Practice to draw third angle projection of simple object blocks.• Practice to draw the missing view of different given orthographic projection.• Practice to draw the section view of different blocks.		<p>marker</p> <ul style="list-style-type: none">• Duster• Drawing sheets• Drawing pen• Masking tape• Different drawing pencils• Scale <p>Non Consumable</p> <ul style="list-style-type: none">• White board• Multimedia• Internet• Computer system	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> Drawing board Drawing instruments 	
LU4. Dimension the drawing	<ol style="list-style-type: none"> Draw different types of dimensions. Draw geometrical tolerance. 	<ul style="list-style-type: none"> Describe the different dimensioning principles Explanation of geometrical tolerance <p>Activity:</p> <ul style="list-style-type: none"> Practice to dimension the given orthographic projections with different dimensioning style. 	<p>Total:9 hrs</p> <p>Theory:3 hrs</p> <p>Practical:6hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Erasers Sharpener White board marker Duster Drawing sheets Drawing pen 	Class Room/Drawing hall



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none">• Masking tape• Different drawing pencils• Scale• Non-Consumable• White board• Multimedia• Internet• Computer system• Drawing board• Drawing instruments	



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0732CM02: Demonstrate Basic Numeracy Skills

Objective of the module: The aim of this module is to get knowledge, skills and understanding to demonstrate basic numeracy skills

Duration: 50 Hours

Theory: 11 Hours

Practice: 39 Hours

Credit Hours: 5

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1:Apply Basic Numeracy Skills	The trainee will be able to: <ol style="list-style-type: none"> 1. Perform addition 2. Perform subtraction 3. Perform multiplication 4. Perform division 5. Calculate percentage 	<ul style="list-style-type: none"> • Understanding of basic principles of addition, subtraction, multiplication division of whole number and fraction • Explain how to calculate percentage 	Total: 11hrs. Theory: 2 hrs. Practical: 9hrs.	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Pen • White board marker • Duster Non Consumable <ul style="list-style-type: none"> • White board 	<ul style="list-style-type: none"> • Class Room
		Activity: <ul style="list-style-type: none"> • Practice of addition, subtraction, multiplication division of whole number and fraction • Practice to calculate 			



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		percentage between referred number			
LU2:Perform Measurement	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Select measuring tools as per requirement 2. Identify imperial and metric system 3. Perform inter conversion of measuring units 	<ul style="list-style-type: none"> • Understanding of basic measuring units. • Knowledge of measuring tools • Understanding of Imperial and metric system of measurements. • Explain the inter-conversion between measuring units. 	<p>Total:16hrs</p> <p>Theory:4hrs</p> <p>Practical:12hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster <p>Non Consumable</p> <ul style="list-style-type: none"> • White board 	<ul style="list-style-type: none"> • Class Room



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		<p>Activity:</p> <ol style="list-style-type: none">1. Take the measurement of different geometrical figures with scale.2. Practice to measure the boundaries of specific land and calculate its area and perimeter.3. Take the measurements of different solids4. Practice of inter-conversion of units.		<ul style="list-style-type: none">• Multimedia• Internet• Computer system• Printer• Measuring tape• Scale	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU3: Calculate basic mathematical calculations	The trainee will be able to: <ol style="list-style-type: none"> 1. Calculate length 2. Calculate volume 3. Calculate area 4. Calculate percentage 	<ul style="list-style-type: none"> • Knowledge of geometrical figures and solids. • Understanding the surface area and volume of solid figures. • Explain the method of calculating quantity of material in piles/stack. 	Total: 23hrs Theory: 5hrs. Practical: 18hrs	<div style="background-color: #d3d3d3; padding: 2px;">Consumable</div> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster <div style="background-color: #d3d3d3; padding: 2px;">Non Consumable</div> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • Printer • Measuring tape 	Class Room/workshop
		Activity: <ul style="list-style-type: none"> • Practice to calculate the surface area and volume of given geometrical figures and solids. • Practice to calculate quantity of material in 			



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		piles/stack.		<ul style="list-style-type: none">• Scale• 3D model of geometrical solids	



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0732CM03: Maintain Steel Fixing & Erecting Tools, Equipment and Materials

Objective of the module: The aim of this module is to get knowledge, skills and understanding to maintain steel fixing & erecting tools, equipment and materials

Duration: 30 Hours

Theory: 9 Hours

Practice: 21 Hours

Credit Hours: 3

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Arrange tools, equipment and accessories.	The trainee will be able to: <ol style="list-style-type: none"> Identify hand tools Select the tools as per job requirement 	<ul style="list-style-type: none"> Explain types of tools, equipment and accessories. Explain usage of different working tools. Knowledge of basic techniques for using and handling measuring, cutting and layout tools. Understanding of basic measuring units and it's inter- conversion. Explain importance of storing tools and material in specific place. 	Total: 10hrs Theory: 3 hrs Practical: 7hrs	Consumable <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners White board marker Duster Rebars Non Consumable <ul style="list-style-type: none"> White board Multimedia Internet 	<ul style="list-style-type: none"> Class room/ Workshop



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		<p>Activity:</p> <ul style="list-style-type: none">• Practice to prepare required list of tools for specific job.• Practice to prepare required list of equipments and accessories for specific job.		<ul style="list-style-type: none">• Computer system• Cold Chisels (for cutting steel)• Different types of hammer(sledge hammer, light hammer etc.)• Clippers• Measuring Tapes• Pliers• Tongs• Pliers• Bending Rods• Cutting Machine with cutters• Bench vice• Gloves	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> • Anvil • Straighting Base • Manual Cutting Base • Pincers • Empty tool box • Wire Twisting Tool 	
LU2: Perform routine maintenance of components	The trainee will be able to: <ol style="list-style-type: none"> 1. Clean and check the working condition of Tools components and accessories. 2. Tag the faulty/damaged/ worn out tools components and accessories. 3. Report faults /damages 	<ul style="list-style-type: none"> • Explain guidelines and checklists to conduct maintenance and good housekeeping of fittings & tools. • Explain importance of daily cleanliness of workplace and lubrication of the tools. • Identify Faulty/damaged/ worn out parts. 	Total: 10hrs Theory: 3 hrs Practical: 7hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster • Rebars 	<ul style="list-style-type: none"> • Class room/ Workshop



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>components.</p> <p>4. Lubricate tools and accessories as per checklists.</p> <p>5. Stack all the components & material in proper place to ensure safe work.</p>	<ul style="list-style-type: none"> • Describe preventive and corrective measures for tools and accessories • Describe methods of stacking of various components & fitting as per standards procedure <p>Activity:</p> <ul style="list-style-type: none"> • Practice of sorting the damage/worn outs tools and accessories for given set of tools • Practice of routine maintenance of components and accessories as per standards. • Practice of lubrication and sharpening of 		<p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • Cold Chisels (for cutting steel) • Different types of hammer(sledge hammer, light hammer etc.) • Clippers • Measuring 	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<p>Tapes</p> <ul style="list-style-type: none">• Pliers• Tongs• Pliers• Bending Rods• Cutting Machine with cutters• Bench vice• Gloves• Anvil• Straighting Base• Manual Cutting Base• Pincers• Empty tool box	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> Wire Twisting Tool 	
LU3: Maintain inventory of stores	The trainee will be able to: <ol style="list-style-type: none"> Arrange the steel fixing & erecting tools, components and accessories at appropriate positions in store Identify and label/tag the damaged and out of order tools and accessories. 	<ul style="list-style-type: none"> Knowledge of Inventory management. Explain basic steel erecting components and their standard size Knowledge of entry procedure in inventory register. <p>Activity:</p> <ul style="list-style-type: none"> Practice to identify the faulty tools and generate report Practice to prepare the 	Total: 10hrs Theory: 3 hrs Practical: 7hrs	Consumable <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners White board marker Duster Inventory registers 	<ul style="list-style-type: none"> Class room/ Workshop



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>3. Protect the Steel fixing & erecting fitting, component and tools from rust & moisture to avoid corrosion.</p>	<p>inventory register for the tool equipment at site store.</p> <ul style="list-style-type: none"> • Practice to generate demand tool and equipment as per job order. • Practice to clean and paint rebars to protect from rust & moisture • Practice to lubricate tools 		<ul style="list-style-type: none"> • Stock register • Gate passes • Indent book • Return book • Red oxide paint Non Consumable • White board • Multimedia • Internet • Computer system 	



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0732CM04: Perform Cutting and Bending Rebars for Simple Shapes

Objective of the module: The aim of this module is to get knowledge, skills and understanding to perform cutting and bending rebars for simple shapes

Duration: 80 Hours

Theory: 17 Hours

Practice: 63 Hours

Credit Hours: 8

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Perform straightening of Rebars	The trainee will be able to: <ol style="list-style-type: none"> 1. Select the tools as per job requirement. 2. Place the steel base on firm and level surface. 3. Perform straightening of rebar using hammer and bending lever. 4. Select and wear the PPEs relevant to Job. 	<ul style="list-style-type: none"> • Explain the importance of basic Steel erecting setup • Explain usage of bending rebars • Describe types of straightening tools • Knowledge of PPEs 	Total: 19hrs Theory: 4 hrs Practical: 15hrs	<div style="background-color: #d3d3d3; padding: 2px;">Consumable</div> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster • Rebars • Chalk <div style="background-color: #d3d3d3; padding: 2px;">Non Consumable</div> <ul style="list-style-type: none"> • White board • Multimedia 	<ul style="list-style-type: none"> • Class Room/ On site
		Activity: <ul style="list-style-type: none"> • Practice to separate and straighten the rebar from bundle 			



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> • Internet • Computer system • Steel ring base • Hammer • Bar bending key 	
LU2:Perform Measuring	The trainee will be able to: <ol style="list-style-type: none"> 1. Select the tools as per job requirement. 2. Interpret the hand sketch of bend up rebars, stirrups & chair rebars etc. 3. Select the types of rebar as per job 4. Mark the cutting length of stirrups & ties bar on 	<ul style="list-style-type: none"> • Explain usage of measurement and marking tools • Knowledge of simple arithmetic calculation • Describe simple measurements using metric and imperial systems • Knowledge of conversion of linear unit for measurement unit 	Total: 15hrs Theory: 3hrs Practical: 12hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster 	<ul style="list-style-type: none"> • Class Room/ On site/ Workshop



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	rebars 5. Mark the cutting length of chair bar on rebars 6. Check the dia of rebars 7. Check the gauge of binding wire 8. Mark the spacing of rebars with chalk on plate - form as per sketch	Activity: <ul style="list-style-type: none"> Practice to interpret sketches of different types of bent up bars, stirrups and chairs, sort out its cut length and mark on straight rebars 		<ul style="list-style-type: none"> Chalk Non Consumable White board Multimedia Measuring tape Vernier caliper 	
LU3: Perform Cutting of Rebars	The trainee will be able to: 1. Select the tools as per job requirement. 2. Place the cutting base with chool/wedge on firm and level surface. 3. Cut the binding wire using chisel & hammer	<ul style="list-style-type: none"> Describe cutting tools of rebars Explain fixing and cutting blade and other accessories in cutting and bending machine Explain capacity and required details of cutting machines, bending machine. Explain types of hand tool available for cutting and bending 	Total: 15hrs Theory: 3hrs Practical: 12hrs	Consumable <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners Whiteboard marker Duster 	<ul style="list-style-type: none"> Class Room/on site/ workshop



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>4. Cut the rebar using power cutting tools.</p>	<ul style="list-style-type: none"> • Describe BBS in order to carry out cutting and bending of reinforcement. • Knowledge of storing of cut rebars and scrap material • Understanding of tolerance limits for bending and cutting of rebars <hr/> <p>Activity:</p> <ul style="list-style-type: none"> • Practice to cut rebars of different dia as per marked cut length. 		<ul style="list-style-type: none"> • Rebars • Chalk Non Consumable • White board • Multimedia • Cutting base with chool • Cutting chisel with tong • Hammer • Mechanical bar cutter • Power cutting machine 	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU4: Perform bending of Rebars at different Angles	The trainee will be able to: <ol style="list-style-type: none"> 1. Select the tools as per job requirement. 2. Place the bending table on firm & level ground. 3. Mark on rebar as per sketch. 4. Select appropriate lever according to dia of rebar. 5. Bend the rebar according to required angle 6. Check the bent rebar for its shape, angle & length 	<ul style="list-style-type: none"> • Explain procedure of bending of rebars • Knowledge of tools and accessories • Knowledge of bending angles • Understanding of bending machine Activity: <ul style="list-style-type: none"> • Practice to make hook, U and bend at the end of rebars • Practice to bend up a straight bar at 30, 45 and 90 degree. 	Total: 15hrs Theory: 3hrs Practical: 12hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Rebars • Chalk Non Consumable <ul style="list-style-type: none"> • White board • Multimedia • Bar bending table • Bar bending plates with pins 	<ul style="list-style-type: none"> • Class Room/on site/ workshop



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> Bar bending key of different sizes Bar bending machine 	
LU5: Make Stirrups and Ties of different sizes and shapes	The trainee will be able to: <ol style="list-style-type: none"> Collect and check the bending tools & accessories required for bending of stirrups, ties, rings and chairs Mark and pin on bending bench for making of stirrups, ties, rings and chairs. Place rebar between the pins and bend at required angle. 	<ul style="list-style-type: none"> Describe the types of stirrups Describe types of ties Describe types of chairs Explain methods to calculate the cut length of different types of stirrups/ties Knowledge to check accuracy of stirrups/ties Describe the method of stirrups/ties <p>Activity:</p> <ul style="list-style-type: none"> Practice to sort out cut 	<p>Total: 16hrs</p> <p>Theory:4hrs</p> <p>Practical:12hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpener Whiteboard marker Duster Rebars Chalk <p>Non Consumable</p>	<ul style="list-style-type: none"> Class Room/on site/ workshop



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<p>4. Check the bent rebar for its shape, angle & length.</p> <p>5. Check and clean all tools & accessories for any discrepancy, tag and report.</p> <p>6. Clear work area and dispose off rebar wastage as per standards.</p>	<p>length of two legs stirrups, cut rebar according to calculated cut length and make stirrups and check its accuracy.</p> <ul style="list-style-type: none"> • Practice to sort out cut length of three legs stirrups, cut rebar according to calculated cut length and make stirrups and check its accuracy. • Practice to sort out cut length of four legs stirrups, cut rebar according to calculated cut length and make 		<ul style="list-style-type: none"> • White board • Multimedia • Computer • Bar bending machine • Hammer • Rebar cutting machine 	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		<p>stirrups and check its accuracy.</p> <ul style="list-style-type: none">• Practice to sort out cut length of ring, cut rebar according to calculated cut length and make rings and check its accuracy.			



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0732CM05:Execute the Steel work for Foundations

Objective of the module: The aim of this module is to get knowledge, skills and understanding to execute the steel work for foundations.

Duration: 70 Hours

Theory: 10 Hours

Practice: 60 Hours

Credit Hours: 7

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform preparatory work	Trainee will be able to: <ol style="list-style-type: none"> 1. Interpret the drawing. 2. Select tools as per job requirement. 3. Place the steel base on firm and level surface. 4. Categorize the types of rebars according to bar bending schedule. 5. Select and wear 	<ul style="list-style-type: none"> • Explain rebars of various diameters. • Knowledge for different grade of steel. • Understanding of bar bending schedule <p>Activity:</p> <ul style="list-style-type: none"> • Practice to count the number of rebars as per drawing 	<p>Theory-2Hrs</p> <p>Practical-6Hrs</p> <p>Total-8Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster • Rebars • Chalk 	Class Room Training Workshop Lab/ Field Visit



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	the PPEs relevant to Job.			<p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system • Steel ring base • Hammer • Bar bending key 	
LU2. Perform cutting of main rebars	Trainee will be able to: 1. Straighten up the rebars 2. Measure and mark the required cut length on rebars 3. Cut the rebars with	<ul style="list-style-type: none"> • Define foundation and its types • Define types of foundation reinforcement • Understanding of rebars cutting. 	Theory-3Hrs Practical-18Hrs Total-21Hrs	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard 	Class Room Training Workshop Lab/ Field Visit



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	relevant cutting tool 4. Make the bundle of cutting rebars and mark the bar code using tag for foundation	<ul style="list-style-type: none"> Knowledge of marking codes and numbers to the rebars, using tags for reference. Explain operating procedure of various bar cutting tools. <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> Practice to cutting of longitudinal and tie bars 		marker <ul style="list-style-type: none"> Duster Chalk Rebars <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia <p>PPEs</p> <ul style="list-style-type: none"> Chisels(for cutting rebars) Differnt types of hammer(sledge hammer,light hammer etc.)t Cutting base Clipers Measuring tape(100') Measuring tape 18' 	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none"> • Clippers • Measuring tape(100') • Measuring tape 18' 	

0732CM06: Execute steel work in column for domestic building

Objective of the module: The aim of this module to get knowledge, skills and understanding to execute steel work in column for domestic building

Duration: 60 Hours

Theory: 12 Hours

Practice: 48 Hours

Credit Hours: 6

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform preparator y work	Trainee will be able to: 1. Interpret reinforcement drawing	<ul style="list-style-type: none"> • Understanding of bar bending schedule • Knowledge of structural drawing 	Theory-2Hrs Practical-6Hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners 	Class Room Training Workshop Lab/ Field Visit



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	2. Interpret bar bending schedule 3. Select the tools as per job requirement. 4. Select and wear the PPEs relevant to Job.	<ul style="list-style-type: none"> • Knowledge to use of tools • Understanding importance of PPEs <p><u>Practical Activity:</u></p> <p>Practice to calculate the number of tie bars as per drawing</p>	Total-8Hrs	<ul style="list-style-type: none"> • White board marker • Duster • Rebars • Chalk • Non Consumable • White board • Multimedia • Internet • Computer system • Steel ring base • Hammer • Bar bending key 	
LU2. Perform Cutting of vertical rebars and lateral ties	<p>Trainee will be able to:</p> 1. Measure and mark the required cut length on rebars as	<ul style="list-style-type: none"> • Define columns and its types • Define types of column reinforcement • Understanding of rebars 	Theory-4Hrs Practical-9Hrs Total-13Hrs	<ul style="list-style-type: none"> • Consumable • Notebooks • Pencils • Erasers • Sharpeners 	Class Room Training Workshop Lab/ Field Visit



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	per bar bending schedule 2. Cut the rebars with relevant cutting tool 3. Make the bundle of cutting rebars and mark the bar code using tag	cutting. <ul style="list-style-type: none"> Knowledge of marking codes and numbers to the rebars, using tags for reference. Explain operating procedure of various bar cutting tools. <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> Practice to cutting of longitudinal and tie bars 		<ul style="list-style-type: none"> Whiteboard marker Duster Chalk Rebars Non Consumable White board Multimedia PPEs Chisels(for cutting rebars) Different types of hammer(sledge hammer, light hammer etc.) Cutting base Clippers Measuring 	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				tape(100') • Measuring tape 18'	
LU3. Perform bending to make lateral ties	Trainee will be able to: 1. Bend the bar to make the lateral ties, as per bar bending schedule 2. Make the bundle of ties and attach the bar code tag for reference	<ul style="list-style-type: none"> • Explain bending of rebars. • Knowledge of marking of codes and numbers to the rebars, using tags for reference. <p><u>Practical Activity</u></p> <ul style="list-style-type: none"> • Practice to bend the bars for making lateral ties. 	<p>Theory-4Hrs</p> <p>Practical-18Hrs</p> <p>Total-22Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars <p>Non Consumable</p> <ul style="list-style-type: none"> • White board 	Class Room Training Workshop Lab/ Field Visit



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				<ul style="list-style-type: none">• Multimedia• PPEs• Computer• Chisels(for cutting rebars)• Different types of hammer(sledge hammer,light hammer etc.)• Cutting base• Clippers• Measuring tape(100'• Measuring tape 18'• Bar bending table• Bar bending key• Bar bending	



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				machine	
LU4. Bind the vertical rebars	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> Place the lateral ties Erect the main vertical rebars one by one with dowel bar of column within the lateral ties. Bind the main vertical rebars with ties with the help of binding wire according to drawing/bar bending schedule. Fix spacer around 	<ul style="list-style-type: none"> Explain placing procedure of rebars. Explain binding procedure of rebars. Knowledge of spacer Knowledge of safety measures during transportation of rebars <p style="text-align: center;"><u>Practical Activity</u></p> <ul style="list-style-type: none"> Practice to bind vertical rebars with lateral ties. Practice to place rebars for column 	<p>Theory-2Hrs</p> <p>Practical-15Hrs</p> <p>Total-17Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners Whiteboard marker Duster Chalk Rebars <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Computer PPEs Chisels(for 	<p>Class Room</p> <p>Training Workshop</p> <p>Lab/ Field Visit</p>



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	the column as per drawing			<ul style="list-style-type: none">cutting rebars)• Different types of hammer(sledge hammer, light hammer etc.)t• Cutting base• Clippers• Measuring tape(100'Measuring tape 18'	

0732CM07 Execute Steel Work In Beams For Domestic Building

Objective: This competency standard covers the skills and knowledge required to execute steel work in beams for domestic building

Duration: 70Hours

Theory: 10 Hours

Practice: 60Hours

Credit Hours: 7



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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform preparatory work	Trainee will be able to: 1. Interpret bar bending schedule 2. Interpret structural drawing 3. Select the tools as per job requirement. 4. Select and wear the PPEs relevant to Job.	<ul style="list-style-type: none"> • Understanding of bar bending schedule • Knowledge of structural drawing • Knowledge to use of tools • Understanding importance of PPEs <p><u>Practical Activity:</u> Practice to count the number of rebars as per drawing</p>	<p>Theory-2Hrs</p> <p>Practical-8Hrs</p> <p>Total-10Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster • Rebars • Chalk <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer system 	Class Room Training Workshop Lab/ Field Visit



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				<ul style="list-style-type: none"> • Steel ring base • Hammer • Bar bending key 	
<p>LU2. Perform cutting of main rebars</p>	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> 1. Straighten up the rebars 2. Measure and mark the required cut length on rebars 3. Cut the rebars with relevant cutting tool 4. Make the bundle of cutting rebars and mark the bar code using tag for beam. 	<ul style="list-style-type: none"> • Understanding of main rebars, holding rebars, curtail rebars, in the beam. • Knowledge of hanger bar, bent up bar, straight bar • Explain general sequence of binding steps involved in beam formation. • Describe methods for cutting and fixing of rebars in beams. • Explain types of beam <p>Practical Activity:</p>	<p>Theory-3Hrs</p> <p>Practical-12Hrs</p> <p>Total-15Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia 	<p>Class Room</p> <p>Training Workshop</p> <p>Lab/ Field Visit</p>



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		Practice to cutting of main rebars		<ul style="list-style-type: none"> • PPEs • Computer • Chisels(for cutting rebars) • Different types of hammer(sledge hammer,light hammer etc.)t • Cutting base • Clippers • Measuring tape(100') • Measuring tape 18' 	
<p>LU3.</p> <p>Perform bending for stirrups and hooks</p>	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> 1. Bend the rebars to make the stirrups using bar bending schedule 2. Bend the end hooks for main, and bent up rebars as per bar bending schedule. 3. Make the bundle of stirrups and bent up rebars, attach the bar code tag for reference 	<ul style="list-style-type: none"> • Explain methods for bending and fixing of rebars in beams. • Describe operating procedure for bending tools • Explain types of beam <p><u>Practical Activity</u></p>	<p>Theory-3Hrs</p> <p>Practical-24Hrs</p> <p>Total-27Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster • Rebars 	



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		<ul style="list-style-type: none"> Practice to prepare the bend up bar as per bar bending schedule. Practice to prepare the stirrups as per bar bending schedule. 		<ul style="list-style-type: none"> Chalk Non Consumable White board Multimedia Internet Computer system Steel ring base Hammer Bar bending key 	
<p>LU4. Bind the stirrups with main rebars</p>	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> Place main rebars as per drawing Fix the stirrups along with the main rebars as per drawing Bind the main rebars with stirrups by binding wire Fix spacer around the beam as per drawing 	<ul style="list-style-type: none"> Explain methods for bending and fixing of rebars in beams. Describe operating procedure for bending tools Describe the concept of spacing of stirrups 	<p>Theory-2Hrs</p> <p>Practical-16Hrs</p> <p>Total-18Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpener Whiteboard marker Duster 	



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	<p>5. Fix spacer bars between rows of main rebars</p>	<ul style="list-style-type: none">• Describe the types and purpose of spacer• Understanding of concrete cover and its standard value for concrete structure• Understanding of spacer bars between two rows of main rebars <p><u>Practical Activity:</u></p> <ul style="list-style-type: none">• Practice to place main bars, mark, place and bind the stirrups as per structural drawing.		<ul style="list-style-type: none">• Chalk• Rebars• Binding wire <p>Non Consumable</p> <ul style="list-style-type: none">• White board• Multimedia• PPEs• Computer• Pliers• Measuring tape 18'	
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0732CM08 Execute steel work in roof slabs for domestic building

Objective: The aim of this module is to get knowledge, skills and understanding to execute steel work in roof slabs for domestic building

Duration: 40 Hours

Theory: 07 Hours

Practice: 33 Hours

Credit Hours: 6

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform preparatory work	Trainee will be able to: <ol style="list-style-type: none"> 1. Interpret bar bending schedule 2. Interpret structural drawing 3. Select the tools as per job requirement. 4. Select and wear the PPEs relevant to Job. 	<ul style="list-style-type: none"> • Understanding of bar bending schedule • Knowledge of structural drawing • Knowledge to use of tools • Understanding importance of PPEs <p>Practical Activity:</p> <ul style="list-style-type: none"> • Practice to calculate the number of rebars required from structural drawing 	Theory- 1Hr s Practical- 6Hr s Total- 7Hr s	<div style="background-color: #cccccc; padding: 2px;">Consumable</div> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk <div style="background-color: #cccccc; padding: 2px;">Non Consumable</div> <ul style="list-style-type: none"> • White board • Multimedia 	Class Room Training Workshop Lab/ Field Visit



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				<ul style="list-style-type: none"> • Computer • PPEs 	
<p>LU2.</p> <p>Perform cutting rebars of</p>	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> 1. Straighten the rebars 2. Separate the rebars as per bar bending schedule of roof 3. Measure and mark the rebars as per requirements 4. Cut the rebars as per measurements of roof slab 	<ul style="list-style-type: none"> • Understanding of rebars, holding rebars, curtail rebars, in the roof slab • Knowledge of bend up bar and straight bar • Explain general sequence of binding steps involved in roof slab • Describe methods for cutting and fixing of rebars in roof slab • Explain types of roof slab <p><u>Practical Activity:</u></p> <p>Practice to cutting of main, distribution and extra rebars for roof slab</p>	<p>Theory-2-Hrs</p> <p>Practical-15-Hrs</p> <p>Total- 17 Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Chalk • Duster • Rebars of different sizes <p>Non Consumable</p> <ul style="list-style-type: none"> • White board 	<p>Class Room/ Workshop</p>



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				<ul style="list-style-type: none"> • Multimedia • PPEs • Computer • Chisels(for cutting rebars) • Differnt types of hammer(sledge hammer,light hammer etc.)t • Cutting base • Clippers • Measuring tape(100') • Measuring tape 18' 	
<p>LU3. Perform placing and binding the rebars</p>	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> 1. Place the main rebars as per drawing 2. Place distribution steel 	<ul style="list-style-type: none"> • Knowledge of main and distribution rebars • Describe extra rebars • Describe binding procedure of main and distribution rebars. <p><u>Practical Activity:</u></p>	<p>Theory-2-Hrs</p> <p>Practical-6-Hrs</p> <p>Total-8Hr</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners 	<p>Class Room</p> <p>Training Workshop</p> <p>Lab/ Field Visit</p>



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	<p>as per drawing</p> <ol style="list-style-type: none">Place extra rebars as per drawingBind the rebars by binding wire.	<ul style="list-style-type: none">Practice to placing and binding the main and distribution rebars of roof slabPractice to placing and binding the extra rebars of roof slab	s	<ul style="list-style-type: none">Whiteboard markerDusterChalkDifferent rebarsBinding wiresNon ConsumableWhite boardMultimediaPPEsComputerTwisting PlierDiagonal Cutter	
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<p>LU4. Perform placing of spacer</p>	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> 1. Select the spacer 2. Place spacer as per design 	<ul style="list-style-type: none"> • Define spacer and its functions. • Explain different types of spacer • Explain placing procedure of spacer <p><u>Practical Activity:</u></p> <p style="text-align: center;">Practice to placing of spacer as per requirement.</p>	<p>Theory-2- Hrs</p> <p>Practical-6- Hrs</p> <p>Total- 08 Hrs</p>	<p style="text-align: center;">Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Spacers <p style="text-align: center;">Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • PPEs • Computer 	<p>Class Room/ Training Workshop</p>
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				<ul style="list-style-type: none"> • White board • Multimedia • Computer • PPEs 	
LU2. Perform cutting of rebars	Trainee will be able to: <ol style="list-style-type: none"> 1. Straighten the rebars 2. Separate main and distribution rebars 2. Mark the points for cutting the rebars as per measurements 3. Prepare required rings for beam by cutting and bending of rebars 4. Cut and bend the rebars as per stair shape 5. Make the bundles of rebars and tag according to the length and diameters 	<ul style="list-style-type: none"> • Define stairs and its components • Describe different types of stairs • Understanding of main and distribution rebars in stairs • Knowledge of bend up bar and straight bar • Describe methods for cutting and fixing of rebars in stairs <p><u>Practical Activity:</u> Practice to cut main and</p>	<p>Theory-3Hrs</p> <p>Practical-15Hrs</p> <p>Total-18Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars of different sizes <p>Non Consumable</p> <ul style="list-style-type: none"> • White board 	Class Room/ Workshop



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		distribution rebars for stairs		<ul style="list-style-type: none"> • Multimedia • PPEs • Chisels(for cutting rebars) • Differnt types of hammer(sledge hammer,light hammer etc.)t • Cutting base • Clippers • Measuring tape(100') • Measuring tape 18' 	
LU3. Perform placing and binding rebars.	<ol style="list-style-type: none"> 1. Place the rebars in waist slab of stair as per drawing 2. Bind the rebars 3. Place spacer as per requirement 	<ul style="list-style-type: none"> • Knowledge of main and distribution rebars • Describe binding procedure of main and distribution rebars. • Explain placing procedure of spacers <p><u>Practical Activity:</u></p>	Theory-3Hrs Practical-21Hrs Total-24Hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster 	Class Room Training Workshop Lab/ Field Visit



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		<ul style="list-style-type: none">• Practice to place and bind main and distribution rebars of waist slab• Practice to place spacers as per requirement		<ul style="list-style-type: none">• Chalk• Different rebars• Binding wires• Spacers <p>Non Consumable</p> <ul style="list-style-type: none">• White board• Multimedia• Computer• PPEs• Twisting Plier• Diagonal Cutter	
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				<p align="center">Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Computer • PPEs • Twisting Plier • Diagonal Cutter 	
<p>LU2. Perform cutting of rebars</p>	<p>Trainee will be able to:</p> <ol style="list-style-type: none"> 1. Straighten the rebars 2. Separate the rebars according to diameter 3. Measure the rebars as per bar bending schedule 4. Mark the rebars 5. Cut main and tie rebars 6. Bend the main rebars as per bar bending schedule 7. Make the bundles of rebars and tag them 	<ul style="list-style-type: none"> • Define arches and its components • Describe different types of arches • Understanding of main and distribution rebars in arches • Knowledge of bend up bar and straight bar • Describe methods for 	<p>Theory-3Hrs</p> <p>Practical-15Hrs</p> <p>Total-18Hrs</p>	<p align="center">Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars of different sizes 	<p>Class Room/ Workshop</p>



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		<p>cutting and fixing of rebars in arches</p> <p>Practical Activity:</p> <p>Practice to cut main and distribution rebars for arch as per drawing</p>		<p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Computer • PPEs • Chisels(for cutting rebars) • Different types of hammer(sledge hammer, light hammer etc.) • Cutting base • Clippers • Measuring tape(100') • Measuring tape 18' 	
<p>LU3. Perform placing and binding rebars.</p>	<ol style="list-style-type: none"> 1. Transport the bundle of rebars to site 2. Place the rebars of arch at site 3. Bind the rebars 4. Place spacers as per requirement 	<ul style="list-style-type: none"> • Knowledge of main and distribution rebars • Describe binding procedure of main and distribution rebars. • Explain placing procedure of spacers 	<p>Theory-3Hrs</p> <p>Practical-21Hrs</p> <p>Total-24Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard 	<p>Class Room</p> <p>Training Workshop</p>



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		<p><u>Practical Activity:</u></p> <ul style="list-style-type: none">• Practice to place and bind main and tie rebars of arch• Practice to place spacers as per requirement		<ul style="list-style-type: none">• marker• Duster• Chalk• Different rebars• Binding wires• Spacers• Non Consumable• White board• Multimedia• Computer• PPEs• Twisting Plier• Diagonal Cutter	Lab/ Field Visit
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List of Tool, Machinery and Equipment:

SR#	Items/Tools & Equipment	Quantity
1.	PPEs: Safety Helmet Safety Shoes Earmuffs Gloves Goggles Face Shields.	30 30 30 30 30 05
2.	First Aid Kit	01
3.	Computer	26
4.	Multimedia	01
5.	Clip Board	30



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6.	Structural drawing (3D Blocks)	15
7.	Scale cards	30
8.	Cold Chisels (for cutting steel)	10
9.	Hammer(sledge)	10
10.	Hammer(light)	05
11.	Clippers	10
12.	Tongs	10
13.	Pliers	10
14.	Bending Rods	10
15.	Cutting Machine with cutters	05
16.	Bench vice	02



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17.	Anvil	05
18.	Straighting Base	05
19.	Manual Cutting Base	05
20.	Pincers	10
21.	Wire Twisting Tool	10
22.	Empty tool box	05
23.	Rebar bender	10
24.	Measuring tape (1m to 30 m)	10
25.	Round tong	10
26.	Claw Lever (Bari)	10
27.	Measuring tape(100')	10



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28.	Disc cutter	03
29.	Knipex	10
30.	Bar bending table	03
31.	Steel Cutting machine	02
32.	Spanner	05
33.	Rebar bending tools and machine	02
34.	Vernier calipper	15

List of Consumable Supplies

SR#	Consumable Supplies	Quantity
1.	PPEs Surgical Face Masks	2 Boxes



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2.	Stationary	As per requirement
3.	Rebar(1/2" dia)	600kg
4.	Binding wire	50kg
5.	Rebar(3/4" dia)	500kg
6.	Rebar(1/4" dia)	350kg
7.	Printer paper	As per requirement
8.	Sample job order	As per requirement
9.	Safety sign boards	As per requirement



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Members of the Curriculum Development Committee

S#	Name	Designation
1	Mr. Tariq Saeed	Sr. Instructor, GTTI Mughalpura Lahore
2	Mr. Azhar Iqbal Shad	Principal, GCT Raiwind Road Lahore
3	Mr. Muhammad Asim	Lab Technologist UOL, Lahore
4	Mr. Muhammad Shafiq	Sr. Instructor, GSTC Mughalpura Lahore
5	Ms. Hira Ishtiaq	Lecturer, UOL, Lahore



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6	Ms. Saima Asghar	CBT Expert & Certified Assessor, Lahore
7	Mr. Nadeem Zaigham	Sr. Instructor, GCT Raiwind Road Lahore
8	Mr. Tahir Mehmood	Sr. Instructor, GTTI Mughalpura Lahore
9	Mr. Muhammad AmjadRafique	Principal, GCT Rasool
10	Engr. Danish Khan	DACUM Facilitator
11	Mr. Muhammad Yasir	Deputy Director/ Coordinator –(Skills Standards and Curricula) NAVTTTC HQ



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2.	Mr. Azhar Iqbal Shad	Ex-Principal, GCT Raiwind Road Lahore
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4.	Engr. Abdul Rasheed	Principal GCT Tangi, Charsadda KPK
5.	Mr. Imtiaz Ahmed	Assistant Manager, SK International Builders Islamabad



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7.	Engr. Habiba Mohsin	Lecturer, UOL, Lahore
8.	Ms. Saima Asghar	CBT Expert & Certified Assessor, Lahore
9.	Mr. Muhammad Abid	Instructor, GCT Railway Road Lahore
10.	Mr. Tahir Mehmood	Sr. Instructor, GTTI Mughalpura Lahore
11.	Mr. Shoukat Ali Rana	Deputy Controller Examination, PBTE, Lahore
12.	Engr. Muhammad Waris	Instructor, GCT Raiwind Road Lahore



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13.	Mr. Sikandar Hayat	Jr. Instructor, GCT Raiwind Road Lahore
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15.	Mr. Muhammad Yasir	DD, VT (NAVTTTC)