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SATELLITE DISH INSTALLER

CBT Curriculum

National Vocational Certificate Level 2

Version 1 - October, 2019

NAVTTC

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Introduction

Definition/ Description of the training program for *Satellite Dish Installer*

In order to build the capacity of technical and vocational training institutes in Pakistan through provision of demand driven competencies-based trainings in Electronics sector the NAVTTC, and TEVT Sector Support Program (TSSP) have joined hands together to develop qualifications for Electronics sector. These qualifications will not only build the capacity of existing workers of this sector but also support the youth to acquire skills best fit for this sector. The benefits and impact of development of these qualifications will be on both demand and supply side.

Based upon this demand of industry these competency-based qualifications for Satellite Dish Installer are developed under National Vocational Qualification Framework (NVQF) (Level 1 to 4). The qualifications mainly cover competencies along with related knowledge and professional skills which are essential for getting a job or self-employed.

The qualifications are also in line with the vision of Pakistan's National Skills Strategy (NSS), National TVET Policy and National Vocational Qualification Framework (NVQF). This provides policy directions, support and an enabling environment to the public and private sectors to impart training for skills development to enhance social and economic profile. The National Vocational & Technical Training Commission (NAVTTC) has approved the Qualification Development Committee (QDC). The QDC consists experts from the relevant industries from different geographical locations across Pakistan and academicians who were consulted during the development process to ensure input and ownership of all the stakeholders. The National Competency Standards could be used as a referral document for the development of curricula to be used by training institutions.

Purpose of the training program

The purpose of the training is to provide skilled manpower to improve the existing capacity of Electronics sector. This training will provide the requisite skills to the trainees to Install Satellite Dish. It will enable the participants to meet the challenges in the field of Satellite Dish industry. Further, to improve the skill level of the technician and prepare them for the Electronics industry to meet the market competition nationally and internationally.

The core purpose of this qualification is to produce employable Satellite Dish Installer who could Install Satellite Dish according to national and international standards. In addition, this qualification will prepare unemployable youth to employee in this sector.

Overall objectives of training program

The Satellite Dish Installer qualifications level 1- 4 consists of theoretical and practical details required to Install Satellite Dish in Electronics industries. However, this will require providing additional input on entrepreneurship development for the one who is willing to start his/her own business. The main objectives of the qualification are as follows:

- Follow Work Health and Safety Policies
- Understand the Workplace Policies and Procedures

- Follow Basic Communication Skills
- Operate Computer Functions
- Demonstrate Basic Literacy Skills
- Maintain Tools and Equipment
- Maintain Personal Health and Safety
- Communicate the Workplace Policy and Procedure
- Perform Basic Communication
- Perform Basic Computer Application
- Develop Entrepreneurial Skills
- Demonstrate Basic Numeracy Skills
- Develop Basic Electrical/ Electronic Skills
- Perform Cable Connection
- Assemble Dish Antenna
- Apply Work Health and Safety Practices (WHS)
- Identify and Implement Workplace Policy and Procedures
- Communicate at Workplace
- Perform Computer Application Skills
- Manage Personal Finances
- Mount Dish for Uplink / Downlink
- Perform Tuning
- Perform Troubleshooting
- Conduct Site Survey
- Contribute to Work Related Health and Safety (WHS) Initiatives
- Analyze and Develop Workplace Policy and Procedures
- Perform Advanced Communication
- Develop Advance Computer Application Skills
- Manage Human Resource Services
- Implement Network Security
- Plan Work

Competencies to be gained after completion of course

At the end of the course, the trainee must have attained the following competencies:

1. Follow Work Health and Safety Policies
2. Understand the Workplace Policies and Procedures
3. Follow Basic Communication Skills

4. Operate Computer Functions
5. Demonstrate Basic Literacy Skills
6. Maintain Tools and Equipment
7. Maintain Personal Health and Safety
8. Communicate the Workplace Policy and Procedure
9. Perform Basic Communication
10. Perform Basic Computer Application
11. Develop Entrepreneurial Skills
12. Demonstrate Basic Numeracy Skills
13. Develop Basic Electrical/ Electronic Skills
14. Perform Cable Connection
15. Assemble Dish Antenna
16. Apply Work Health and Safety Practices (WHS)
17. Identify and Implement Workplace Policy and Procedures
18. Communicate at Workplace
19. Perform Computer Application Skills
20. Manage Personal Finances
21. Mount Dish for Uplink / Downlink
22. Perform Tuning
23. Perform Troubleshooting
24. Conduct Site Survey
25. Contribute to Work Related Health and Safety (WHS) Initiatives
26. Analyze and Develop Workplace Policy and Procedures
27. Perform Advanced Communication
28. Develop Advance Computer Application Skills
29. Manage Human Resource Services
30. Implement Network Security
31. Plan Work

Possible available job opportunities available immediately and later in the future

Satellite Dish Installer are employed in the light engineering sector especially in Telecom sector. Experienced Satellite Dish Installer may advance through promotions with the same employer or by moving to more advanced positions with other employers. They can become:

- Domestic Satellite Dish Installer
- Industrial Satellite Dish Installer
- Satellite dish Technician
- Satellite dish supervisor

- Satellite installation technician
- Satellite dish Trainer
- Cable distributer,
- Internet Service Provider
- TV Network distributor,
- TV Technician
- work in Telecommunication.

Trainee entry level

- Middle (Grade 8) for level-1
- Level-1 for level-2
- Level-2 for level-3
- Level-3 for level-4

Minimum qualification for trainer

- Must hold DAE/Higher in (Electrical/Telecom/Electronics/Equivalent)
- Or at least level 4 qualification in **(Satellite Dish Installer)** with minimum 03 years of experience in relevant field.

Recommended trainer: trainee ratio

The recommended maximum trainer: trainee ratio for this program is 1 trainer for 20 trainees

Medium of instruction i.e. language of instruction

Instructions will be in Urdu/English/Local language.

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

This curriculum comprises of 31 modules. The recommended delivery time is 2400 hours.

- Delivery of the course can therefore be full time (4 hours a business day), 6 days a week, for 24 months (on average 26 working days a month) for each level. Training providers are at liberty to develop other models of delivery, including part-time and evening delivery. **OR**
- Delivery of the course can therefore be full time (5 hours a business day), 5 days a week, for 24 months (on average 22 working days a month). Training providers are at liberty to develop other models of delivery, including part-time and evening delivery.

The full structure of the course is as follows:

Module	Theory hours	Workplace hours	Total hours
Follow Work Health and Safety Policies	20	30	50
Understand the Workplace Policies and Procedures	30	20	50
Follow Basic Communication Skills	30	20	50
Operate Computer Functions	10	40	100
Demonstrate Basic Literacy Skills	10	40	50
Maintain Tools and Equipment	10	40	50
Maintain Personal Health and Safety	10	40	50
Communicate the Workplace Policy and Procedure	20	30	50
Perform Basic Communication	50	50	100
Perform Basic Computer Application	10	140	150
Develop Entrepreneurial Skills	50	100	150
Demonstrate Basic Numeracy Skills	10	40	50
Develop Basic Electrical/ Electronic Skills	30	120	150
Perform Cable Connection	10	90	100
Assemble Dish Antenna	20	180	200
Apply Work Health and Safety Practices (WHS)	10	20	30
Identify and Implement Workplace Policy and Procedures	5	15	20
Communicate at Workplace	5	15	20
Perform Computer Application Skills	10	40	50

Module	Theory hours	Workplace hours	Total hours
Manage Personal Finances	10	40	50
Mount Dish for Uplink / Downlink	10	40	50
Perform Tuning	10	140	150
Perform Troubleshooting	10	190	200
Conduct Site Survey	10	180	200
Contribute to Work Related Health and Safety (WHS) Initiatives	10	20	30
Analyze and Develop Workplace Policy and Procedures	10	40	50
Perform Advanced Communication	10	40	50
Develop Advance Computer Application Skills	10	40	50
Manage Human Resource Services	10	40	50
Implement Network Security	10	140	150
Plan Work	14	36	50

Sequence of the modules

This qualification is made up of 31 modules. A suggested distribution of these modules is presented overleaf. This is not prescriptive and training providers may modify this if they wish.

The following technical module will be followed as require for the training purpose.

Module 6

Module 13

Module 14

Module 15

Module 21

Module 22

Module 23

Module 24

Module 30

Module 31

Each module covers a range of learning components. These are intended to provide detailed guidance to teachers (for example the Learning Elements component) and give them additional support for preparing their lessons (for example the Materials Required component). The detail provided by each module will contribute to a standardized approach to teaching, ensuring that training providers in different parts of the country have clear information on what should be taught. Each module also incorporates the industrial demand of Pakistan that make this qualification unique to Pakistan's industry needs.

Summary – overview of the curriculum

Modules

Module: 0619001081 Develop Basic Electrical / Electronic Skills.

Objective of the Module: Objective of this module is to cover the skills and knowledge required to lay Electrical cables, perform single-phase AC Connection, Perform DC Connection, perform basic electric wiring and conduct wiring test.

Duration: 150hrs. Theory: 30hrs. Practice: 120 hrs.

Learning Unit	Learning Outcomes	Learning Elements	Duration	Material/Tools Required	Learning Place

LU1. Lay Electrical cables	**The trainee will be able to**
	1. Interpret electrical drawing/document
	2. Identify Electrical cables
	3. Lay Electrical cables
	4. Connect earthing.
		• Interpret electrical drawing/documents.
		  ○ Current path
		  ○ Layout drawing
		  ○ Wiring diagrams
		• Identify electrical cables (AC and DC cables)
		• Lay electrical cables (Underground/trench, Overhead/Cancatenary)
		• Demonstrate earthing
		  ○ Lighting arrester
		  ○ Equipment earth
		  ○ Electrical earth
		  ○ Electrostatic discharge
		Practice-1
		• Interpret current path.
		• Interpret layout drawings.
			Total 30 Hrs
			Theory: 6 Hrs
			Practical: 24 Hrs
				• Measuring tape
				• Insulated plier, insulated wire cutter, insulated screw driver set, VOM, Cable knife, Cable cutter, Solder iron, blow lamp, Insulation tape.
					Theory: Class/ Electrical Lab
					Practical:
					Electrical Lab

		• Interpret wiring diagram. • Apply wiring using current path. • Apply wiring layout diagrams. • Apply wiring as per dining room wiring. • Apply PVC wiring for Kitchen. • Apply open wiring for stare case.			
LU2. Perform single-phase AC Connection	**The trainee will be able to** 1. Select cable gauge 2. Select cables colors 3. Select tools and equipment 4. Connect cables 5. Insulate Joints	• Explain different types of cables • Demonstrate Selection of cables with respect to voltage and current • Demonstrate Classification of cables according to gauge. • Illustrate color coding of cables. • Demonstrate Classification of cable tools (hand tools/ knife, mechanical tools, wrenched knife) and equipment (VOM, MEGGER, earth tester) • Define cable joints • Explain how to Locate position for making joints. • Demonstrate different cable joints (straight joint, Britannia joint, cross joint) • Demonstrate LT (220 V ~ 380 V) voltage insulation on joints. • Demonstrate HT (11 KV) voltage insulation on joints. **Practice** • Apply SWG measurement • Apply AWG measurement. • Classify cable joints • Demonstrate color coding of cable. • Operate VOM. • Operate MEGGER.	**Total 30 Hrs** **Theory: 6 Hrs** **Practical: 24 Hrs**	• Measuring tape • Insulated plier, insulated wire cutter, insulated screw driver set, VOM, Cable knife, Cable cutter, Solder iron, blow lamp, Insulation tape. • AWG, SWG, Cable tables. • Multimeter/ VOM, Megger	Theory: Class/ Electrical Lab Practical: Electrical Lab

		• Operate earth tester • Demonstrate to insulate joints.			
LU3. Perform DC Connection	1. Select cable Gauge 2. Select cables colors 3. Connect cables 4. Insulate Joints	• Explain different types cables • Demonstrate Selection of cables with respect to voltage and current • Demonstrate Classification of cables according to gauge. • Illustrate color coding of cables. • Demonstrate Classification of cable tools (hand tools/ knife, mechanical tools, wrenched knife) and equipment (VOM, Megger, earth tester) • Define cable joints • Explain how to Locate position for making joints. • Demonstrate different cable joints (straight joint, Britannia joint, cross joint) • Apply low voltage DC insulation on joints (low frequency/ high frequency) **Practice** • Apply SWG, AWG etc. • Classify cable joints • Demonstrate color coding of cable. • Operate (VOM, MEGGER, earth tester) • Demonstrate to insulate joints. • Apply LT insulation tape on joint. • Apply HT tape on joint. • Apply Sleve on simple solder joint.	**Total 30 Hrs** **Theory: 6 Hrs** **Practical: 24 Hrs**	• Measuring tape • Insulated plier, insulated wire cutter, insulated screw driver set, Cable knife, Cable cutter, Solder iron, blow lamp, Insulation tape. • AWG, SWG, Cable tables. • Multimeter/VOM, Megger	Theory: Class/ Electrical Lab Practical: Electrical Lab

LU 4 Perform Basic Electrical wiring	1. Measure cables as per requirement 2. Connect cables 3. Perform joints 4. Insulate Joints	• Demonstrate cables selection by length as per requirement. • Demonstrate cables selection as per electric voltage size. • Demonstrate cables selection as per current requirement. • Demonstrate Selection of connectors as per load size and voltage. • Demonstrate following joints in lab (straight joint, Britannia joint, cross joint). • Explain insulations, solid (wood, cloth, synthetic tape). • List insulation liquids (kerosene oil, bitumen, transformer oil). • List insulation gaseous (inert gas, SF6, Dry air).	**Total 30 Hrs** **Theory: 6 Hrs** **Practical: 24 Hrs**	• Measuring tape • Insulated plier, insulated wire cutter, insulated screw driver set, VOM, Cable knife, Cable cutter, Solder iron, blow lamp, Insulation tape. • Measuring tape. • Wires of different size or gauges. • Insulation tape	Theory: Class/ Electrical Lab Practical: Electrical Lab
		Practice • Demonstrate laying of cable on wall mounted wooden board. • Select a cable for 20 ampere load of 220 volts • Select a cable for 20 ampere load on 380 volts • Make straight joint • Make T-Joint • Make Britannia joint • Apply LV insulations on Britannia joint • Apply HV insulation on Britannia joint			

LU 5
 	
Conduct wiring Test
	1. Operate multi-meter for voltage and current
	2. Perform continuity test
	3. Perform polarity test
	4. Perform earthing test
	5. Perform insulation test
	6. Record test results
		• Define Electrical tests
		• Demonstrate Categories of Electrical test
		• Demonstrate Selection of electrical test
		• Demonstrate electrical tests
		  ○ continuity tests,
		  ○ insulation tests,
		  ○ earthing tests
		  ○ polarity tests.
		• Demonstrate how to record and examine test results.
		
		Practice
		• Demonstrate continuity test with the help of megger of a house circuit.
		• Demonstrate insulation test with the help of Megger of a house circuit
		• Demonstrate polarity test with the help of Megger of a house circuit.
		• Demonstrate earthing test with the help of Megger/earth tester of a house circuit.
		• Find fault with the help of phase tester.
		• Find fault with the help of lamp taster.
		• Find fault with the help of series board.
		• Find fault by using VOM.
			Total 30 Hrs
			
			Theory: 6 Hrs
			
			Practical: 24 Hrs
				• Measuring tape
				• Insulated plier, insulated wire cutter, insulated screw driver set, VOM, Cable knife, Cable cutter, Solder iron, blow lamp, Insulation tape.
				• Megger
				• earth tester
				• phase tester
				• Lamp tester
					Theory: Class/ Electrical Lab
					
					Practical:
					
					Electrical Lab

Module : 0619001082 Perform Cable connection

Objective of the Module: The objective of this module is to provide skills and knowledge related to Fix Splitter, Lay Coaxial Cables, Fix/Mount Diseqc Switch, Make Coaxial Cable Connections and Connect Input/ Output Cables

Duration: 100hrs. Theory: 10 hrs. Practice: 90 hrs.

Learning Unit	Learning Outcomes	Learning Elements	Duration	Material/Tools Required	Learning Place
LU1 Fix Splitter	**You will be able to** 1. Select splitter 2. Make IF connecter with coaxial cable 3. Mount splitter with screw 4. Connect in/out cable with splitter.	1. Demonstrate splitter types a. 2 ports splitter b. 4 port splitter 2. Explain diagram of splitter and IF connector ssembly. 3. Explain coaxial's mesh and inner core . 4. Make connectors as per design 5. Install splitter as per design 6. Connect cable form LNB to splitter input port. 7. Connect receiver cables to the output ports of splitter **Practical-1** Install 4 ports Splitter in Lab /field as per plan **Practical-2** Make IF connectors as per design **Practical-3** Connect input/ output cables with splitter	**Total 20 Hrs** **Theory: 2 Hrs** **Practical: 18 Hrs**	• Steel roll/Steel wire • Gloves • Electric Drill Machine • Grip plier • Hacksaw • Thimble plier • Hammers • Vernier caliper • Measuring tape • Wire gauge • Micrometers • Wire stripper • Nose plier • Phase tester • Multi-meter • Plier • Wire Tester • LAN Tester • Screw driver set • Side cutter • Coaxial Cable Stripper • Crimping Tool • Cable Compression Tool	Practical: Lab/ Field

LU2 Lay Coaxial Cables	**You will be able to** 1. Measure cables as per route 2. Select cable 3. Perform ducting/ piping 4. Drill holes if required 5. Lay cables as per standard.	1. Explain basic measuring unit(feet,inch,meter) 2. Examine cable layout(cable route toward receiver) 3. Measure cable length from dish to receiver 4. Explain basic knowledge of ducting/piping 5. Perform ducting 6. Explain drilling principal 7. Lay cables **Practice-1** Measure cable length as per route. Install duct if require and lay cable	**Total 20 Hrs** **Theory: 2 Hrs** **Practical: 18 Hrs**	• Steel roll/Steel wire • Gloves • Electric Drill Machine • Grip plier • Hacksaw • Thimble plier • Hammers • Vernier caliper • Measuring tape • Wire gauge • Micrometers • Wire stripper • Nose plier • Phase tester • Multi-meter • Plier • Wire Tester • LAN Tester • Screw driver set • Side cutter • Coaxial Cable Stripper • Crimping Tool • Cable Compression Tool	Field/ Lab

LU3 **Fix/Mount Diseqc Switch**	**You will be able to** 1. Select Diseqc switch. 2. Make IF connecter with coaxial cable 3. Mount Diseqc switch with screw 4. Connect in/out cable with Diseqc switch.	1. Explain Diseqc switch 2. Explain LNB and its types a. KU band b. C band 3. Make IF connector 4. Explain safety precaution of Diseqc Switch 5. Install Diseqc Switch IN port with LNB 6. Connect Diseqc switch OUT port with Reciver **Practice-1** Install Diseqc switch with LNB and reciver as per given requirments	**Total 20 Hrs** **Theory: 2 Hrs** **Practical: 18 Hrs**	• Steel roll/Steel wire • Gloves • Electric Drill Machine • Grip plier • Hacksaw • Thimble plier • Hammers • Vernier caliper • Measuring tape • Wire gauge • Micrometers • Wire stripper • Nose plier • Phase tester • Multi-meter • Plier • Wire Tester • LAN Tester • Screw driver set • Side cutter • Coaxial Cable Stripper • Crimping Tool • Cable Compression Tool	Field/ Lab

LU 4 Make Coaxial Cable Connections	**You will be able to** 1. Make IF connecter with all coaxial cable 2. Connect one end of cable with LNB/LNA. 3. Connect other end in the input of Diseqc switch/Splitter. 4. Connect one end of the cable at the output of Diseqc switch/Splitter. **5.** Connect other end of the cable with input of satellite receiver.	1. Explain LNB and its function 2. Explain LNA and its function 3. Explain Diseqc Switch Function 4. Explain splitter function 5. Make IF Connector 6. Connect LNB/LNA and Diseqc Switch **Practice-1** Install Diseqc switch with LNB and 4 receivers using 4 port splitters	**Total 20 Hrs** **Theory: 2 Hrs** **Practical: 18 Hrs**	• Steel roll/Steel wire • Gloves • Electric Drill Machine • Grip plier • Hacksaw • Thimble plier • Hammers • Vernier caliper • Measuring tape • Wire gauge • Micrometers • Wire stripper • Nose plier • Phase tester • Multi-meter • Plier • Wire Tester • LAN Tester • Screw driver set • Side cutter • Coaxial Cable Stripper • Crimping Tool • Cable Compression Tool	Field/ Lab
LU 5 Connect Input/ Output Cables	1. Select audio, video and HDMI cables as per	1. Explain HDMI cable functions 2. Explain audio / video cables function 3. Demonstrate input/output ports on receiver 4. Explain power supply functions 5. Connect power supply	**Total 20 Hrs** **Theory: 2 Hrs**	• Steel roll/Steel wire • Gloves • Electric Drill Machine	Field/ Lab

	standard 2. Identify input/output ports of Display unit and Receiver 3. Connect output of Receiver with input of Display unit **4.** Connect power cables of Receiver and display unit with power supply	with receiver and display **Practice-1** Install audio/video cables with receiver and display	**Practical: 18 Hrs**	• Grip plier • Hacksaw • Thimble plier • Hammers • Vernier caliper • Measuring tape • Wire gauge • Micrometers • Wire stripper • Nose plier • Phase tester • Multi-meter • Plier • Wire Tester • LAN Tester • Screw driver set • Side cutter • Coaxial Cable Stripper • Crimping Tool • Cable Compression Tool	

Module: 0619001083 Assemble Dish Antenna

Objective of the Module: The objective of this module is to provide skills and knowledge related to Assemble Dish Stand, Combine Dish Pieces, Install Actuator, Mount LNB Support Arm for Downlink and Mount LNA Support Arm for Uplink

Duration: 200hrs. Theory: 20 hrs. Practice: 180 hrs.

Learning Unit	Learning Outcomes	Learning Elements	Duration	Material/Tools Required	Learning Place

LU1 Assemble Dish Stand	**You will be able to**
	1. Select tools and equipment
	2. Select dish stand as per size requirement
	3. Identify parts of stand
	4. Assemble stand of dish antenna as per drawing
		• Explain tool required for assembly of dish antenna stand
		• Explain types of dish stand
		• Demonstrate Selection of tools as per dish antenna stand assembly
		• Brief components of dish antenna stand
		  ○ Actuator
		  ○ Elevation rod
		  ○ And more…
		• Explain assembly diagram of stand
		• Demonstrate assembly of dish antenna stand as per design.
		Practice-1
		Assemble 8 feet dish antenna stand in lab / site as per given diagram.
			Total 40 Hrs
			Theory: 4 Hrs
			Practical: 36 Hrs
				• Screw driver set
				• L-Key
				• Socket set
				• Drill Machine
				• Hammer
				• Pliers
				• Hack saw
				• Drill bits
				• Measuring tape
				• Spirit level
				• Satellite finder
				• Compass
				• Multi-meter
					Practical: Lab/ Field

LU2
Combine Dish Pieces
	You will be able to
	1. Identify pieces of dish antenna
	2. Follow sequence of dish pieces as per drawing
	3. Assemble dish pieces as per sequence
		• Explain different parts of dish antenna
		  ○ Feed horn
		  ○ Actuator Rod
		  ○ Elevation Rod
		  ○ And More..
		• Demonstrate how to follow sequence of dish pieces as per given drawing.
		Practice-1
		Assemble dish antenna as per given design in Lab / site
			Total 40 Hrs
			Theory: 4 Hrs
			Practical: 36 Hrs
				• Screw driver set
				• L-Key
				• Socket set
				• Drill Machine
				• Hammer
				• Pliers
				• Hack saw
				• Drill bits
				• Measuring tape
				• Spirit level
				• Satellite finder
				• Compass
					Field/ Lab

				Multi-meter	

LU3
 	
Install Actuator.
	You will be able to
	8. Identify horizontal/vertical actuators
	9. Adjust arc of actuator between North and South
	10. Adjust arc of actuator between East and West
	11. Install limit switches
		• Explain functions and types of actuators
		  ○ Static
		  ○ Motorized
		• Demonstrate function of actuator arc
		  ○ Vertical/ Horizontal movements
		• Demonstrate adjustment of actuator arc.
		
		Practice-1
		Install and adjust actuator arc between North and south/ East and west.
			Total 40 Hrs
			
			Theory: 4 Hrs
			
			Practical: 36 Hrs
				• Screw driver set
				• L-Key
				• Socket set
				• Drill Machine
				• Hammer
				• Pliers
				• Hack saw
				• Drill bits
				• Measuring tape
				• Spirit level
				• Satellite finder
				• Compass
				Multi-meter
					Field/ Lab

LU 4 Mount LNB Support Arm for Downlink	**You will be able to** 1. Identify LNB support arm for downlink 2. Mount LNB supports arm with satellite dish 3. Fix feed-horn at the top of support arms 4. Fix LNB in feed-horn as per focal length **5.** Fix dual feed-horn for C and Ku bands	• Explain different types of band • Explain LNB types (C band, Ku band) • Explain function of LNB support arms • Demonstrate how to fix feed horn at the top of support arms • Demonstrate how to Mount LNB support arm on dish antenna as per focal length • Demonstrate fixing of dual feed horn for c band (5150~5750) and ku (9750 ~ 11550) bands and other bands as per requirement **Practice-1** Mount LNB Support Arm for Downlink	**Total 40 Hrs** **Theory: 4 Hrs** **Practical: 36 Hrs**	• Screw driver set • L-Key • Socket set • Drill Machine • Hammer • Pliers • Hack saw • Drill bits • Measuring tape • Spirit level • Satellite finder • Compass Multi-meter	Field/ Lab

LU 5 Mount LNA Support Arm for Uplink	**You will be able to** 1. Identify LNA support arm for uplink 2. Mount LNA supports arm with satellite dish **3.** Fix feed-horn at the top of support arms **4.** Fix LNA in feed-horn as per focal length **5.** Connect LNA with transmitter though wave guide	1. Explain function of LNA support arms and types 2. Demonstrate feed horn and focal length 3. Explain LNA types 4. Demonstrate Mount LNA support arm on dish antenna 5. Install feed horn on LNA support arms. 6. Fix LNA in feed horn **Practice-1** Mount LNA Support Arm for Downlink	**Total 40 Hrs** **Theory: 4 Hrs** **Practical: 36 Hrs**	• Screw driver set • L-Key • Socket set • Drill Machine • Hammer • Pliers • Hack saw • Drill bits • Measuring tape • Spirit level • Satellite finder • Compass Multi-meter	Field/ Lab

General assessment guidance for *Satellite Dish Installer*

Good practice in Pakistan makes, use of sessional and final assessments, the basis of which is described below. Good practice by vocational training providers in Pakistan, is to use a combination of these sessional and final assessments, combined to produce the final qualification result.

Sessional assessment is going on all the time. Its purpose is to provide feedback on what students are learning:

- To the student: to identify achievement and areas for further work
- To the teacher: to evaluate the effectiveness of teaching to date, and to focus future plans.

Assessors need to devise sessional assessments for both theoretical and practical work. Guidance is provided in the assessment strategy

Final assessment is the assessment, usually on completion of a course or Level, which says whether or not the student has "passed". It is – or should be – undertaken with reference to all the objectives or outcomes of the course, and is usually fairly formal. Considerations of security – ensuring that the student who gets the credit is the person who did the work – assume considerable importance in final assessment.

Methods of assessment

For lessons with a high quantity of theory, written or oral tests related to learning outcomes and/ or learning content can be conducted. For workplace lessons, assessment can focus on the quality of planning the related process, the quality of executing the process, the quality of the product and/or evaluation of the process.

Methods include direct assessment, which is the most desirable form of assessment. For this method, evidence is obtained by direct observation of the student's performance.

Examples for direct assessment of a Satellite Dish Installer Lev-1-4 include:

- Work performances, for example installing pipeline support system and pipelines with required safety precautions
- Demonstrations, for example demonstrating to Assemble the dish for specific stand.
- Direct questioning, where the assessor would ask the student why he is considering the angle and why he is applying specific cable connection for dish antenna
- Paper-based tests, such as multiple choice or short answer questions on health & safety, Communication skill, mount dish for uplink/ downlink and tuning etc.

Indirect assessment is the method used where the performance could not be watched and evidence is gained indirectly.

Examples for indirect assessment of a Satellite Dish Installer Lev-1-4 include:

- Work products, such as a mounted dish antenna
- Completed site survey report
- Workplace documents, such as note book or practical activity journal

Indirect assessment should only be a second choice. (In some cases, it may not even be guaranteed that the work products were produced by the person being assessed.)

Principles of assessment

All assessments must meet all the following principles, regardless of the method of assessment used to evidence learners' attainment.

All assessments must produce outcomes that are:

i. valid: the assessment evidence meets all assessment criteria and all learning outcomes
ii. authentic: all the work is the learner's own
iii. reliable: assessment evidence is consistent and generates outcomes that would be replicated were the assessment repeated
iv. current: assessment evidence is up-to-date
v. sufficient: enough work is available to justify the credit value, and to enable a consistent and reliable judgement about the learner's achievement
vi. comparable: all assessment evidence is comparable in standard between assessments within a unit/qualification, and between learners of the same level
vii. manageable: all assessment places reasonable demands on all learners

viii. fair and minimize bias: assessments are fair to all learners irrespective of their characteristics (for example, age, gender, etc)

Assessment strategy for Satellite Dish Installer Lev-1-4 Curriculum

This curriculum consists of 31 modules:

Module-1	Follow Work Health and Safety Policies
Module-2	Understand the Workplace Policies and Procedures
Module-3	Follow Basic Communication Skills
Module-4	Operate Computer Functions
Module-5	Demonstrate Basic Literacy Skills
Module-6	Maintain Tools and Equipment
Module-7	Maintain Personal Health and Safety
Module-8	Communicate the Workplace Policy and Procedure
Module-9	Perform Basic Communication
Module-10	Perform Basic Computer Application
Module-11	Develop Entrepreneurial Skills
Module-12	Demonstrate Basic Numeracy Skills
Module-13	Develop Basic Electrical/ Electronic Skills
Module-14	Perform Cable Connection
Module-15	Assemble Dish Antenna
Module-16	Apply Work Health and Safety Practices (WHS)
Module-17	Identify and Implement Workplace Policy and Procedures
Module-18	Communicate at Workplace
Module-19	Perform Computer Application Skills

Module-20	Manage Personal Finances
Module-21	Mount Dish for Uplink / Downlink
Module-22	Perform Tuning
Module-23	Perform Troubleshooting
Module-24	Conduct Site Survey
Module-25	Contribute to Work Related Health and Safety (WHS) Initiatives
Module-26	Analyze and Develop Workplace Policy and Procedures
Module-27	Perform Advanced Communication
Module-28	Develop Advance Computer Application Skills
Module-29	Manage Human Resource Services
Module-30	Implement Network Security
Module-31	Plan Work

Sessional or Developmental assessment

The sessional/developmental assessment shall be conducted after completion of each module in two parts: theoretical assessment and practical assessment.

Theoretical assessment for all learning modules must consist of a written paper lasting at least 30 minutes per module. This can be a combination of multiple choice and short answer questions.

For practical assessment, all procedures and methods for the modules must be assessed on a sessional basis. Guidance is provided below under Planning for assessment.

Final assessment

Final assessment shall also be in two parts: theoretical assessment and practical assessment.

For the final practical assessment, each student shall be assessed over a period of 4-5 hours session. During this period, each student must be assessed on his ability to perform a complete job for all Technical and functional modules.

Generic modules shall be assessed comprising with other modules at the time of final assessment. Practical work for this module could be assessed on a sessional basis.

Planning of assessment.

Plaining of assessment will plan by the assessment Centre as per CBT/A policy. But for development assessment it could be plan by the Trainer during the course.

As for final assessment as concern, certified assessor must be contacted and the assessor must meet the needs of the students and the training provider. For example, where two assessors are conducting the assessment, there must be a maximum of five students per assessor. In this example, a group of 20 students shall therefore require assessments to be carried out over a four-day period. For a group of only 10 students, assessments would be carried out over a two-day period only or it could be formulated as per CBT/A Centre policies.

Complete list of tools and equipment

S. No	Description	Quantity
1	Blower	As per Requirement
2	Chisel	As per Requirement
3	Drill bits	As per Requirement
4	Ellen key set	As per Requirement
5	Files	As per Requirement
6	Glasses (goggles)	As per Requirement
7	Gloves	As per Requirement
8	Grip plier	As per Requirement
9	Hacksaw	As per Requirement
10	Hammers	As per Requirement
11	Marking punch	As per Requirement
12	Measuring tape	As per Requirement
13	Micrometers	As per Requirement
14	Nose plier	As per

		Requirement
15	Open spanner set	As per Requirement
16	Phase tester	As per Requirement
17	Plier	As per Requirement
18	Ring spanner set	As per Requirement
19	Scissors	As per Requirement
20	Screw driver set	As per Requirement
21	Screw wrench	As per Requirement
22	Side cutter	As per Requirement
23	Crimping Tool	As per Requirement
24	Solder iron	As per Requirement
25	Spanner box	As per Requirement
26	Steel roll/Steel wire	As per Requirement
27	Sucker	As per Requirement
28	Silicone Gun	As per Requirement
29	Spirit Level	As per Requirement
30	Electric Drill Machine	As per Requirement
31	Hand Grinding Machine	As per Requirement
32	Thimble plier	As per Requirement
33	Tongs (sunny)	As per Requirement
34	Vernier caliper	As per Requirement
35	Wire gauge	As per Requirement

36	Wire stripper	As per Requirement
37	Adjustable Wrench	As per Requirement
38	Satellite Finder	As per Requirement
39	Multi-meter	As per Requirement
40	Digital Compass	As per Requirement
41	Wire Tester	As per Requirement
42	LAN Tester	As per Requirement
43	Rivet Gun	As per Requirement
44	Emergency lamp	As per Requirement
45	Coaxial Cable Stripper	As per Requirement
46	Cable Compression Tool.	As per Requirement
47	Air compressors.	As per Requirement
48	Clamp meter.	As per Requirement
49	Bench voice.	As per Requirement
50	Drill machine.	As per Requirement
51	Dryer.	As per Requirement
52	Hand grinding machine	As per Requirement

S. No.	Items
1.	Different Tags and Locks
2.	Process SOPs
3.	Equipment Maintenance Manuals
4.	Log Book
5.	Handbooks
6.	Design Books/ Sheets
7.	Pencils
8.	Erasers
9.	Pencil Sharpeners
10.	Paper Cutter
11.	Scissors
12.	Color Pencils
13.	White chart paper
14.	Brown Sheets
15.	White Board Markers (red, blue, green, black)
16.	Permanent markers (black)
17.	File covers

Credit values

The credit value of the National Certificate Level 1-4 in Satellite Dish Installer is defined by estimating the amount of time/ instruction hours required to complete each competency unit and competency standard. The NVQF uses a standard credit value of 1 credit = 10 hours of learning (Following TVET guidelines.

The credit values are as follows:

Code	Name of Duty or (Module)	Category	Estimated Hours	Credit
102200843	Comply with Work Health and Safety Policies	Generic	30	3
041700838	Obey the Workplace Policies and Procedures	Generic	20	2
001100850	Follow Basic Communication Skills (General)	Generic	50	5
061100855	Operate Computer Functions(General)	Generic	50	5
101200828	Demonstrate Basic Literacy Skills	Generic	50	05
000000000	Maintain Tools and Equipment	Technical	50	05
102200844	Comply Personal Health and Safety Guidelines	Generic	30	3
041700839	Communicate the Workplace Policy and Procedure	Generic	20	2
001100851	Perform Basic Communication (Specific)	Generic	30	3
061100856	Perform Basic Computer Application (Specific)	Generic	40	4
101200831	Demonstrate Basic Numeracy Skills	Functional	20	02
000000000	Develop Basic Electrical/ Electronic Skills (Naseer sab)	Technical	150	15
000000000	Perform Cable Connection	Technical	100	10
000000000	Assemble Dish Antenna	Technical	200	20
102200846	Apply Work Health and Safety Practices (WHS)	Generic	30	3
041700840	Identify and Implement Workplace Policy and Procedures	Generic	20	2
001100852	Communicate at Workplace	Generic	30	3
061100858	Perform Computer Application Skills	Generic	40	4

041300867	Manage Personal Finances	Generic	30	3
000000000	Mount Dish for Uplink / Downlink	Technical	50	5
000000000	Perform Tuning	Technical	150	15
000000000	Contribute to Work Related Health and Safety (WHS) Initiatives	Generic	30	3
000000000	Analyze and Develop Workplace Policy and Procedures	Generic	30	3
000000000	Perform Advanced Communication	Generic	30	3
000000000	Develop Advance Computer Application Skills	Generic	40	4
000000000	Manage Human Resource Services	Generic	20	2
041300860	Develop Entrepreneurial Skills	Generic	30	3
000000000	Implement Network Security	Technical	150	15
000000000	Plan Work	Technical	50	5
000000000	Perform Troubleshooting	Technical	200	20
000000000	Conduct Site Survey	Technical	200	20

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