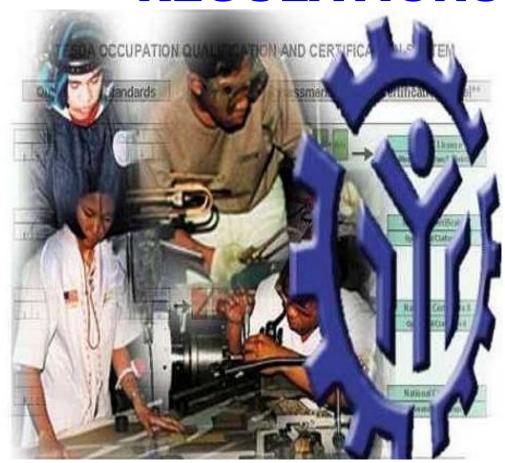# TRAINING REGULATIONS

Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) NC II

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) SECTOR (TELECOMMUNICATION INDUSTRY)

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY

East Service Road, South Superhighway, Taguig City, Metro Manila

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**TELECOM OSP AND SUBSCRIBER LINE INSTALLATION
(Copper Cable/POTS and DSL)**

NATIONAL CERTIFICATE LEVEL II

TRAINING REGULATIONS FOR
Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) NC II

**Section 1   Telecom OSP and Subscriber Line Installation
(Copper Cable/POTS and DSL) NC II QUALIFICATION**

The **Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) NC II** Qualification consists of competencies that a person must possess to splice copper cable, install outside-plant (OSP) and subscriber line for plain old telephone system (POTS) and digital subscriber line (DSL).

Specifically it covers installation of pole hardware, cable terminal, line wire and accessories; installation of main copper cable; splicing/jointing cable terminal to main aerial/underground copper cable splices; basic troubleshooting and correction on cable fault and error; installation POTS subscriber line; and installation of digital subscriber lines.

This Qualification is packaged from the competency map of the Electronics and Communication Industry (Service sector) as shown in Annex A.

The units of competency comprising this qualification include the following:

Code	BASIC COMPETENCIES
5 00 311 1 05	Participate in workplace communication
5 00 311 1 06	Work in team environment
5 00 311 1 07	Practice career professionalism
5 00 311 1 08	Practice occupational health and safety procedures

Code	COMMON COMPETENCIES
ICT 315 2 02	Apply Quality Standards
ICT 311 2 03	Operate a Personal Computer

Code	CORE COMPETENCIES
ICT 724605	Install pole hardware, cable terminal, line wire and accessories
ICT 724606	Perform main cable installation
ICT 724607	Splice/Joint cable terminal to main aerial and/or underground copper cable splice
ICT 724608	Perform basic troubleshooting and correction of cable fault and error
ICT 724609	Install POTS subscriber line
ICT 724610	Install Digital Subscriber Line (DSL)

A person who has achieved this Qualification is competent to be:

- ➢ Telephone and Broadband Technician
- ➢ Copper Cable Technician

SECTION 2: **COMPETENCY STANDARDS**

This section gives the details of the contents of the basic, common, and core units of competency required for **Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) NC II.**

BASIC COMPETENCIES

UNIT OF COMPETENCY :   **PARTICIPATE IN WORKPLACE COMMUNICATION**

UNIT CODE   :   **500311105**

UNIT DESCRIPTOR   :   This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements.

ELEMENT	PERFORMANCE CRITERIA *Bold & Italicized* fonts are elaborated in the Range of Variables
1. Obtain and convey workplace information	1.1 Specific and relevant information is accessed from ***appropriate sources*** 1.2 Effective questioning , active listening and speaking skills are used to gather and convey information 1.3 Appropriate ***medium*** is used to transfer information and ideas 1.4 Appropriate non- verbal communication is used 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed 1.6 Defined workplace procedures for the location and ***storage*** of information are used 1.7 Personal interaction is carried out clearly and concisely
2. Participate in workplace meetings and discussions	2.1 Team meetings are attended on time 2.2 Own opinions are clearly expressed and those of others are listened to without interruption 2.3 Meeting inputs are consistent with the meeting purpose and established ***protocols*** 2.4 ***Workplace interactions*** are conducted in a courteous manner 2.5 Questions about simple routine workplace procedures and matters concerning working conditions of employment are asked and responded to 2.6 Meetings outcomes are interpreted and implemented
3. Complete relevant work related documents	3.1 Range of ***forms*** relating to conditions of employment are completed accurately and legibly 3.2 Workplace data is recorded on standard workplace forms and documents 3.3 Basic mathematical processes are used for routine calculations 3.4 Errors in recording information on forms/ documents are identified and properly acted upon 3.5 Reporting requirements to supervisor are completed according to organizational guidelines

RANGE OF VARIABLES

VARIABLE	RANGE
1. Appropriate sources	1.1. Team members 1.2. Suppliers 1.3. Trade personnel 1.4. Local government 1.5. Industry bodies
2. Medium	2.1. Memorandum 2.2. Circular 2.3. Notice 2.4. Information discussion 2.5. Follow-up or verbal instructions 2.6. Face to face communication
3. Storage	3.1. Manual filing system 3.2. Computer-based filing system
4. Forms	4.1. Personnel forms, telephone message forms, safety reports
5. Workplace interactions	5.1. Face to face 5.2. Telephone 5.3. Electronic and two way radio 5.4. Written including electronic, memos, instruction and forms, non-verbal including gestures, signals, signs and diagrams
6. Protocols	6.1. Observing meeting 6.2. Compliance with meeting decisions 6.3. Obeying meeting instructions

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate:
	1.1. Prepared written communication following standard format of the organization
	1.2. Accessed information using communication equipment
	1.3. Made use of relevant terms as an aid to transfer information effectively
	1.4. Conveyed information effectively adopting the formal or informal communication
2. Required Knowledge and Attitude	2.1. Effective communication
	2.2. Different modes of communication
	2.3. Written communication
	2.4. Organizational policies
	2.5. Communication procedures and systems
	2.6. Technology relevant to the enterprise and the individual's work responsibilities
3. Required Skills	3.1. Follow simple spoken language
	3.2. Perform routine workplace duties following simple written notices
	3.3. Participate in workplace meetings and discussions
	3.4. Complete work related documents
	3.5. Estimate, calculate and record routine workplace measures
	3.6. Basic mathematical processes of addition, subtraction, division and multiplication
	3.7. Ability to relate to people of social range in the workplace
	3.8. Gather and provide information in response to workplace Requirements
4. Resource Implications	4.1. Fax machine
	4.2. Telephone
	4.3. Writing materials
	4.4. Internet
5. Methods of Assessment	5.1. Direct Observation
	5.2. Oral interview
	5.3. Written test
6. Context for Assessment	6.1. Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY: **WORK IN TEAM ENVIRONMENT**

UNIT CODE **:** **500311106**

UNIT DESCRIPTOR **:** This unit covers the skills, knowledge and attitudes to identify role and responsibility as a member of a team.

ELEMENT	PERFORMANCE CRITERIA *Bold & Italicized* fonts are elaborated in the Range of Variables
1. Describe team role and scope	1.1. The *role and objective of the team* is identified from available *sources of information* 1.2. Team parameters, reporting relationships and responsibilities are identified from team discussions and appropriate external sources
2. Identify own role and responsibility within team	2.1. Individual role and responsibilities within the team environment are identified 2.2. Roles and responsibility of other team members are identified and recognized 2.3. Reporting relationships within team and external to team are identified
3. Work as a team member	3.1. Effective and appropriate forms of communications used and interactions undertaken with team members who contribute to known team activities and objectives 3.2. Effective and appropriate contributions made to complement team activities and objectives, based on individual skills and competencies and *workplace context* 3.3. Observed protocols in reporting using standard operating procedures 3.4. Contribute to the development of team work plans based on an understanding of team's role and objectives and individual competencies of the members.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Role and objective of team	1.1. Work activities in a team environment with enterprise or specific sector 1.2. Limited discretion, initiative and judgement maybe demonstrated on the job, either individually or in a team environment
2. Sources of information	2.1. Standard operating and/or other workplace procedures 2.2. Job procedures 2.3. Machine/equipment manufacturer's specifications and instructions 2.4. Organizational or external personnel 2.5. Client/supplier instructions 2.6. Quality standards 2.7. Health, safety and environmental standards
3. Workplace context	3.1. Work procedures and practices 3.2. Conditions of work environments 3.3. Legislation and industrial agreements 3.4. Standard work practice including the storage, safe handling and disposal of chemicals 3.5. Occupational Health Safety, environmental, housekeeping and quality guidelines

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Operated in a team to complete workplace activity 1.2. Worked effectively with others 1.3. Conveyed information in written or oral form 1.4. Selected and used appropriate workplace language 1.5. Followed designated work plan for the job 1.6. Reported outcomes
2. Required Knowledge and Attitude	2.1. Communication process 2.2. Team structure 2.3. Team roles 2.4. Group planning and decision making
3. Required Skills	3.1. Communicate appropriately, consistent with the culture of the workplace 3.2. Participate in workplace discussion 3.3. Comply with organization work requirements
4. Resource Implications	The following resources **MUST** be provided: 4.1. Access to relevant workplace or appropriately simulated environment where assessment can take place 4.2. Materials relevant to the proposed activity or tasks 4.3. Communication and work tools
5. Methods of Assessment	Competency may be assessed through: 5.1. Observation of the individual member in relation to the work activities of the group 5.2. Observation of simulation and or role play involving the participation of individual member to the attainment of organizational goal 5.3. Case studies and scenarios as a basis for discussion of issues and strategies in teamwork
6. Context for Assessment	6.1. Competency may be assessed in workplace or in a simulated workplace setting 6.2. Assessment shall be observed while task are being undertaken individually

UNIT OF COMPETENCY: **PRACTICE CAREER PROFESSIONALISM**

UNIT CODE   :   **500311107**

UNIT DESCRIPTOR   :   This unit covers the knowledge, skills and attitudes in promoting career growth and advancement.

ELEMENT	PERFORMANCE CRITERIA *Bold & Italicized* fonts are elaborated in the Range of Variables
1. Integrate personal objectives with organizational goals	1.1. Personal growth and work plans are pursued towards improving the qualifications set for the profession 1.2. Intra- and interpersonal relationships are maintained in the course of managing oneself based on performance *evaluation* 1.3. Commitment to the organization and its goal is demonstrated in the performance of duties
2. Set and meet work priorities	2.1. Competing demands are prioritized to achieve personal, team and organizational goals and objectives. 2.2. *Resources* are utilized efficiently and effectively to manage work priorities and commitments 2.3. Practices along economic use and maintenance of equipment and facilities are followed as per established procedures
3. Maintain professional growth and development	3.1. *Trainings and career opportunities* are identified and availed of based on job requirements 3.2 *Recognitions* are sought/received and demonstrated as proof of career advancement 3.3 *Licenses and/or certifications* relevant to job and career are obtained and renewed every 3 years

RANGE OF VARIABLES

VARIABLE	RANGE
1. Evaluation	1.1 Performance Appraisal 1.2 Psychological Profile 1.3 Aptitude Tests

2. Resources	2.1 Human
	2.2 Financial
	2.3 Technology
	    2.3.1 Hardware
	    2.3.2 Software

3. Trainings and career opportunities	3.1 Participation in training programs
	    3.1.1 Technical
	    3.1.2 Supervisory
	    3.1.3 Managerial
	    3.1.4 Continuing Education
	3.2 Serving as Resource Persons in conferences and workshops

4. Recognitions	4.1 Recommendations 4.2 Citations 4.3 Certificate of Appreciations 4.4 Commendations 4.5 Awards 4.6 Tangible and Intangible Rewards
5. Licenses and/or certifications	5.1 National Certificates 5.2 Certificate of Competency 5.3 Support Level Licenses 5.4 Professional Licenses

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Attained job targets within key result areas (KRAs) 1.2 Maintained intra - and interpersonal relationship in the course of managing oneself based on performance evaluation 1.3 Completed trainings and career opportunities which are based on the requirements of the industries 1.4 Acquired and maintained licenses and/or certifications according to the requirement of the qualification
2. Required Knowledge and Attitude	2.1 Work values and ethics (Code of Conduct, Code of Ethics, etc.) 2.2 Company policies 2.3 Company-operations, procedures and standards 2.4 Fundamental rights at work including gender sensitivity 2.5 Personal hygiene practices
3. Required Skills	3.1 Application of outside plant safety practices 3.2 Intra and Interpersonal skills 3.3 Communication skills
4. Resource Implications	The following resources **MUST** be provided: 4.1 Workplace or assessment location 4.2 Case studies/scenarios 4.3 Standard tools/equipment
5. Methods of Assessment	Competency may be assessed through: 5.1 Portfolio Assessment 5.2 Interview 5.3 Simulation/Role-plays 5.4 Observation 5.5 Third Party Reports 5.6 Exams and Tests
6. Context for Assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT OF COMPETENCY	:	**PRACTICE OCCUPATIONAL HEALTH AND SAFETY PROCEDURES**
UNIT CODE	:	**500311108**
UNIT DESCRIPTOR	:	This unit covers the knowledge, skills and attitudes required to comply with regulatory and organizational requirements for occupational health and safety.

ELEMENT	PERFORMANCE CRITERIA *Bold & Italicized* fonts are elaborated in the Range of Variables
1. Identify hazards and risks	1.1 *Safety regulations* and workplace safety and hazard control practices and procedures are clarified and explained based on organization procedures 1.2 *Hazards/risks* in the workplace and their corresponding indicators are identified to minimize or eliminate risk to co-workers, workplace and environment in accordance with organization procedures 1.3 *Contingency measures* during workplace accidents, fire and other emergencies are recognized and established in accordance with organization procedures
2. Evaluate hazards and risks	2.1 Terms of maximum tolerable limits which when exceeded will result in harm or damage are identified based on threshold limit values (TLV) 2.2 Effects of the hazards are determined 2.3 OHS issues and/or concerns and identified safety hazards are reported to designated personnel in accordance with workplace requirements and relevant workplace OHS legislation
3. Control hazards and risks	3.1 Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace are consistently followed 3.2 Procedures for dealing with workplace accidents, fire and emergencies are followed in accordance with organization OHS policies 3.3 *Personal protective equipment (PPE)* is correctly used in accordance with organization OHS procedures and practices 3.4 Appropriate assistance is provided in the event of a workplace emergency in accordance with established organization protocol
4. Maintain OHS awareness	4.1 *Emergency-related drills and trainings* are participated in as per established organization guidelines and procedures 4.2 *OHS personal records* are completed and updated in accordance with workplace requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Safety regulations	May include but are not limited to: 1.1 Clean Air Act 1.2 Building code 1.3 National Electrical and Fire Safety Codes 1.4 Waste management statutes and rules 1.5 Philippine Occupational Safety and Health Standards 1.6 DOLE regulations on safety legal requirements 1.7 ECC regulations

2. Hazards/Risks	May include but are not limited to:
	2.1 Physical hazards – impact, illumination, pressure, noise, vibration, temperature, radiation
	2.2 Biological hazards- bacteria, viruses, plants, parasites, mites, molds, fungi, insects
	2.3 Chemical hazards – dusts, fibers, mists, fumes, smoke, gasses, vapors
	2.4 Ergonomics
	    2.4.1 Psychological factors – over exertion/ excessive force, awkward/static positions, fatigue, direct pressure, varying metabolic cycles
	    2.4.2 Physiological factors – monotony, personal relationship, work out cycle

3. Contingency measures	May include but are not limited to: 3.1 Evacuation 3.2 Isolation 3.3 Decontamination 3.4 (Calling designed) emergency personnel
4. Personal Protective Equipment	May include but are not limited to: 4.1 Mask 4.2 Gloves 4.3 Goggles 4.4 Hair Net/cap/bonnet 4.5 Face mask/shield 4.6 Ear muffs 4.7 hard hat/body belt /safety straps 4.8 Anti-static suits

VARIABLE	RANGE
5. Emergency-related drills and training	5.1 Fire drill 5.2 Earthquake drill 5.3 Basic life support/CPR 5.4 First aid 5.5 Spillage control 5.6 Decontamination of chemical and toxic 5.7 Disaster preparedness/management
6. OHS personal records	6.1 Medical/Health records 6.2 Incident reports 6.3 Accident reports 6.4 OHS-related training completed

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Explained clearly established workplace safety and hazard control practices and procedures 1.2 Identified hazards/risks in the workplace and its corresponding indicators in accordance with company procedures 1.3 Recognized contingency measures during workplace accidents, fire and other emergencies 1.4 Identified terms of maximum tolerable limits based on threshold limit value- TLV. 1.5 Followed Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace 1.6 Used Personal Protective Equipment (PPE) in accordance with company OHS procedures and practices 1.7 Completed and updated OHS personal records in accordance with workplace requirements
2. Required Knowledge and Attitude	2.1 OHS procedures and practices and regulations 2.2 PPE types and uses 2.3 Personal hygiene practices 2.4 Hazards/risks identification and control 2.5 Threshold Limit Value -TLV 2.6 OHS indicators 2.7 Organization safety and health protocol 2.8 Safety consciousness 2.9 Health consciousness
3. Required Skills	3.1 Outside plant safety and practices 3.2 Hazards/risks identification and control skills 3.3 Interpersonal skills 3.4 Communication skills
4. Resource Implications	The following resources must be provided: 4.1 Workplace or assessment location 4.2 OHS personal records 4.3 Personal protective equipment 4.4 Health records
5. Methods of Assessment	Competency may be assessed through: 5.1 Portfolio Assessment 5.2 Interview/written test 5.3 Case Study/Situation
6. Context for Assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

COMMON COMPETENCIES

UNIT TITLE	:	**APPLY QUALITY STANDARDS**
UNIT CODE	:	**ELC315202**
UNIT DESCRIPTOR	:	This unit covers the knowledge, skills and attitudes needed to apply quality standards in the workplace. The unit also includes the application of relevant safety procedures and regulations, organization procedures and customer requirements

ELEMENT	PERFORMANCE CRITERIA *Bold & Italicized* fonts are elaborated in the Range of Variables
1. Assess quality of received materials or components	1.1. Work instructions are obtained and work is carried out in accordance with standard operating procedures 1.2. Received ***materials or component parts*** are checked against workplace standards and specifications 1.3. Faulty material or components related to work are identified and isolated 1.4. ***Faults*** and any identified causes are recorded and/or reported to the supervisor concerned in accordance with workplace procedures 1.5. Faulty materials or components are replaced in accordance with workplace procedures
2. Assess own work	2.1. ***Documentation*** relative to quality within the company is identified and used 2.2. Completed work is checked against workplace standards relevant to the task undertaken 2.3. Faulty pieces are identified and isolated 2.4. Information on the quality and other indicators of production performance is recorded in accordance with workplace procedures 2.5. Deviations from specified ***quality standards***, causes are documented and reported in accordance with the workplace' standards operating procedures
3. Engage in quality improvement	3.1. Process improvement procedures are participated in relation to workplace assignment 3.2. Work is carried out in accordance with process improvement procedures 3.3. Performance of operation or quality of product or service to ensure ***customer*** satisfaction is monitored

RANGE OF VARIABLES

VARIABLE	RANGE

1. Materials/components	1.1. Materials may include but not limited to:
	    1.1.1. Wires
	    1.1.2. Cables, soldering lead
	    1.1.3. Electrical tape
	    1.1.4. Connectors
	    1.1.5. Cable terminal/closures
	1.2. Components may include but not limited to:
	    1.2.1. ICs
	    1.2.2. Diodes
	    1.2.3. Resistors
	    1.2.4. capacitors

2. Faults	Faults may include but not limited to: 2.1. Components/materials not according to specification 2.2. Components/materials contain manufacturing defects 2.3. Components/materials do not conform with government regulation i.e., PEC, environmental code 2.4. Components/materials have safety defect
3. Documentation	3.1. Organization work procedures 3.2. Manufacturer's instruction manual 3.3. Customer requirements 3.4. Forms

4. Quality standards	4.1. Quality standards may relate but not limited to the following:
	    4.1.1. Materials
	    4.1.2. Component parts
	    4.1.3. Final product
	    4.1.4. Production processes

5. Customer	5.1. Co-worker 5.2. Supplier 5.3. Client 5.4. Organization receiving the product or service

EVIDENCE GUIDE

1. Critical aspect of competency	Assessment requires evidence that the candidate:
	1.1. Carried out work in accordance with the company's standard operating procedures 1.2. Performed task according to specifications 1.3. Reported defects detected in accordance with standard operating procedures 1.4. Carried out work in accordance with the process improvement procedures
2. Required knowledge and attitude	2.1. Relevant production processes, materials and products 2.2. Characteristics of materials/component parts used in electronic production processes 2.3. Quality checking procedures 2.4. Workplace procedures 2.5. Safety and environmental aspects of production processes 2.6. Fault identification and reporting 2.7. Quality improvement process
3. Required skills	3.1. Reading skills required to interpret work instruction 3.2. Communication skills needed to interpret and apply defined work procedures 3.3. Carry out work in accordance with OHS policies and procedures
4. Method of assessment	4.1. The assessor may select at least two (2) of the following assessment methods to objectively assess the candidate: 4.1.1. Observation 4.1.2. Questioning 4.1.3. Practical demonstration
5. Resource implication	5.1. Materials and component parts and equipment to be used in a real or simulated electronic production situation
6. Context of Assessment	6.1. Assessment may be conducted in the workplace or in a simulated work environment.

UNIT TITLE	:	**OPERATE A PERSONAL COMPUTER**
UNIT CODE	:	**ICT 311203**
UNIT DESCRIPTOR	:	This unit defines the competency required to operate a personal computer by: starting the PC, logging in, using and working with files, folders and programs, saving work, and closing down the PC.

ELEMENT	PERFORMANCE CRITERIA *Bold & Italicized* fonts are elaborated in the Range of Variables
1. Start the computer	1.1 The **peripheral devices** are properly connected 1.2 Power is checked and the **computer** and peripheral devices are switched on 1.3 Proper logging in and logging off is successfully done 1.4 The **operating system** features and functions are accessed and navigated 1.5 Hardware configuration and other **system features** are checked
2. Arrange and customize desktop display/ GUI settings	2.1 The desktop screen or GUI elements are changed as needed 2.2 Desktop icons are added, renamed, moved, copied or deleted 2.3 The **online help functions** are accessed or used as needed 2.4 Desktop icons of **application programs** are selected, opened and closed 2.5 **Properties** of icons are displayed 2.6 Computer or desktop settings are saved and restored
3. Work with files and folders (or directories)	3.1 A file or folder is created, opened, moved, renamed or copied 3.2 Files are located, deleted and restored 3.3 Details and properties of files and folders are displayed or viewed 3.4 **Various files** are organized for easy lookup and use 3.5 Files and information are searched 3.6 **Disks** are checked, erased or formatted as necessary
4. Work with user application programs	4.1 **Application programs** are added, changed, removed or ran 4.2 User software or application program are installed, updated and upgraded 4.3 Information/data are moved between documents or files
5. Print information	5.1 Printer is added or installed and correct **printer settings** is ensured 5.2 Default printer is assigned accordingly 5.3 Information or document is printed on the installed printer 5.4 Progress of print jobs are viewed and deleted as required
6. Shut down computer	6.1 All open application programs are closed 6.2 Computer and peripheral devices are properly shut down

RANGE OF VARIABLES

	VARIABLE	RANGE
1.	Peripheral device	This may include but is not limited to: 1.1 mouse 1.2 keyboard 1.3 monitor or visual display unit 1.4 printer 1.5 scanner
2.	Computer	May include: 2.1. Laptops/notebooks 2.2. Workstations 2.3. Servers 2.4. other personal computer devices
3.	Application programs	Can include: 3.1 user programs 3.2 database programs 3.3 word processors 3.4 email programs 3.5 Internet browsers 3.6 system browsers 3.7 spreadsheets
4.	Operating system	May include but is not limited to the various versions and variants of operating systems running on personal computers and servers, such as: 4.1 Windows 4.2 NT 4.3 Mac OS 4.4 Linux 4.5 Solaris 4.6 Unix
5.	System features	May include but is not limited to the operating system features and hardware features like: 5.1 memory size 5.2 disk capacities 5.3 video cards 5.4 USBs 5.5 Modems 5.6 1394 and LAN connectors 5.7 SD and PC cards 5.8 wireless and infrared connections.
6.	Online help functions	6.1 An instruction manual, or a portion of the manual, integrated and accessible from within the program or software being used.

VARIABLE	RANGE
7. Properties	Indicates the description of the file or folder to include the: 7.1 file name 7.2 type of file 7.3 file size 7.4 date created and modified 7.5 attributes (hidden, read-only).
8. Various files	8.1 Documents 8.2 Records 8.3 Pictures 8.4 Music 8.5 Video
9. Disks	May include but is not limited to: 9.1 Floppy disks 9.2 CDs 9.3 CD-RW (Compact discs-Read/Write) 9.4 DVD RW 9.5 zip disks 9.6 flash drives 9.7 memory sticks 9.8 hard drives
10. Printer settings	The properties of the printer that enables it to work includes: 10.1 page layout 10.2 paper size 10.3 ink/cartridge type 10.4 number of copies 10.5 page orientation.

EVIDENCE GUIDE

1.	Critical aspects of Competency	Assessment must confirm the candidate's ability to: 1.1 utilize software 1.2 navigate the desktop 1.3 use system features to perform tasks 1.4 save results of work.
2.	Required Knowledge and Attitude	Knowledge includes: 2.1 Keyboard layout and functions 2.2 Computer functions 2.3 Basic parts of a computer and various hardware components 2.4 Storage devices and file concepts 2.5 Basic software operation and functionalities
3.	Required Skills	Skills include: 3.1 Saving and retrieving files to and from various folders or disk storage 3.2 Mouse and keyboarding skills for running software applications 3.3 Reading and writing at a level where basic workplace documents are understood 3.4 Clear ability to communicate with peers and supervisors 3.5 Interpretation of user manuals and help functions 3.6 The ability to carry out written and verbal instructions using a personal computer whether standalone or in a networked environment
4.	Resource Implications	To demonstrate competence in this unit access to the following resources will be required: 4.1 A personal computer 4.2 A printer 4.3 Mouse and keyboard 4.4 Basic systems software
5.	Methods of Assessment	Competency may be assessed through: 5.1 Observation in a workplace or simulated environment 5.2 Third party reports 5.3 Exams and tests 5.4 Demonstration of required skills 5.5 Interviews
6.	Context for Assessment	6.1 Competency may be assessed in the workplace or in a simulated work environment.

CORE COMPETENCIES

UNIT OF COMPETENCY : **INSTALL POLE HARDWARE, CABLE TERMINAL, LINE WIRE AND ACCESSORIES**

UNIT CODE : ICT724605

DESCRIPTOR : This unit covers the outcomes required for installing pole hardware, cable terminal, line wire and accessories. This involves working with a team.

ELEMENT	PERFORMANCE CRITERIA *Bold & Italicized* fonts are elaborated in the range of variables
1. Prepare for pole hardware, cable terminal and line wire installation	1.1 Necessary *tools, materials and personal protective equipment (PPE)* are prepared in line with job requirements. 1.2 Information on proposed locations and necessary approvals from *relevant authorities* is obtained. 1.3 Site is cleared and prepared to provide unrestricted access for installation works in accordance with joint pole agreement 1.4 Installation constraints and safety hazards are identified and suitable action is determined
2. Perform pole hardware, cable terminal, line wire and accessories installation	2.1 Installation site is made safe through erection of necessary *barriers* in accordance with standard practices and *applicable rules and regulations* 2.2 *Fixing structures* on pole are *installed* securely in accordance with manufacturer's specifications and joint pole agreement (JPA) and/or enterprise standards 2.3 *Fixing devices* where the support is other than a pole are installed in accordance with the JPA and/or enterprise standards 2.4 *Pole identifier marks* are placed on installed poles for identification 2.5 Ground are installed and grounding wires are bonded to messenger wire of copper cable in accordance with the industry construction standards 2.6 *Guy-wire assembly* is installed and tensioned to required specifications 2.7 Problems encountered are reported as per standard operating procedures (SOP). 2.8 *Installation and design amendments* are reported/ documented in accordance with job requirements

RANGE OF VARIABLES

VARIABLE	RANGE	
1. Tools and equipment, materials and PPE	May include but not limited to: **Tools and equipment:** 1.1 set of wrenches 1.2 set of pliers 1.3 extension ladder 1.4 bolt cutter 1.5 set of screw drivers 1.6 come-a-long / guy grip 1.7 Claw hammer 1.8 hacksaw 1.9 canvass bag 1.10 tabbing shear 1.11 cable puncher 1.12 closure tool kit 1.13 reel stand 1.14 bender board/cable form 1.15 polyethylene knife 1.16 pole mount cable block (for self support cable) 1.17 hand/head - set 1.18 crimping tool 1.19 lay-up stick / cable lifter 1.20 multiple cable puller 1.21 messenger wire raising tool **Materials:** 1.22 pole clamps of various sizes 1.23 set of suspension clamps 1.24 messengered cable 1.25 pole extension arm 1.26 grounding rod/wires	1.27 cable clamps 1.28 set of guy grips 1.29 guy protector 1.30 anchor rod 1.31 ground/guying insulator 1.32 tie wrap 1.33 thimble eye nut 1.34 stainless strap and buckle 1.35 cable closures kit 1.36 sets of washer, bolts and nuts 1.37 cable terminal 1.38 cable tag 1.39 pole tag 1.40 stainless lashing wire 1.41 lashing clamp 1.42 grounding wire 1.43 bullet bond clip/bar 1.44 scotch/vinyl tape 1.45 Scotch lock connectors **PPE:** 1.46 body belt & strap 1.47 hard hat/ helmet 1.48 set gloves 1.49 goggles 1.50 safety shoes 1.51 tool pouch 1.52 safety cones/other collapsible signs

2. relevant authorities	2.1 local government
	    2.1.1. barangay
	    2.1.2. municipality/city
		2.2 DPWH
		2.3 homeowner's association
		2.4 house owners

3. barriers	3.1 safety cones 3.2 early warning devices 3.3 collapsible barrier and signs	3.4 service vehicles 3.5 wooden barricades 3.6 red flag warning signs
4. Applicable rules and regulations	4.1 Local Government Regulations 4.2 PEC	
5. Fixing structures	5.1 pole dressing 5.2 anchor rod 5.3 anchor block	

6. Fixing devices	6.1 screw hooks 6.2 set of bolts, nuts and washers 6.3 machine bolts – straight, thimble-eye and bent types 6.4 lag screws 6.5 conduit pipes	6.6 messenger-wire clamps 6.7 messenger wire 6.8 extension arm 6.9 suspension clamps 6.10 anchor and grounding rods 6.11 sidewalk guy fixture 6.12 bonding clamp

7. Pole identifier marks	7.1 Written or stamped on steel plate and strapped to concrete pole or nailed to wooden pole
	 7.2 Contains data on
	     7.2.1. Company markings
	     7.2.2. Pole identification	

8. Guy-wire assembly	8.1 Guy grip 8.2 Insulator strain 8.3 Guy wire 8.4 Guy-wire protector	
9. Installation and design amendments	9.1 cable re-routing 9.2 as-built plan	

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Complied with job requirements and safety procedures at all times during installation 1.2. Identified tools, materials, hardware and other accessories 1.3. Attached cable terminal pole 1.4. Stenciled cable assignment

2. Required knowledge and attitude	2.1 Safety Practices
	    1.1.1 Work safety requirements
	    1.1.2 Proper use of tools and equipment
	    1.1.3 OH&S policies and procedures
	2.2 Materials, Tools and Equipment: Uses and Specifications
	    2.2.1 Identification of appropriate tools, equipment; and devices
	    2.2.2 Familiarity with the use of standard tools (both for heavy construction)
	2.3 Theory and Practices
	    2.3.1 Outside plant construction principles and standards
	    2.3.2 Outside plant protection concept
	    2.3.3 Pole hardware and accessories
	    2.3.4 Cable Terminal Attachments
	    2.2.1 Line wires
	    2.2.2 Stenciling, support and measurements
	    2.2.3 Grounding and bonding techniques
	
	2.3 Desirable work values and attitudes (cost conscious, safety conscious, quality conscious, etc.)

3. Required skills	3.1. Work efficiently and systematically 3.2. Observing safety precautions 3.3. Proper handling and positioning of extension ladder 3.4. Proper handling, use and maintenance of tools and equipment 3.5. Communicate effectively 3.6. Interpretation of plans and symbols 3.7. Documentation skills
4. Resource implications	The following resources should be available: 4.1. Tools, equipment, materials and PPE (see range of variables) 4.2. Mockup/Sample service order 4.3. Work area
5. Method of assessment	5.1. Direct observation/demonstration with oral questioning 5.2. Written Test
6. Context of assessment	6.1. Competency maybe assessed in the workplace or in a simulated workplace setting 6.2. Assessment shall be undertaken either individually

UNIT OF COMPETENCY : **PERFORM MAIN CABLE INSTALLATION**

UNIT CODE : ICT724606

DESCRIPTOR : This unit covers the outcomes required for performing main cable installation. This involves working with a team.

ELEMENT	PERFORMANCE CRITERIA *Bold & Italicized* fonts are elaborated in the range of variables
1. Prepare for cable jointing and installation	1.1. Necessary *tools, equipment, materials and personal protective equipment (PPE)* are prepared in line with job requirements. 1.2. Cable preparation and installation requirements and constraints from plan and site inspection are identified as per job requirements 1.3. Cable preparation and installation equipment is set up in accordance with manufacturer's and job requirements 1.4. Site is made safe and secure for cable installation 1.5. Suitable protective clothing is selected and required safety devices used 1.6. *Support structure* is assessed as safe for normal working conditions 1.7. Cable route is checked for *obstructions* and vertical clearances from street level and are made clear using *suitable methods* and in coordination with authorities concerned.
2. Install main cable	2.1 Occupational health & safety (OH&S) policies and procedures are followed based on safety requirements. 2.2 Tools, equipment, clothing and safety requirements are identified and obtained for the sheath opening, bonding, grounding and securing bunch end. 2.3 Sheath opening of the cable terminal stub and main cable, bonding and grounding are *installed* as required per outside plant standards. 2.4 Cables are bind and secured in accordance with standard installation procedures 2.5 Loop and bending radius tolerance is insured for cable materials at all times in accordance with outside plant standards 2.6 Problems encountered are reported as per standard operating procedures (SOP). 2.7 Waste materials are removed from workplace and disposed off in accordance with government regulations and environmental health and safety requirements.

RANGE OF VARIABLES

VARIABLE	RANGE	
1. Tools, equipment and materials and PPE	May include but not limited to: **Tools and Equipment:** 1.1 hammers 1.2 aerial handline 1.3 extension ladders (24 ft. and 20 ft. length) 1.4 adjustable wrench 1.5 fixing brackets/clamps 1.6 cable tensioner/rachet/ coping jack 1.7 come-a-long / guy grip 1.8 polyethylene knife 1.9 wire/lashing wire 1.10 cable puncher 1.11 tape linen/steel tape 1.12 Height measuring stick/pole stick for clearances. 1.13 Cable slitter 1.14 Gimlet 1.15 hacksaw **Materials:** 1.16 cable clip 1.17 grounding wire 1.18 lashing wire 1.19 lashing wire clamps 1.20 cable support 1.21 cable spacer	1.22 adhesive tape 1.23 cable clamps 1.24 cable roller 1.25 standard rope 1.26 tie wrap 1.27 cable-loop form / X-frame 1.28 bonding jumper wire 1.29 thimble eye nut 1.30 sets of washer, bolts and nuts, machine bolts 1.31 cable straps 1.32 connectors 1.33 cable tag 1.34 pole tag 1.35 screws 1.36 color coded marked tape 1.37 poly vinyl sleeve **PPE:** 1.38 body belt & strap 1.39 hard hat/ helmet 1.40 set gloves 1.41 safety goggles 1.42 safety shoes 1.43 tool pouch 1.44 safety cones/traffic safety devices
2. Support structure	2.1 Electric/Telephone pole (JPA) 2.2 Guy wire/Messenger wire 2.3 Pole dressing/Cable tagging	
3. Obstructions	3.1 Trees 3.2 Structures such as arcs, billboards, etc. 3.3 Parts of buildings and houses, i.e. roof extensions/overhangs 3.4 Traffic lights, street lights, etc. 3.5 Power lines	
4. Suitable methods for removing obstructions	4.1 Trimming of tree branches 4.2 Installation of ten-pin alley arm 4.3 Installation of high-tension insulation materials	
5. Installation procedures	5.1 Stringing of cable between suspension clamps 5.2 Tensioning of cable	

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Installed main cable 1.2. Bind and secured cables	

2. Required knowledge and attitude	2.1 Safety Practices
	    1.1.4 Occupational health & safety requirements
	    1.1.5 Proper use of tools and equipment
	 2.2 Materials, Tools and Equipment: Uses and Specifications
	    2.3.5 Identification of appropriate tools, equipment; and devices and proper usage
	 2.3 Theory and Practices
	    2.3.1 Introduction to Telephone Outside Plant Network
	    2.3.2 Outside Plant Standard Symbols/Diagrams Interpretation
	    2.3.3 Types of Cables and their Characteristics
	    2.3.4 Cable installation and preparation
	    2.3.5 Outside plant safety and practices
	 2.4 Government regulations and environmental health & safety requirements
	 2.5 Desirable work values and attitudes (cost conscious, safety conscious, quality conscious, etc.)	

3. Required skills	3.1. Work efficiently and systematically 3.2. Observing safety precautions 3.3. Pole climbing & proper handling of extension ladder 3.4. Proper handling, use and maintenance of tools and equipment. 3.5. Cable binding 3.6. Cable pair identification and splicing 3.7. Proper handling copper cables 3.8. Communicating effectively 3.9. Interpreting plans and symbols	
4. Resource implications	The following resources should be available: 4.1. Tools, equipment, materials and PPE (see range of variables) 4.2. Mockup/Sample service order 4.3. Work area with pole/s installed with messenger	
5. Method of assessment	5.1. Direct observation/demonstration with oral questioning 5.2. Written test	
6. Context of assessment	6.1. Competency maybe assessed in the workplace or in a simulated workplace setting 6.2. Assessment shall be undertaken individually with supervision	

UNIT OF COMPETENCY : **SPLICE/JOINT CABLE TERMINAL TO MAIN AERIAL AND/OR UNDERGROUND COPPER CABLE SPLICE**

UNIT CODE : ICT724607

DESCRIPTOR : This unit covers the outcomes required for joining/ splicing cable terminal to main aerial cable and/or underground cable splicing/jointing for outside plant telephone network. It also includes installing cable closure and cable supports.

ELEMENT	PERFORMANCE CRITERIA *Bold & Italicized* fonts are elaborated in the range of variables
1. Splice and join cable terminal and main cable pairs for aerial copper cable works	1.1. Necessary *tools, equipment, materials and personal protective equipment (PPE)* are identified and prepared in line with job requirements. 1.2. Cable pairs Identification, twisting techniques and crimping/connectorization are performed in accordance with manufacturer's specifications and as per design plan/assignment. 1.3. Group binders and segregation of cable pairs are performed as per job requirements and assignment. 1.4. Accomplishment reports are accurately reported/ documented in accordance with job requirements
2. Splice and join straight and branch cable pairs for underground copper cable works	2.1. Necessary tools, equipment, materials and personal protective equipment (PPE) are identified and prepared in line with job requirements 2.2. *Manhole and cable preparation* for splicing/joining of straight/branch splices is performed in line with job requirements 2.3. Cable pairs identification, twisting techniques and crimping/connectorization is performed in accordance with manufacturer's specifications and as per design plan/assignment 2.4. Group binders and segregation of cable pairs are performed as per job requirements and assignment. 2.5. Accomplishment reports are accurately reported/ documented in accordance with job requirements
3. Install Cable Closure	3.1. Cable closure is applied to spliced cable pairs in accordance with product specification 3.2. Problems encountered are reported as per standard operating procedures (SOP). 3.3. Flush testing of completed closure is performed according to job requirements and SOP to prevent water and moisture entry.
4. Install Cable Support	4.1. Spliced cable are attached to messenger wire/cable rack for support in line with job requirements and product specifications 4.2. Job completion report is prepared in line with enterprise procedures

RANGE OF VARIABLES

VARIABLE	RANGE	
1. Tools, equipment, materials and PPE	May include but not limited to: **Tools:** 1.1 Cable cutter 1.2 Side cutter 1.3 Crimping tools 1.4 Cable Slitter 1.5 Polyethylene knife 1.6 Screwdrivers 1.7 Socket / adjustable wrench 1.8 Manhole hook **Materials:** 1.9 bond clip 1.10 Bond bar 1.11 cable gel cleaner 1.12 tie wrap 1.13 color coded binders 1.14 connectors 1.15 tap-off bracket 1.16 electric meter 1.17 circuit breaker	1.18 grounding wire (gauge 12, stranded) 1.19 TW wire (gauge 12, stranded or solid) **Equipment:** 1.20 Hand/Head-set 1.21 Service vehicle 1.22 extension ladders (24 ft/20 ft length) 1.23 MH ladder 1.24 manhole pump **PPE:** 1.25 body belt & strap 1.26 hard hat/ helmet 1.27 set gloves 1.28 goggles 1.29 safety shoes 1.30 tool pouch / holster 1.31 safety cones/traffic safety devices

2. Manhole and cable preparation	2.1 Manhole preparation
	     2.1.1. Drain and clean manhole
	     2.1.2. Install drain plugs
	 2.2 Cable preparation
	     2.2.1. Positioning/attachment of splices to cable racks
	     2.2.2. Cable pairs preparation and connectorization
	     2.2.3. Alignments of splices/joints as specified by the product manufacturers/suppliers	

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Spliced and joined cable terminal and main cable pairs for aerial copper cable works, 1.2. Spliced and joined straight and branch cable pairs for underground copper cable works, 1.3. Installed cable closure. 1.4. Installed cable support.

2. Required knowledge and attitude	2.1 Safety Practices
	    2.1.1 Work safety requirements
	    2.1.2 Proper use of tools and equipment
	2.2 Materials, Tools and Equipment: Uses and Specifications
	    2.2.1 Identification of appropriate tools, equipment; and materials and proper usage
	2.3 Theory and Practices
	    2.3.1 Telephone Cable Color Codes
	    2.3.2 Identification and usage of tools, materials and equipment
	    2.3.3 Aerial and underground cable practices and installations
	    2.3.4 Pole climbing techniques and ladder handling –aerial and underground procedures and practices.
	    2.3.5 Aerial/Underground cable splicing/jointing
	    2.3.6 Cable closure Installation
	    2.3.7 Basic Electricity
	    2.3.8 Copper cable handling
	    2.3.9 Closure set-up
	2.4 Government regulations and environmental health & safety requirements
	2.5 Desirable work values and attitudes (cost conscious, safety conscious, quality conscious, etc.)

3. Required skills	3.1. Work efficiently and systematically 3.2. Observing safety precautions 3.3. proper handling of extension ladder/MH ladder 3.4. Proper handling, use and maintenance of tools and equipment. 3.5. Proper handling of copper cables and terminal 3.6. Identification of cable pairs and cable binders 3.7. Cable splicing 3.8. Communicating effectively 3.9. Interpreting plans and symbols
4. Resource implications	The following resources should be available: 4.1. Tools, equipment, materials and PPE (see range of variables) 4.2. Mockup/sample service order 4.3. Work area with aerial and underground cable installed
5. Method of assessment	5.1. Direct observation/demonstration with oral questioning 5.2. Written
6. Context of assessment	6.1. Competency maybe assessed in the workplace or in a simulated workplace setting 6.2. Assessment shall be undertaken either individually or part of team under limited supervision

UNIT OF COMPETENCY : **PERFORM BASIC TROUBLESHOOTING AND CORRECTION OF CABLE FAULT AND ERROR**

UNIT CODE   : ICT724608

DESCRIPTOR   : This unit covers the knowledge, skills and attitudes required to perform the basic troubleshooting of copper cable faults and errors

ELEMENT	PERFORMANCE CRITERIA *Bold & Italicized* fonts are elaborated in the range of variables
1. Prepare for cable fault and error troubleshooting	1.1 Documentation are required and interpreted in accordance with enterprise procedures 1.2 Necessary *tools, equipment, materials and personal protective equipment (PPE)* are identified and prepared in line with job requirements. 1.3 Cable pair's identification and preparation is performed in accordance with job requirements and assignments.
2. Test and correct cable faults and errors	2.1 Identification and interpretation of *cable faults and errors* is performed as per job requirements 2.2 Corrective action is applied in line with enterprise procedure 2.3 Accomplishment report is prepared according to enterprise policy
3. Wrap up job	3.1 Tools, equipment and materials are gathered and stored back to the service vehicle 3.2 Waste materials are removed from work place and disposed off in accordance with government regulations and environmental requirements 3.3 Changes made are restored to the work area during installation, splicing/jointing and re-splicing to complete/clear for acceptance and approval.

RANGE OF VARIABLES

VARIABLE	RANGE	
1. Tools, equipment, materials and PPE	May include but not limited to: **Tools:** 1.1 Cable cutter 1.2 Cable prep tool 1.3 Crimping / compression tool 1.4 NT cutter / blade cutter 1.5 Staple gun 1.6 Set of pliers 1.7 Set of screwdrivers 1.8 F-open wrench **Materials:** 1.9 UY/UG-connectors (crimped or compression type) 1.10 cable tie 1.11 remnant cloth 1.12 cable cleaner 1.13 silicon gel 1.14 rubber boots 1.15 cable tag 1.16 terminators 1.17 grounding wire (gauge 12, stranded)	1.18 grounding rod (1/4' by 4' with clamp) 1.19 grounding block 1.20 Cable clamp 1.21 Lasing wire 1.22 Lashing wire clamp **Equipment:** 1.23 Hand/head-set 1.24 Tone identifier 1.25 Service vehicle 1.26 Extension ladders (24ft.) 1.27 Manhole ladder 1.28 Manhole hook 1.29 Manhole pump **PPE:** 1.30 body belt & strap 1.31 hard hat/ helmet 1.32 set gloves 1.33 goggles 1.34 safety shoes 1.35 tool pouch / holster 1.36 safety cones/traffic safety devices
2. Troubleshooting of cable faults and errors	2.1 Identify splicing/jointing errors 2.2 Test for grounded circuit 2.3 Test for shorted circuit 2.4 Test open circuit	

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Identified cable faults and errors 1.2 Corrected cable fault and errors

2. Required knowledge and attitude	2.1 Safety Practices
	    2.1.1 Work safety requirements
	    2.1.2 Proper handling and use of tools and equipment
	2.2 Materials, Tools and Equipment: Uses and Specifications
	    2.2.2 Identification of appropriate tools, equipment and proper usage
	2.3 Theory and Practices
	    2.3.1 Cable types and its characteristics
	    2.3.2 Basic Electricity
	    2.3.3 Pole climbing techniques
	    2.3.4 Identification and usage of pole hardware
	    2.3.5 Copper cable handling
	    2.3.6 Cable common faults and errors
	    2.3.7 Troubleshooting techniques
	2.4 Government regulations and environmental health & safety requirements
	2.5 Desirable work values and attitudes (cost conscious, safety conscious, quality conscious, etc.)

3. Required skills	3.1 Work efficiently and systematically 3.2 Observing safety precautions 3.3 Cable Map/Plan interpretation skills 3.4 Copper cable troubleshooting and testing skills 3.5 Proper handling of tools, equipment and proper maintenance. 3.6 Communicating effectively
4. Resource implications	The following resources must be available: 4.1 Tools and test instruments and PPE (see range of variables) 4.2 Mockup/sample service order 4.3 Work area with OSP telephone cable network 4.4 Access to distribution point, manhole locations 4.5 Extension ladder, manhole ladder
5. Method of assessment	5.1 Direct observation/ oral questioning 5.2 Written Test
6. Context of assessment	6.1 Competency may be assessed in the workplace or in a simulated workplace setting 6.2 Assessment shall be undertaken either individually or part of team under limited supervision

UNIT OF COMPETENCY	:	**INSTALL POTS SUBSCRIBER LINE**
UNIT CODE	:	ICT724609
DESCRIPTOR	:	This unit covers the outcomes required in installing POTS subscriber line. It includes preparation of distribution point, lay-outing and installation of drop wire, house attachment and customer premises equipment (CPE) and accessories.

ELEMENT	PERFORMANCE CRITERIA *Bold & Italicized* fonts are elaborated in the range of variables
1. Prepare distribution point to customer premises installation	1.1 Necessary ***tools, materials and personal protective equipment (PPE)*** are prepared in line with job requirements. 1.2 Information on proposed installation locations are identified based on service order 1.3 Site is cleared and prepared to provide unrestricted access for installation works in accordance with joint pole agreement 1.4 Installation constraints and safety hazards are identified and suitable action determined
2. Layout and install drop wire and house attachment	2.1 Occupational health & safety (OH&S) policies and procedures are followed based on safety requirements. 2.2 Distribution point terminal are identified in line with service order 2.3 Drop wire are terminated in line with service order 2.4 Drop wire layout installation from distribution point to station protector is performed in line with standard installation procedure 2.5 ***House attachment*** is installed and secured permanently to support drop wire in accordance with standard installation procedure 2.6 **Grounding elements** are installed in accordance with established standards 2.7 Problems encountered are reported in line with standard operating procedures (SOP).
3. Install telephone set and accessories	3.1 Connecting Block (CBK) are installed in line with installation manual 3.2 Jacketed wire is terminated and connected to CBK based on installation manual 3.3 Telephone instrument is installed in line with installation manual 3.4 Problems encountered are reported as per standard operating procedures (SOP). 3.5 Installation is properly documented according to SOP.
4. Wrap up job	4.1 Tools, equipment and materials are gathered and stored back to the service vehicle 4.2 Waste materials are removed from work place and disposed off in accordance with government regulations and environmental health & safety requirements 4.3 Changes made are restored to the work area during installation, disconnection and reconnection to the customer's satisfaction

RANGE OF VARIABLES

VARIABLE	RANGE	
1. Tools and equipment, materials and PPE	May include but not limited to: **Tools and equipment:** 1.1 Wire Slitter 1.2 Tool 216 – B 1.3 Screw Driver 1.4 Long nose/cutter pliers 1.5 Extension Ladder **Materials:** 1.6 Parallel wires AWG # 18/22	**PPE:** 1.7 body belt & strap 1.8 hard hat/ helmet 1.9 set gloves 1.10 safety shoes 1.11 tool pouch 1.12 safety cones/other collapsible signs
2. House attachments	2.1 Protector 2.2 House bracket 2.3 Span clamp 2.4 C-knob	
3. Grounding elements	3.1 Ground rod 3.2 Ground wire 3.3 Ground clamp	

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Installed drop wire from DP to protector 1.2. Installed grounding elements 1.3. Installed jacketed wire from protector to CBK 1.4. Installed telephone set and accessories

2. Required knowledge and attitude	2.1 Safety Practices
	    2.1.1 Work safety requirements
	    2.1.2 Proper use of tools and equipment
	2.2 Materials, Tools and Equipment: Uses and Specifications
	    2.2.1 Identification of appropriate tools, equipment; and devices
	2.3 Theory and Practices
	    2.3.1 Cable Terminal Attachments
	    2.3.2 Installation of cable clamps
	    2.3.3 Stenciling, support and measurements
	    2.3.4 Grounding and bonding techniques
	    2.3.5 Basic Telephone Installation
	    2.3.6 Telephone installation standards
	    2.3.7 Basic Electricity
	    2.3.8 Identification and usage of tools and materials
	2.4 Government regulations and environmental health & safety requirements
	2.5 Desirable work values and attitudes (cost conscious, safety conscious, quality conscious, etc.)

3. Required skills	3.1. Work efficiently and systematically 3.2. Observing safety precautions 3.3. proper handling and positioning of extension ladder 3.4. Proper handling, use and maintenance of tools and equipment 3.5. In-house wiring skills 3.6. Communicate effectively 3.7. Interpretation of plans and symbols 3.8. documentation skills
4. Resource implications	The following resources should be available: 4.1. Tools, equipment, materials and PPE (see range of variables) 4.2. Mockup/Sample service order 4.3. Work area
5. Method of assessment	5.1 Direct observation/demonstration with oral questioning 5.2 Written test
6. Context of assessment	6.1 Competency maybe assessed in the workplace or in a simulated workplace setting 6.2 Assessment shall be undertaken either individually or part of team under limited supervision

UNIT OF COMPETENCY : **INSTALL DIGITAL SUBSCRIBER LINE (DSL)**

UNIT CODE : ICT724610

DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to install DSL modems.

ELEMENT	PERFORMANCE CRITERIA
	Bold & Italicized fonts are elaborated in the range of variables
1. Prepare for DSL Modem Installation	1.1 Subscriber's *unit specification* is checked in accordance with system requirements 1.2 Necessary *tools, equipment, materials and personal protective equipment (PPE)* are identified and prepared in line with job requirements.
2. Perform Installation of DSL Modem	2.1 Occupational health & safety (OH&S) policies and procedures are followed based on safety requirements. 2.2 Voice-Data splitter is connected in line with installation manual. 2.3 Modem is installed and configured in line with modem installation manual. 2.4 Internet connection is tested in line with enterprise procedure 2.5 Installation report is documented according to SOP 2.6 Interpersonal skills is demonstrated in dealing with subscriber concerns in line with enterprise procedures
3. Wrap up job	3.1 Tools, equipment and materials are gathered and stored back to the service vehicle 3.2 Waste materials are removed from work place and disposed off in accordance with environmental requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Unit specification	May include: 1.1 PC hardware 1.2 PC Operating system
2. Tools, equipment, materials and PPE	May include but not limited to: **Tools:** 2.1 Crimping tool **Materials:** 2.2 Splitters 2.3 Line cord RJ11 2.4 Data cable RJ 45 2.5 Micro filter **Equipment:** 2.6 DSL modem **PPE:** 2.7 tool pouch / holster

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate:
	1.1 Installed DSL modem
	1.2 Configure Modems
	1.3 Demonstrated interpersonal skills in dealing with subscriber concerns
2. Required knowledge and attitude	2.1 Safety Practices
	2.1.1 Work safety requirements
	2.1.2 Proper handling and use of tools and equipment
	2.2 Materials, Tools and Equipment: Uses and Specifications
	2.2.1 Identification of appropriate tools, equipment; and devices and proper usage
	2.3 Theory and Practices
	2.3.1 ADSL Technology
	2.3.2 Basic Electricity
	2.3.3 Modem set up
	2.3.4 Basic Internet principles of operation
	2.3.5 Basic networking and network troubleshooting
	2.4 Government regulations and environmental health & safety requirements
	2.5 Desirable work values and attitudes (cost conscious, safety conscious, quality conscious, etc.)
3. Required skills	3.1 Work efficiently and systematically
	3.2 Computer manipulation skills
	3.3 Modem installation and configuration skills
	3.4 Network testing
	3.5 Proper handling of tools, equipment and proper maintenance.
	3.6 Communicating effectively
4. Resource implications	The following resources must be available:
	4.1 Tools and test instruments and PPE (see range of variables)
	4.2 Laptop with appropriate OS and software
	4.3 DSL Modem
	4.4 Access to telephone line with internet connection
5. Method of assessment	5.1 Direct observation/demonstration with oral questioning
	5.2 Written test
6. Context of assessment	6.1 Competency may be assessed in the workplace or in a simulated workplace setting
	6.2 Assessment shall be undertaken either individually or part of team under limited supervision

SECTION 3   TRAINING STANDARDS

3.1   CURRICULUM DESIGN

Course Title: Telecom Installation (Copper Cable and DSL)   NC Level: NC II

Nominal Training Duration: 16 hrs – Basic Competencies
16 hrs – Common Competencies
448 hrs – Core Competencies
160 hrs in-school **+**
288 hrs Supervised-Industry Training (SIT) in
actual work environment
_____
480 hrs. – Total training duration

Course Description:

This course is designed to develop & enhance the knowledge, skills, & attitudes of a Copper Cable Splicer/Jointer and Telephone and Broadband Installer, in accordance with industry standards. It covers the basic and common competencies in addition to the core competencies such as installing pole hardware, cable terminal, line wire and accessories; installing main copper cable; splicing/jointing cable terminal to main aerial/underground copper cable splices; performing basic troubleshooting on cable fault and errors; installing/connecting parallel wires; installing jacketed wire, CBK and telephone instrument; and installing digital subscriber lines.

BASIC COMPETENCIES
16 hrs

Unit of Competency	Learning Outcome	Training Methodology	Institutional Assessment Approach
1. Participate in Workplace Communication	1.1 Obtain and convey workplace information 1.2 Complete relevant work-related document 1.3 Participate in workplace meeting and discussion	• Group discussion • Interaction	• Demonstration • Observation • Interviews/ questioning
2. Work in a Team Environment	2.1 Describe and identify team role and responsibility in a team 2.2 Describe work as a team member	• Discussion • Interaction	• Demonstration • Observation • Interviews/ questioning

3. Practice Career Professionalism	3.1 Integrate personal objectives with organizational goals. 3.2 Set and meet work priorities. 3.3 Maintain professional growth and development.	• Discussion • Interaction	• Demonstration • Observation • Interviews/ questioning
4. Practice Occupational Health and Safety Procedures	4.1 Identify hazards and risks. 4.2 Evaluate hazards and risks. 4.3 Control hazards and risks. 4.4 Maintain occupational health and safety awareness.	• Discussion • Plant tour • Symposium	• Observation • Interview

COMMON COMPETENCIES
16 hrs

Unit of Competency	Learning Outcomes	Training Methodology	Institutional Assessment Approach
1. Apply Quality Standards	1.1 Asses quality of received materials 1.2 Assess own work 1.3 Engage in quality improvement	▪ Field trip ▪ Symposium ▪ Film showing ▪ Simulation ▪ On the job training	▪ Demonstration & questioning ▪ Observation & questioning ▪ Third party report
2. Operate a Personal Computer	2.1 Start and shutdown computer 2.2 Work with files and folders 2.3 Arrange and customize desktop display 2.4 Utilize OS bundled application	• Modular • Film showing • Computer based training (e-learning) • Project method • On the job training	• Demonstration & questioning • Observation & questioning • Third party report • Assessment of output product • Portfolio • Computer-based assessment

CORE COMPETENCIES
480 hrs. (160 hrs in-school + 288 hrs. SIT*)

Unit of Competency	Learning Outcomes	Training Methodology	Institutional Assessment Approach
1. Install Pole Hardware, Cable Terminal, Line Wire and Accessories	1.1 Prepare for pole hardware, cable terminal and line wire installation 1.2 Perform pole hardware, cable terminal, line wire and accessories installation	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Hands on practice / SIT	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Written test
2. Perform Main Cable Installation	2.1 Prepare for copper cable jointing and installation 2.2 Install main copper cable	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Hands on practice / SIT	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Written test
3. Splice/Joint cable terminal to main aerial cable and/or underground cable splice	3.1 Splice and join cable terminal and main cable pairs for aerial copper cable works 3.2 Splice and join straight and branch cable pairs for underground copper cable works 3.3 Install Cable Closure 3.4 Install Cable Support	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice/ SIT	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Written test
4. Perform basic troubleshooting and correction of cable faults and errors	4.1 Prepare for cable fault and error troubleshooting 4.2 Test and correct cable faults and errors 4.3 Wrap up job	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice/ SIT	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Written test
5. Install POTS subscriber line	5.1 Prepare distribution joint to customer premises installation 5.2 Layout and install drop wire and house attachment 5.3 Install telephone set and accessories 5.4 Wrap up job	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice/ SIT	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Written test
6. Install digital subscriber lines (DSL)	6.1 Prepare for DSL Modem Installation 6.2 Perform Installation of DSL Modem 6.3 Wrap up job	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice/ SIT	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Written test

*Note: Supervised-Industry Training (SIT) in actual work environment is included in the training duration.

3.2   TRAINING DELIVERY

The delivery of training should adhere to the design of the curriculum. Delivery should be guided by the 10 basic principles of the competency-based TVET.

- The training is based on curriculum developed from the competency standards;
- Learning is modular in its structure;
- Training delivery is by group/individualized and self paced;
- Training is based on work that must be performed;
- Training materials are directly related to the competency standards and the curriculum modules;
- Assessment is based in the collection of evidence of the performance of work to the industry required standard;
- Training is based both on and off-the-job requirements;
- Allows for recognition of prior learning (RPL) or current competencies;
- Training allows for multiple entry and exit; and
- Approved training programs are nationally accredited.

The competency-based TVET system recognizes various types of delivery modes, both on and off-the-job as long as the learning is driven by the competency standards specified by the industry.   The following training modalities may be adopted when designing training programs:

- The dualized mode of training delivery is preferred and recommended. Thus programs would contain both in-school and in-industry training or fieldwork components. Details can be referred to the Dual Training System (DTS) Implementing Rules and Regulations.

- Modular/self-paced learning is a competency-based training modality wherein the trainee is allowed to progress at his own pace.   The trainer conducts and facilitates the training delivery.

- Peer teaching/mentoring is a training modality wherein fast learners are given the opportunity to assist the slow learners.

- Supervised industry training or on-the-job training is an approach in training designed to enhance the knowledge and skills of the trainee through actual experience in the workplace to acquire a specific competencies prescribed in the training regulations.

- Distance learning is a formal education process in which majority of the instruction occurs when the students and instructors are not in the same place. Distance learning may employ correspondence study, or audio, video or computer technologies.

3.3 TRAINEE ENTRY REQUIREMENTS

The trainees who wish to enter the course should possess the following requirements:

- Can communicate in oral and written language
- Can perform basic mathematical computations
- Must be physically and mentally fit to undergo training

This list does not include specific institutional requirements such as educational attainment, appropriate work experience and others that may be required from the trainees by the school or training center delivering the TVET program.

3.4 LIST OF TOOLS, EQUIPMENT AND MATERIALS (Institution-based)

Recommended list of tools, equipment and materials required for a class size of 15 trainees for Copper Cable Splicing and Installation NC II:

_	TOOLS		EQUIPMENT		MATERIALS
Qty.	Description	Qty.	Description	Qty.	Description
5	set of wrenches		Line extender*	1 roll	messengered cable
10	Set of screwdrivers		Service vehicle*	3	set of suspension clamps
10	torque wrench	1	lineman boom truck*	3	pole extension arm
10	F-open wrench	1	cable trailer*	5	Pressure testing valve
3	bolt cutter	1	reel stand*	5	pole insulator
5	cable slitter	1	lashing machine*	5	ground/guying insulator
5	Electrician scissors	1	Manhole pump	5	pole tag
3	Staple gun	1	Power supply	5	cable tag
3	Technician's knife	1	Trunk amplifier	10	sets of washer, bolts and nuts, machine bolts
5	Cable prep tool	1	TV set	1	machine bolts – straight, thimble-eye and bent types
2	set of hammer	1	LCD	1 rl	stainless lashing wire
10	set of pliers	1	Karaoke	60	lashing wire clamps
5	Boring tools	1	microphone		
5	Blow torch	1	DVD /VCD /MP3 players		
10	Poly knife	1	Personal computers/ internet		
5	hacksaw				
5	cable tensioner/ rachet/ coping jack				
10	Crimping/ compression tool				
5	cable guide				
10	aerial handline				
5	set of ropes				
10	tape linen/steel tape				
5	Manhole hook				
5	Manhole Ladder 10 ft				
5	Extension Ladder 20ft				

TOOLS		EQUIPMENT		MATERIALS	
Qty.	Description	Qty.	Description	Qty.	Description
5	fixing brackets/ clamps		**PPE:**	5	standard rope
				5	color coded marked tape
5	lay-up stick / cable lifter	5	Safety shoes	2	extension arm
5	adjustable wrench	5	body belt & strap	5	Closure kits
5	extension ladders (24 ft. length)	5	Safety goggles tool pouch/holster	1 rl	grounding wire (gauge 12, stranded)
5	drill/electric drill (w/ bits of various sizes)	3	safety cones/other collapsible signs	5	grounding rod (1/4' by 4' with clamp)
10	gimlet	10	set gloves	5	Cable clamps
			hard hat/ helmet	5 sets	screw hooks
				5	lag screws
		5	Rain coat	5000	UY-Connetors
				2	sidewalk guy fixture
				5	bonding clamp
				2	anchor and grounding rods
				10	cable support
				10	cable spacer
				10	adhesive tape
				10	strand clamps
				1	soap
				60	cable tie
				5	rubber boots

* optional

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3.5 TRAINING FACILITIES

Estimated for maximum of 15 pax

Recommended space requirements for the various teaching/learning areas are as follows:

TEACHING/LEARNING AREAS	SIZE IN METERS (M)	AREA IN SQ. M	QTY	TOTAL AREA IN SQ. M
Lecture Area	6 x 5	30	1	30
Laboratory Area	10 X 10	100	1	100
Learning Resource Area	6 x 7	42	1	42
Tool Room/Storage Area	5 x 5	25	1	25
Wash ,Toilet & Locker Room	2 x 5	10	2	20
Total				159
Facilities / Equipment / Circulation*				60
Total Area				**219**

***Area requirement is equivalent to 30% of the total teaching/learning areas**

3.6 TRAINERS QUALIFICATIONS

- Must be a holder of Telecom OSP and Subscriber line Installation (Copper Cable/POTS and DSL) NC II or equivalent
- Holder of National TVET Trainers Certificate Level I
- * Must have at least 5-years relevant industry experience.
- Must be physically & mentally fit.

* Optional: Only when required by the hiring institution.

3.7 ASSESSMENT

Institutional assessment is undertaken by trainees to determine their achievement of units of competency. A certificate of achievement is issued for each unit of competency.

As a matter of policy, graduates of programs registered with TESDA under these training regulations are required to undergo mandatory national competency assessment upon completion of the program.

SECTION 4: NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

4.1   To attain the National Qualification of **Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) NC II**, the candidate must demonstrate competency in all the units listed in Section 1. Successful candidates shall be awarded a **National Certificate II** signed by the TESDA Director General.

4.2   The qualification of **Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) NC II** may be attained through:

4.2.1 Accumulation of Certificates of Competency (COCs) in all the following areas:

❖ **Telecom Outside Plant Line Installation (Copper cable)**
   This COC covers the following competency units:
   o Install pole hardware, cable terminal, line wire and accessories
   o Perform main cable installation
   o Splice/Joint cable terminal to main aerial and/or underground copper cable splicing
   o Perform basic troubleshooting on cable faults and errors

❖ **Subscriber Line/POTS and DSL Installation**
   This COC covers the following competency units:
   o Install POTS Subscriber Line
   o Install Digital Subscriber Line (DSL)

Successful candidates shall be awarded Certificates of Competency (COCs).

4.3   Assessment shall focus on the core units of competency. The basic and common units shall be integrated or assessed concurrently with the core units.

4.4   The following are qualified to apply for assessment and certification:

4.4.1. Graduate of formal, non-formal, and informal, including enterprise-based, training programs.

4.4.2. Experienced workers (wage employed or self employed)

4.5   The guidelines on assessment and certification are discussed in detail in the "Procedures Manual on Assessment and Certification" and "Guidelines on the Implementation of the Philippine TVET Qualification and Certification System (PTQCS)".

DEFINITION OF TERMS

GENERAL

1) **Certification -** is the process of verifying and validating the competencies of a person through assessment

2) **Certificate of Competency (COC)** – is a certification issued to individuals who pass the assessment for a single unit or cluster of units of competency

3) **Common Competencies** - are the skills and knowledge needed by all people working in a particular industry

4) **Competency** - is the possession and application of knowledge, skills and attitudes to perform work activities to the standard expected in the workplace

5) **Competency Assessment -** is the process of collecting evidence and making judgments on whether competency has been achieved

6) **Competency Standard (CS)** - is the industry-determined specification of competencies required for effective work performance

7) **Context of Assessment** - refers to the place where assessment is to be conducted or carried out

8) **Core Competencies -** are the specific skills and knowledge needed in a particular area of work - industry sector/occupation/job role

9) **Critical aspects of competency -** refers to the evidence that is essential for successful performance of the unit of competency

10) **Elective Competencies -** are the additional skills and knowledge required by the individual or enterprise for work

11) **Elements** - are the building blocks of a unit of competency. They describe in outcome terms the functions that a person performs in the workplace.

12) **Evidence Guide** - is a component of the unit of competency that defines or identifies the evidences required to determine the competence of the individual. It provides information on critical aspects of competency, underpinning knowledge, underpinning skills, resource implications, assessment method and context of assessment

13) **Level -** refers to the category of skills and knowledge required to do a job

14) **Method of Assessment** - refers to the ways of collecting evidence and when, evidence should be collected

15) **National Certificate (NC)** – is a certification issued to individuals who achieve all the required units of competency for a national qualification defined under the Training Regulations. NCs are aligned to specific levels within the PTQF

16) **Performance Criteria** - are evaluative statements that specify what is to be assessed and the required level of performance

17) **Qualification** - is a cluster of units of competencies that meets job roles and is significant in the workplace. It is also a certification awarded to a person on successful completion of a course in recognition of having demonstrated competencies in an industry sector

18) **Range of Variables** - describes the circumstances or context in which the work is to be performed

19) **Recognition of Prior Learning (RPL)** – is the acknowledgement of an individual's skills, knowledge and attitudes gained from life and work experiences outside registered training programs

20) **Required Knowledge -** refers to the competency that involves in applying knowledge to perform work activities. It includes specific knowledge that is essential to the performance of the competency

21) **Required Skills** - refers to the list of the skills needed to achieve the elements and performance criteria in the unit of competency. It includes generic and industry specific skills

22) **Resource Implications -** refers to the resources needed for the successful performance of the work activity described in the unit of competency. It includes work environment and conditions, materials, tools and equipment

23) **Basic Competencies -** are the skills and knowledge that everyone needs for work

24) **Training Regulations (TR)** – refers to the document promulgated and issued by TESDA consisting of competency standards, national qualifications and training guidelines for specific sectors/occupations. The TR serves as basis for establishment of qualification and certification under the PTQF. It also serves as guide for development of competency-based curricula and instructional materials including registration of TVET programs offered by TVET providers

25) **Unit of Competency** – is a component of the competency standards stating a specific key function or role in a particular job or occupation; it is the smallest component of achievement that can be assessed and certified under the PTQF

SECTOR SPECIFIC

1. **Aerial Cable** – suspended and attached on telephone pole for distribution porposes.

2. **Broadband -** broadband refers to telecommunication in which a wide band of frequencies is available to transmit information. Information can be multiplexed and sent on many different frequencies or channels within the band concurrently, allowing more information to be transmitted in a given amount of time.

3. **CBK –** connecting block

4. **Communication Cable** – is used for the distribution and small copper wires for voice and data signals

5. **Component -** That portion of a unit of equipment, which has been designed as a discrete unit and that can be identified as such.

6. **Connectorization** – proper preparation of cable for installation of appropriate type of connectors.

7. **Copper cable** -- Electric power cables made from twisted pair copper wire.

8. **Drop cable** – a small-diameter cable leading from the tap-off in the cable plant to the subscribers' TV receivers. A drop cable used by the CATV system should be either RG-59 or RG-6, 75-ohms coaxial cable (foam).

9. **DSL** - stands for digital subscriber line. DSL is a way to connect to the internet. DSL is a high speed connection (256kb/s to 24mb/s down and about the same up depending on DSL technology and equipment) that transfers data using the same wires as a regular telephone line.

10. **Environment -** The area surrounding the work site which can be directly or indirectly affected by occurrences at the work site. It includes the atmosphere, soils, drains, underground water tables, and the ecosystem. Protection of the environment would require the proper disposal of waste materials, restriction of burning off, the correct handling of toxic substances, the containment of CFCs and the like.

11. **Established procedures -** Formal arrangements of an organization, enterprise or statutory authority of how work is to be done.

12. **Flash testing** – air pressure testing to prevent water/moisture entry

13. **Hazardous materials -** Flammable gases and vapors and combustible dusts.

14. **Head-end** – is the main site at which all the signals from the various program sources are received, assembled, processed and combined for transmission through the distribution network. It is the originating point for all services carried on a cable television system

15. **Line extender amplifier** – extends further the feeder line from the trunk bridger.

16. **Modifications -** To make changes to the physical parameters or operational function of a device, component or piece of equipment or apparatus.

17. **Modem** - is an electronic device that converts digital data into analog (modulated-wave) signals suitable for transmission over analog telecommunications circuits (e.g., traditional phone lines) and demodulates received analog signals to recover the digital data transmitted. The "modulator/demodulator" thus makes it possible for existing communications channels to support a variety of digital communications, including e-mail, Internet access, and fax transmissions.

18. **Notification (notified) -** Can include verbal, written, electronic or recorded information at completion of work which may be required to be completed in accordance with established procedures.

19. **OH&S policies and procedures -** Arrangements of an organization or enterprise to meet their legal and ethical obligations of ensuring the workplace is safe and without risk to health.

20. **Outside Plant (OSP)** – is a part of Communication Network system that provides for the distribution voice and data signals from the head-end to the paying subscribers.

21. **POTS-** Plain Old Telephone Service

22. **Requirements -** That to which equipment and procedures and their outcomes must conform and includes statutory obligations and regulations and standards called-up by legislation or regulations.

23. **Servicing -** Undertaking routine inspection, repair and maintenance of circuits, systems or apparatus. Maintaining, fault finding and repair of equipment, plant and machinery.

24. **Splicing** - the act or process of creating a physical connection between two separate pieces of optical fiber. Optical fibers should only be spliced by a technician who possesses the required skills and interconnection technology.

25. **Splitter** – is a passive device used to divide the power equally into two path.

26. **Standards -** Technical documents, which set out specifications and other criteria for equipment, materials, and methods to ensure them consistently, perform as intended.

27. **Subscriber** – a person who pays a fee for cable services.

28. **Subscriber terminal** – the cable television system terminal to which a subscriber's equipment is connected.

29. **Supervised Industry Training** – similar to on-the-job training – an approach in training designed to enhance the knowledge and skills of the trainee through actual experience in the workplace to acquire specific competencies prescribed in the training regulations.

30. **System -** A group or combination of inter-related, inter-dependent or interlocking elements forming a collective entity. Includes circuits, apparatus, equipment and the like.

31. **Telecom** – refers to Telecommunication. It is the process of transmitting information to a receiver by means of electric current or pulses of light.

32. **Termination -** The act by means of which an electrical connection to an apparatus is established; specifically a prepared joint or connection between a cable, cord or conductor and a point in an electrical circuit such as a terminal or connection point. Such terminations include soldering, crimping, clamping, wire wrapping, insulation piercing/compression.

33. **Testing devices -** Devices and instruments used to ensure safety requirements and operational functions are met, and to diagnose faults in apparatus, circuits or systems.

34. **Wiring systems -** Permitted cables, enclosures, supports and accessories for power, measurement, control or communications purposes.

ANNEX A -   ICT COMPETENCY MAP

TELECOM OSP AND SUBSCRIBER LINE INSTALLATION (COPPER CABLE/POTS AND DSL) NC II

BASIC COMPETENCIES

Receive & Respond to Workplace Communication	Work with Others	Demonstrate work values	Practice basic housekeeping procedures	**Participate in Workplace Communication**
Work in a Team Environment	**Practice career professionalism**	**Practice occupational health & safety procedures**	Lead Workplace Communication	Lead Small Team
Develop and practice negotiation skills	Solve Problems Related to Work Activities	Use mathematical concepts and techniques	Use relevant technologies	Utilize Specialist Communication Skills
Develop Team and Individuals	Apply Problem Solving Techniques in the Workplace	Collect, analyze and organize information	Plan and Organize Work	Promote environmental protection

COMMON COMPETENCIES

Use Hand Tools	Perform Mensuration and Calculation	Prepare and Interpret Technical Drawing	**Apply Quality Standards**	**Operate a Personal Computer**
Terminate & Connect Electrical Wiring and Electronic Circuits	Perform Computer Operations			

CORE COMPETENCIES

Render Service Excellence to Customers	Install Mast and Accessories	Install and Lay Out Cables	Install and Configure CPE
Install Pole Hardware and Accessories	Lay Out and Install Fiber-Optic/ Coaxial Cables	Install Active and Passive Devices and Accessories	Install Subscriber Drop Lines and CPE
Install Cables and Devices for MDU	Operate CATV system	Implement preventive maintenance of CATV system	Perform CATV system troubleshooting and repair
Commission CATV system	Perform CATV outside plant expansion works	**Install pole hardware, cable terminal, line wire and accessories**	**Perform main cable installation**
Splice/Joint cable terminal to main aerial and/or underground copper cable splice	**Perform basic troubleshooting and correction of cable fault and error**	**Install POTS subscriber line**	**Install Digital Subscriber Line (DSL)**
Install and Splice Aerial/Underground Fiber Optic Cables	Perform optical testing and repair		

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