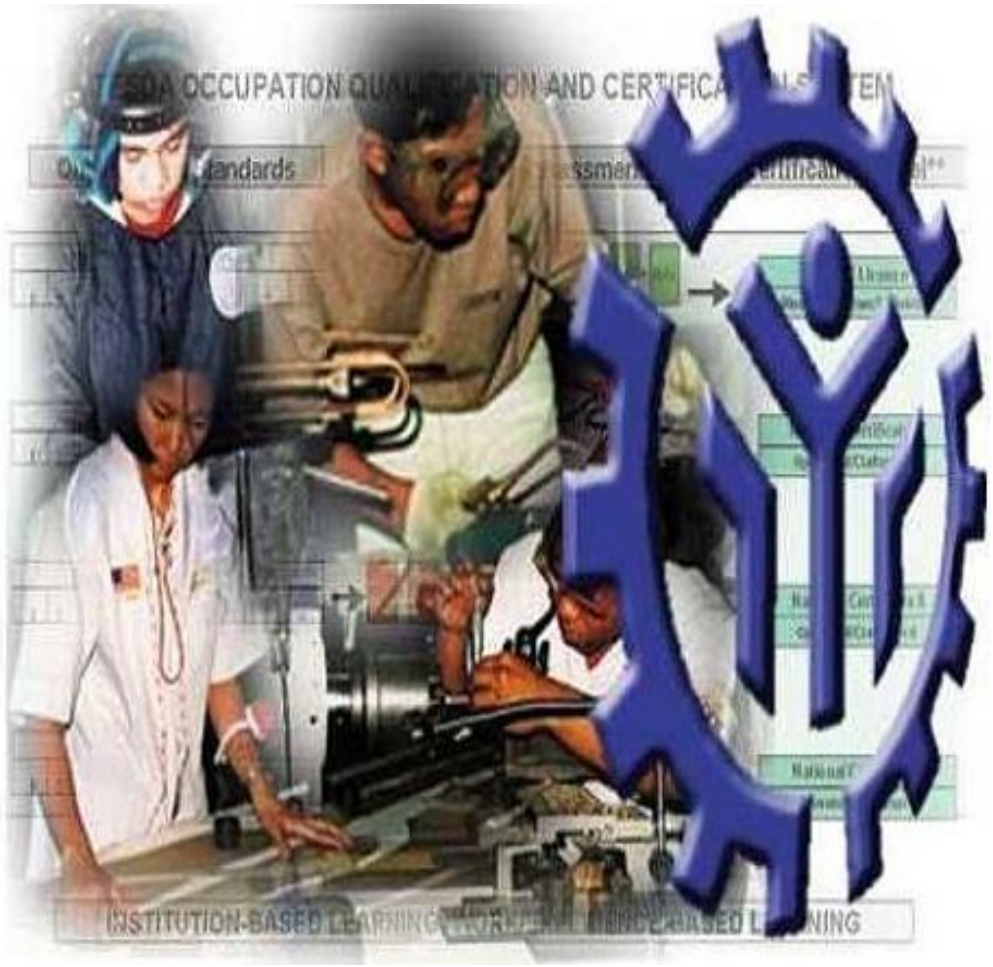
TRAINING REGULATIONS



TRANSMISSION LINE INSTALLATION AND MAINTENANCE NC IV

UTILITIES SECTOR

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY
East Service Road, South Superhighway, Taguig City, Metro Manila

Technical Education and Skills Development Act of 1994
(Republic Act No. 7796)

Section 22, "Establishment and Administration of the National Trade Skills Standards" of the RA 7796 known as the TESDA Act mandates TESDA to establish national occupational skill standards. The Authority shall develop and implement a certification and accreditation program in which private industry group and trade associations are accredited to conduct approved trade tests, and the local government units to promote such trade testing activities in their respective areas in accordance with the guidelines to be set by the Authority.

The Training Regulations (TR) serve as basis for the:

1 Competency assessment and certification;
2 Registration and delivery of training programs; and
3 Development of curriculum and assessment instruments.

Each TR has four sections:

Section 1 Definition of Qualification - refers to the group of competencies that describes the different functions of the qualification.

Section 2 Competency Standards - gives the specifications of competencies required for effective work performance.

Section 3 Training Arrangements - contains information and requirements in designing training program for certain Qualification. It includes curriculum design, training delivery; trainee entry requirements; tools and requirements; tools and equipment; training facilities and trainer's qualification.

Section 4 Assessment and Certification Arrangements - describes the policies governing assessment and certification procedure

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UTILITIES SECTOR

TRANSMISSION LINE INSTALLATION AND MAINTENANCE

NATIONAL CERTIFICATE LEVEL IV

TRAINING REGULATIONS FOR
TRANSMISSION LINE INSTALLATION AND MAINTENANCE NC IV

SECTION 1: TRANSMISSION LINE INSTALLATION AND MAINTENANCE NC IV QUALIFICATION

The Transmission Line (T/L) Installation and Maintenance NC IV Qualification consist of competencies that a person must achieve to enable him/her to perform the required competencies of a transmission line foreman in planning and supervising transmission line maintenance works.

Specifically, this Training Regulations in Transmission Line Installation and Maintenance NC IV deals with the planning of assigned transmission line maintenance work, supervising transmission line maintenance works and conducting initial root cause analysis.

This Qualification is packaged from the competency map of the Utilities industry sector as shown in Annex A.

The units of competency comprising this qualification include the following:

Code	BASIC COMPETENCIES
500311115	Utilize specialized communication skills
500311116	Develop teams and individuals
500311117	Apply problem solving techniques in the workplace
500311118	Collect, analyze and organize information
500311119	Plan and organize work
500311120	Promote environmental protection

Code	COMMON COMPETENCIES
UTL311203	Apply quality standards
UTL311206	Comply with environmental protection procedures
UTL311205	Operate and maintain line tools and equipment
UTL311201	Observe procedures, specifications and manuals of instruction
UTL311207	Perform computer operations

Code	CORE COMPETENCIES
UTL741309	Plan assigned maintenance work
UTL741310	Supervise transmission line maintenance work
UTL741311	Conduct initial root cause analysis

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

- Transmission Line Foreman

SECTION 2: COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common, and core units of competency required for Transmission Line Installation and Maintenance NC IV.

BASIC COMPETENCIES

UNIT OF COMPETENCY: UTILIZE SPECIALIZED COMMUNICATION SKILLS

UNIT CODE : 500311115

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to use specialized communication skills to meet specific needs of internal and internal clients, conduct interviews, facilitate group of discussions, and contribute to the development of communication strategies.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Meet common and specific communication needs of clients and colleagues	1.1. Specific communication needs of clients and colleagues are identified and met 1.2. Different approaches are used to meet communication needs of clients and colleagues 1.3. Conflict is addressed promptly and in a timely way and in a manner which does not compromise the standing of the organization	1.1. Communication process 1.2. Dynamics of groups and different styles of group leadership 1.3. Communication skills relevant to client groups	1.1. Full range of communication techniques including: 1.1.1. Full range of communication 1.1.2. Active listening 1.1.3. Feedback 1.1.4. Interpretation 1.1.5. Role boundaries setting 1.1.6. Negotiation 1.1.7. Establishing empathy 1.2. Communication skills required to fulfill job roles as specified by the organization
2. Contribute to the development of communication strategies	2.1. ***Strategies*** for internal and external dissemination of information are developed, promoted, implemented and reviewed as required 2.2. Channels of communication are established and reviewed regularly 2.3. Coaching in effective communication is provided 2.4. Work related network and relationship are maintained as necessary 2.5. Negotiation and conflict resolution strategies are used where required	2.1. Different communication strategies 2.2. Strategies in negotiations and conflict resolution	2.1. Full range of communication techniques including: 2.1.1. Active listening 2.1.2. Feedback 2.1.3. Interpretation 2.1.4. Role boundaries setting 2.1.5. Negotiation 2.1.6. Establishing empathy 2.2. Communication skills required to fulfill job roles as

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.6. Communication with clients and colleagues is appropriate to individual needs and organizational objectives		specified by the organization
3. Represent the organization	3.1. When participating in internal or external forums, presentation is relevant, appropriately researched and presented in a manner to promote the organization 3.2. Presentation is clear and sequential and delivered within a predetermined time 3.3. Utilize appropriate media to enhance presentation 3.4. Differences in views are respected 3.5. Written communication is consistent with organizational standards 3.6. Inquiries are responded in a manner consistent with organizational standard	3.1. Communication process 3.2. Communication skills relevant to client groups 3.3. Appropriate presentation tools and materials	3.1. Computer skills 3.2. Communication skills required to fulfill job roles as specified by the organization
4. Facilitate group discussion	4.1 Mechanisms which enhance ***effective group interaction*** is defined and implemented 4.2 Strategies which encourage all group members to participate are used routinely 4.3 Objectives and agenda for meetings and discussions are routinely set and followed 4.4 Relevant information is provided to group to facilitate outcomes 4.5 Evaluation of group communication strategies is undertaken to promote participation of all parties 4.6 Specific communication needs of individuals are identified and addressed	4.1 Communication process 4.2 Dynamics of groups and different styles of group leadership 4.3 Communication skills relevant to client groups	4.1. Full range of communication techniques including: 4.1.1. Role boundaries setting 4.1.2. Negotiation 4.1.3. Establishing empathy 4.2. Communication skills required to fulfill job roles as specified by the organization
5. Conduct interview	5.1 A range of appropriate communication strategies are employed in ***interview situations*** 5.2 Records of ***interviews*** are made and maintained in	5.1. Communication process 5.2. Effective questioning, listening and nonverbal	5.1. Full range of communication techniques including: 5.1.1. Active listening 5.1.2. Feedback

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	accordance with organizational procedures 5.3 Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated	communication techniques 5.3. Communication skills relevant to client groups 5.4. Types of Interview	5.1.3. Negotiation 5.1.4. Establishing empathy 5.2. Communication skills required to fulfill job roles as specified by the organization

RANGE OF VARIABLES

VARIABLES	RANGE
1. Strategies	1.1 Recognizing own limitations 1.2 Referral to specialists 1.3 Utilizing techniques and aids 1.4 Providing written drafts 1.5 Verbal and non verbal communication
2. Effective group interaction	2.1 Identifying and evaluating what is occurring within an interaction in a non-judgmental way 2.2 Using active listening 2.3 Making decision about appropriate words, behavior 2.4 Putting together response which is culturally appropriate 2.5 Expressing an individual perspective 2.6 Expressing own philosophy, ideology and background and exploring impact with relevance to communication
3. Types of Interview	3.1 Related to staff issues 3.2 Routine 3.3 Confidential 3.4 Evidential 3.5 Non-disclosure 3.6 Disclosure
4. Interview situations	4.1 Establish rapport 4.2 Elicit facts and information 4.3 Facilitate resolution of issues 4.4 Develop action plans 4.5 Diffuse potentially difficult situation

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:** 1.1. Demonstrated effective communication skills with clients accessing service and work colleagues 1.2. Adopted relevant communication techniques and strategies to meet client particular needs and difficulties
2. Resource Implications	2.1. Access to appropriate workplace where assessment can take place
3. Methods of Assessment	**Competency in this unit may be assessed through:** 3.1. Direct observation 3.2. Oral Interview
4. Context for Assessment	4.1. This unit should be assessed on the job through simulation

UNIT OF COMPETENCY : DEVELOP TEAMS AND INDIVIDUALS

UNIT CODE : 500311116

UNIT DESCRIPTOR : This unit covers the skills, knowledge and attitudes required to determine individual and team development needs and facilitate the development of the workgroup.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Provide team leadership	1.1 ***Learning and development needs*** are systematically identified and implemented in line with ***organizational requirements*** 1.2 Learning plan to meet individual and group training and developmental needs is collaboratively developed and implemented 1.3 Individuals are encouraged to self -evaluate performance and identify areas for improvement 1.4 ***Feedback on performance*** of team members is collected from relevant sources and compared with established team learning process	1.1. Coaching and mentoring principles 1.2. Understanding how to work effectively with team members who have diverse work styles, aspirations, cultures and perspective 1.3. Understanding how to facilitate team development and improvement 1.4. Understanding methods and techniques for eliciting and interpreting feedback	1.1. Ability to : 1.1.1. read and understand a variety of texts, 1.1.2. prepare general information and documents according to target audience; 1.1.3. spell with accuracy; 1.1.4. use grammar and punctuation effective relationships and conflict management 1.2. Communication skills 1.3. Coaching and mentoring skills to provide support to colleagues
2. Foster individual and organizational growth	2.1. Learning and development program goals and objectives are identified to match the specific knowledge and skills requirements of competency standards 2.2. ***Learning delivery methods*** are appropriate to the learning goals, the learning style of participants and availability of equipment and resources 2.3. Workplace learning opportunities and coaching/ mentoring assistance are provided to facilitate	2.1. Coaching and mentoring principles 2.2. Understanding how to work effectively with team members who have diverse work styles, aspirations, cultures and perspective 2.3. Understanding methods and techniques for eliciting and interpreting feedback	2.1. Communication skills including receiving feedback and reporting, maintaining effective relationships and conflict management 2.2. Coaching and mentoring skills to provide support to colleagues 2.3. Reporting skills to organize information; assess information for relevance and

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	individual and team achievement of competencies 2.4. Resources and timelines required for learning activities are identified and approved in accordance with organizational requirements		accuracy; identify and elaborate on learning outcomes 2.4. Facilitation skills to conduct small group training sessions
3. Monitor and evaluate workplace learning	3.1 Feedback from individuals or teams is used to identify and implement improvements in future learning arrangements 3.2 Outcomes and performance of individuals/teams are assessed and recorded to determine the effectiveness of development programs and the extent of additional support 3.3 Modifications to learning plans are negotiated to improve the efficiency and effectiveness of learning 3.4 Records and reports of competency are maintained within organizational requirement	3.1. Understanding how to facilitate team development and improvement 3.2. Understanding methods and techniques for eliciting and interpreting feedback 3.3. Understanding methods for identifying and prioritizing personal development opportunities and options 3.4. Knowledge of career paths and competency standards in the industry	3.1. Communication skills including receiving feedback and reporting, maintaining effective relationships and conflict management 3.2. Coaching and mentoring skills to provide support to colleagues 3.3. Reporting skills to organize information; assess information for relevance and accuracy; identify and elaborate on learning outcomes 3.4. Ability to relate to people from a range of social, cultural, physical and mental backgrounds
4. Develop team commitment and cooperation	4.1 Open communication processes to obtain and share information is used by team 4.2 Decisions are reached by the team in accordance with its agreed roles and responsibilities 4.3 Mutual concern and camaraderie are developed in the team	4.1. Understanding methods and techniques for eliciting and interpreting feedback 4.2. Understanding methods for identifying and prioritizing personal development opportunities and options 4.3. Knowledge of career paths and competency	4.1. Communication skills including receiving feedback and reporting, maintaining effective relationships and conflict management 4.2. Coaching and mentoring skills to provide support to colleagues 4.3. Facilitation skills to conduct small group training sessions

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
		standards in the industry	4.4. Ability to relate to people from a range of social, cultural, physical and mental backgrounds
5. Facilitate accomplishment of organizational goals	5.1 Team members actively participated in team activities and communication processes 5.2 Teams members developed individual and joint responsibility for their actions 5.3 Collaborative efforts are sustained to attain organizational goals	5.1. Team activities and communication processes 5.2. Understanding how to work effectively with team members who have diverse work styles, aspirations, cultures and perspective 5.3. Understanding how to facilitate team development and improvement 5.4. Knowledge of career paths and competency standards in the industry	5.1. Communication skills including receiving feedback and reporting, maintaining effective relationships and conflict management 5.2. Planning skills to organize required resources and equipment to meet learning needs 5.3. Coaching and mentoring skills to provide support to colleagues 5.4. Ability to relate to people from a range of social, cultural, physical and mental backgrounds

RANGE OF VARIABLES

VARIABLES	RANGE
1. Learning and development needs	1.1 Coaching, mentoring and/or supervision 1.2 Formal/informal learning program 1.3 Internal/external training provision 1.4 Work experience/exchange/opportunities 1.5 Personal study 1.6 Career planning/development 1.7 Performance appraisals 1.8 Workplace skills assessment 1.9 Recognition of prior learning
2. Organizational requirements	2.1 Quality assurance and/or procedures manuals 2.2 Goals, objectives, plans, systems and processes 2.3 Legal and organizational policy/guidelines and requirements 2.4 Safety policies, procedures and programs 2.5 Confidentiality and security requirements 2.6 Business and performance plans 2.7 Ethical standards 2.8 Quality and continuous improvement processes and standards
3. Feedback on performance	3.1 Formal/informal performance appraisals 3.2 Obtaining feedback from supervisors and colleagues 3.3 Obtaining feedback from clients 3.4 Personal and reflective behavior strategies 3.5 Routine and organizational methods for monitoring service delivery
4. Learning delivery methods	4.1 On the job coaching or mentoring 4.2 Problem solving 4.3 Presentation/demonstration 4.4 Formal course participation 4.5 Work experience 4.6 Involvement in professional networks 4.7 Conference and seminar attendance 4.8 Induction

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:** 1.1. Identified and implemented learning opportunities for others 1.2. Gave and received feedback constructively 1.3. Facilitated participation of individuals in the work of the team 1.4. Negotiated learning plans to improve the effectiveness of learning 1.5. Prepared learning plans to match skill needs 1.6. Accessed and designated learning opportunities
2. Resource Implications	**The following resources should be provided:** 2.1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2. Materials relevant to the proposed activity or tasks
3. Methods of Assessment	**Competency in this unit may be assessed through:** 3.1. Observation of work activities of the individual member in relation to the work activities of the group 3.2. Observation of simulation and or role play involving the participation of individual member to the attainment of organizational goal 3.3. Case studies and scenarios as a basis for discussion of issues and strategies in teamwork
4. Context for Assessment	4.1. Competency may be assessed in workplace or in a simulated workplace setting 4.2. Assessment shall be observed while task are being undertaken whether individually or in-group

UNIT OF COMPETENCY : APPLY PROBLEM SOLVING TECHNIQUES IN THE WORKPLACE *(Critical thinking and problem solving techniques)*

UNIT CODE : 500311117

UNIT DESCRIPTOR : This competency covers the knowledge, skills and attitudes required to apply the process of problem solving and other problems beyond those associated directly with the process unit. It includes the application of structured processes and improvement tools. This competency is typically performed by an experienced technician, team leader or supervisor.

ELEMENTS	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Analyze the problem *(Use system thinking)*	1.1. Issues/concerns are evaluated based on data gathered 1.2. Possible causes of problem are identified within the ***area of responsibility*** as based on experience and the use of problem solving tools/analytical techniques 1.3. Possible cause statements are developed based on findings	1.1. Broad understanding of systems, organizational systems and functions 1.2. Broad knowledge of help desk and maintenance practices 1.3. Broad knowledge of the client business domain 1.4. Broad knowledge based of diagnostic tools 1.5. General principles of OHS 1.6. Divisional/unit responsibilities	1.1. Decision making within a limited range of options. 1.2. Communication is clear, precise and varies according to the type of audience 1.3. Time management as applied to self-management. 1.4. Analytical skills in relation to routine malfunctions.
2. Identify possible solutions	2.1 All possible options are considered for resolution of the problem in accordance with ***safety*** and operating procedures 2.2 Strengths and weaknesses of possible options are considered 2.3 Corrective action is determined to resolve the problem and its possible future causes	2.1. Broad understanding of systems, organizational systems and functions 2.2. Broad knowledge of help desk and maintenance practices 2.3. Current industry accepted hardware and software products with broad and detailed knowledge of its general features and capabilities 2.4. Broad knowledge of the operating system 2.5. Broad knowledge of the client business domain 2.6. Broad knowledge based of diagnostic tools	2.1. Decision making within a limited range of options. 2.2. Communication is clear, precise and varies according to the type of audience 2.3. Teamwork in reference to personal responsibility 2.4. Time management as applied to self-management. 2.5. Analytical skills in relation to routine malfunctions. 2.6. General customer service skills displayed 2.7. Questioning and active listening is employed to clarify general information

ELEMENTS	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Recommend solution to higher management *(Make judgment and decisions/ Solve problems)*	3.1 Report/ ***communication*** or ***documentation*** are prepared 3.2 Recommendations are presented to appropriate personnel 3.3 Recommendations are followed-up, if required	3.1. Broad understanding of systems, organizational systems and functions 3.2. Broad knowledge of help desk and maintenance practices 3.3. Broad knowledge of the operating system 3.4. Broad knowledge of the client business domain 3.5. Broad knowledge based incorporating current industry practices related to escalation procedures 3.6. Broad knowledge based of diagnostic tools	3.1. Decision making within a limited range of options. 3.2. Communication is clear, precise and varies according to the type of audience 3.3. Teamwork in reference to personal responsibility 3.4. Time management as applied to self-management. 3.5. Analytical skills in relation to routine malfunctions. 3.6. General customer service skills displayed
4. Implement solution	4.1 Measurable objectives are identified 4.2 Resource needs are identified 4.3 Timelines are identified in accordance with plan	4.1. Broad knowledge of help desk and maintenance practices 4.2. Broad knowledge of the client business domain 4.3. Broad knowledge based incorporating current industry practices related to escalation procedures 4.4. Broad knowledge based of diagnostic tools 4.5. General principles of OHS 4.6. Divisional/unit responsibilities	4.1. Decision making within a limited range of options. 4.2. Time management as applied to self-management. 4.3. Analytical skills in relation to routine malfunctions. 4.4. General customer service skills displayed. 4.5. Questioning and active listening is employed to clarify general information
5. Evaluate/ Monitor results and outcome	5.1 Processes and improvements are identified based on evaluative assessment of problem 5.2 Recommendations are prepared and submitted to superiors.	5.1. Broad knowledge of the client business domain 5.2. Broad knowledge based incorporating current industry practices related to escalation procedures 5.3. Broad knowledge based of diagnostic tools 5.4. General principles of OHS 5.5. Divisional/unit responsibilities	5.1. Time management as applied to self-management. 5.2. Analytical skills in relation to routine malfunctions. 5.3. General customer service skills displayed. 5.4. Questioning and active listening is employed to clarify general information

RANGE OF VARIABLES

VARIABLES	RANGE
1. Area of responsibility	May include: 1.1. Work environment 1.2. Problem solution processes 1.3. Preventative maintenance and diagnostic policy 1.4. Roles and technical responsibilities
2. Occupational Health and Safety	2.1. As per company, statutory and vendor requirements. Ergonomic and environmental factors must be considered during the demonstration of this competency.
3. Communication	3.1. Variables may include but are not limited to: 3.2. Written communication can involve both hand written and printed material, internal memos, electronic mail, briefing notes and bulletin boards.
4. Documentation	4.1. Audit trails 4.2. Naming standards 4.3. Version control

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:** 1.1. Analyzed the problem 1.2. Identified possible solutions 1.3. Implemented solutions 1.4. Recommended solutions to higher management 1.5. Outcome evaluated/monitored Evidence of satisfactory performance in this unit can be obtained by observation of performance and questioning to indicate knowledge and understanding of the elements of the competency and performance criteria.
2. Resource Implications	Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what ifs will be required as well as bank of questions which will be used to probe the reasoning behind the observable actions.
3. Methods of Assessment	**Competency in this unit may be assessed through:** Through direct observation of application to tasks and questions related to underpinning knowledge Under general guidance, checking various stages of operation and at the completion of the activity against performance criteria and specifications
4. Context for Assessment	4.1. Competency may be assessed in the work place or in a simulated work place setting 4.2. Assessment shall be carried out through TESDA's Accredited Assessment Centers/Venues while tasks are undertaken either individually or as part of a team under limited supervision

UNIT OF COMPETENCY : COLLECT, ANALYZE AND ORGANIZE INFORMATION
***(Access and evaluate information*)**

UNIT CODE : 500311118

UNIT DESCRIPTOR : This unit covers the outcomes required to process, analyze, interpret and organize workplace information and other relevant data.

ELEMENTS	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Study information requirements	1.1. Needs are identified using established ***research procedures*** 1.2. Relevant ***forms*** and recording systems are used to gather the information 1.3. Respondents are selected to implement survey / research based on established procedures	1.1. Data processing, Information analysis and interpretation 1.2. Research methods 1.2.1. Qualitative 1.2.2. Quantitative 1.2.3. Statistical 1.3. Report writing 1.4. Use of relevant software 1.4.1. Spreadsheets 1.4.2. Presentation graphics 1.4.3. Work processor 1.4.4. Statistical package	1.1. Communicating effectively 1.2. Performing research 1.3. Reading / interpreting data and information 1.4. Problem solving
2. Process data	2.1. ***Data*** are collected and collated based on the prescribed method. 2.2. Relevant data are used as references in accordance with the objectives of the program. 2.3. ***Information*** is compiled according to the required form	2.1. Data processing, Information analysis and interpretation 2.2. Research methods 2.2.1. Qualitative 2.2.2. Quantitative 2.2.3. Statistical 2.3. Report writing	2.1. Communicating effectively 2.2. Performing research 2.3. Reading / interpreting data and information 2.4. Problem solving
3. Analyze, interpret and organize information gathered	3.1. Data are analyzed using relevant ***methodologies*** 3.2. Where applicable, ***statistical analysis/ methods*** are employed according to the objectives of the program 3.3. Graphs and other visual presentations are prepared to facilitate analysis / interpretation of information	3.1. Data processing, Information analysis and interpretation 3.2. Research methods 3.2.1. Qualitative 3.2.2. Quantitative 3.2.3. Statistical 3.3. Report writing 3.4. Use of relevant software 3.4.1. Spreadsheets 3.4.2. Presentation graphics 3.4.3. Work processor 3.4.4. Statistical package	3.1. Communicating effectively 3.2. Performing research 3.3. Reading / interpreting data and information 3.4. Problem solving

ELEMENTS	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
4. Present findings/ recommendations	4.1. Findings/ recommendations summarized and presented/packaged in user-friendly manner 4.2. Relevant inputs gathered to finalize report 4.3. Draft report prepared based on standard format. 4.4. Technical reports are submitted and disseminated to concerned offices.	4.1. Data processing, Information analysis and interpretation 4.2. Research methods 4.2.1. Qualitative 4.2.2. Quantitative 4.2.3. Statistical 4.3. Report writing 4.4. Use of relevant software 4.4.1. Spreadsheets 4.4.2. Presentation graphics 4.4.3. Work processor 4.4.4. Statistical package	4.1. Communicating effectively 4.2. Performing research 4.3. Reading / interpreting data and information 4.4. Problem solving

RANGE OF VARIABLES

VARIABLES	R A N G E
1. Research procedures	May include: 1.1 TNA 1.2 Front-end analysis 1.3 Surveys 1.4 Interviews 1.5 Functional analysis 1.6 DACUM research
2. Forms	May include: 2.1 Survey forms/Questionnaires 2.2 Personal information/Profile 2.3 Accident report form 2.4 Requisition slip 2.5 Job orders 2.6 Purchase request form 2.7 Incident report form
3. Methodologies	May include: 3.1 Qualitative methods 3.2 Quantitative methods
4. Statistical analysis/ methods	May include: 4.1. Averages (Mean, Median, Mode) 4.2. Percentage 4.3. Ranks 4.4. Frequency Distribution 4.5 Statistical test
5. Data	May include: Raw Data
6. Information	May include: Processed and packaged data

EVIDENCE GUIDE

1. Critical Aspects of Competency	**Assessment requires evidence that the candidate:** 1.1 Determined information requirements based on organizational goals and objectives. 1.2 Used relevant forms and recording systems to gather data 1.3 Processed data based on the objectives of the program 1.4 Utilized relevant research methods based on the objective of the program 1.5 Analyzed and organized information gathered 1.6 Submitted/Disseminated technical reports to concerned offices
2. Resource Implications	**The following resources should be provided:** 2.1 Workplace or assessment location 2.2 Access to office equipment and facilities relevant to the unit 2.3 Case studies/scenarios
3. Methods of Assessment	Competency may be assessed through: 3.1 Written/ Oral Examination 3.2 Interviews 3.3 Portfolio
4. Context for Assessment	4.1 Competency may be assessed in actual workplace or TESDA Accredited Assessment Center

UNIT OF COMPETENCY : PLAN AND ORGANIZE WORK *(Manage projects)*

UNIT CODE : 500311119

UNIT DESCRIPTOR : This unit covers the outcomes required in planning and organizing work. It may be applied to a small independent operation or to a section of a large organization.

ELEMENTS	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1 Set objectives	1.1 ***Objectives*** are consistent with and linked to work activities in accordance with organizational aims 1.2 Objectives are stated as measurable targets with clear time frames 1.3 Support and commitment of team members are reflected in the objectives 1.4 Realistic and attainable objectives are identified	1.1 Organization's strategic plan, policies rules and regulations, laws and objectives for work unit activities and priorities 1.2 Organizations policies, strategic plans, guidelines related to the role of the work unit 1.3 Team work and consultation strategies	1.1 Planning 1.2 Leading 1.3 Organizing 1.4 Coordinating 1.5 Communication Skills 1.6 Inter-and intra-person/ motivation skills
2 Plan and schedule work activities	2.1 Tasks/work activities to be completed are identified and prioritized as directed 2.2 Tasks/work activities are broken down into steps in accordance with set time frames achievable components in accordance with set time frames 2.3 ***Resources*** are allocated as per requirements of the activity 2.4 ***Schedule of work activities*** is coordinated with personnel concerned	2.1 Organization's strategic plan, policies rules and regulations, laws and objectives for work unit activities and priorities 2.2 Organizations policies, strategic plans, guidelines related to the role of the work unit 2.3 Team work and consultation strategies	2.1 Planning 2.2 Leading 2.3 Organizing 2.4 Coordinating 2.5 Communication Skills 2.6 Inter-and intra-person/ motivation skills
3 Implement work plans	3.1 ***Work methods and practices*** are identified in consultation with personnel concerned 3.2 ***Work plans*** are implemented in accordance with set time frames, resources and ***standards***	3.1 Organization's strategic plan, policies rules and regulations, laws and objectives for work unit activities and priorities 3.2 Organizations policies, strategic plans, guidelines related to the role of the work unit 3.3 Team work and consultation strategies	3.1 Planning 3.2 Leading 3.3 Organizing 3.4 Coordinating 3.5 Communication Skills 3.6 Inter-and intra-person/ motivation skills

ELEMENTS	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
4 Monitor work activities	4.1 Work activities are monitored and compared with set objectives 4.2 Work performance is monitored 4.3 Deviations from work activities are reported and recommendations are coordinated with appropriate personnel and in accordance with set standards 4.4 Reporting requirements are complied with in accordance with recommended format 4.5 Observe timeliness of report 4.6 Files are established and maintained in accordance with standard operating procedures	4.1 Organization's strategic plan, policies rules and regulations, laws and objectives for work unit activities and priorities 4.2 Organizations policies, strategic plans, guidelines related to the role of the work unit 4.3 Team work and consultation strategies	4.1 Planning 4.2 Leading 4.3 Organizing 4.4 Coordinating 4.5 Communicatio n Skills 4.6 Inter-and intra-person/ motivation skills
5 Review and evaluate work plans and activities	5.1. Work plans, strategies and implementation are reviewed based on accurate, relevant and current information 5.2. Review is based on comprehensive consultation with appropriate personnel on outcomes of work plans and reliable feedback 5.3. Results of review are provided to concerned parties and formed as the basis for adjustments/simplifications to be made to policies, processes and activities 5.4. Performance appraisal is conducted in accordance with organization rules and regulations 5.5. Performance appraisal report is prepared and documented regularly as per organization requirements. 5.6. Recommendations are prepared and presented to ***appropriate personnel/authorities*** 5.7. ***Feedback mechanisms*** are implemented in line with organization policies	5.1. Organization's strategic plan, policies rules and regulations, laws and objectives for work unit activities and priorities 5.2. Organizations policies, strategic plans, guidelines related to the role of the work unit 5.3. Team work and consultation strategies	5.1. Planning 5.2. Leading 5.3. Organizing 5.4. Coordinating 5.5. Communicatio n Skills 5.6. Inter-and intra-person/ motivation skills

RANGE OF VARIABLES

VARIABLES	RANGE
1. Objectives	1.1. Specific 1.2. General
2. Resources	2.1. Personnel 2.2. Equipment and technology 2.3. Services 2.4. Supplies and materials 2.5. Sources for accessing specialist advice 2.6. Budget
3. Schedule of work activities	3.1. Daily 3.2. Work-based 3.3. Contractual 3.4. Regular 3.5. Confidential 3.6. Disclosure 3.7. Non-disclosure
4. Work methods and practices	Work methods and practices may include but not limited to: 4.1. Legislated regulations and codes of practice 4.2. Industry regulations and codes of practice 4.3. Occupational health and safety practices
5. Work plans	5.1. Daily work plans 5.2. Project plans 5.3. Program plans 5.4. Organization strategic and restructuring plans 5.5. Resource plans 5.6. Skills development plans 5.7. Management strategies and objectives
6. Standards	6.1. Performance targets 6.2. Performance management and appraisal systems 6.3. National competency standards 6.4. Employment contracts 6.5. Client contracts 6.6. Discipline procedures 6.7. Workplace assessment guidelines 6.8. Internal quality assurance 6.9. Internal and external accountability and auditing requirements 6.10. Training Regulation Standards 6.11. Safety Standards
7. Appropriate personnel/authorities	7.1. Appropriate personnel include: 7.2. Management 7.3. Line Staff
8. Feedback mechanisms	8.1. Feedback mechanisms include: 8.2. Verbal feedback 8.3. Informal feedback 8.4. Formal feedback 8.5. Questionnaire 8.6. Survey 8.7. Group discussion

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:** 1.1. Set objectives 1.2. Planned and scheduled work activities 1.3. Implemented work plans 1.4. Monitored work activities 1.5. Reviewed and evaluated work plans and activities
2. Resource Implications	**The following resources should be provided:** 2.1. Tools, equipment and facilities appropriate to the proposed activities 2.2. Materials relevant to the proposed activities 2.3. Work plan schedules 2.4. Drawings, sketches or blueprint
3. Methods of Assessment	**Competency in this unit may be assessed through:** 3.1. Direct observation/questioning 3.2. Practical exercises on Planning and Scheduling Work Activities 3.3. Third Party Report (collection of competency evidence)
4. Context for Assessment	4.1. Competency may be assessed in the workplace or in simulated work

UNIT OF COMPETENCY : PROMOTE ENVIRONMENTAL PROTECTION

UNIT CODE : 500311120

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required in adhering to environmental protection principles, strategies and guidelines

ELEMENTS	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Study guidelines for environmental concerns	1.1. Environmental **legislations/ conventions** and local ordinances are identified according to the different ***environmental aspects/impact*** 1.2. ***Industrial standard/ environmental practices*** are described according to the different environmental concerns	1.1. Features of an environmental management strategy 1.2. Environmental issues/concerns 1.3. International Environmental Protocols (Montreal, Kyoto) 1.4. Waste minimization hierarchy 1.5. Environmental planning/ management 1.6. Community needs and expectations 1.7. Resource availability 1.8. Environment-friendly/ environmental advocates 1.9. Sanitary Code 1.10. Environmental Code of practice	1.1. Communicating effectively 1.2. Performing research and analysis 1.3. Reading / interpreting data and information 1.4. Problem solving
2. Implement specific environmental programs	2.1 ***Programs/Activities*** are identified according to organizations policies and guidelines. 2.2 Individual roles/ responsibilities are determined and performed based on the activities identified. 2.3 Problems/ constraints encountered are resolved in accordance with organizations' policies and guidelines 2.4 Stakeholders are consulted based on company guidelines	2.1. Features of an environmental management strategy 2.2. Waste minimization hierarchy 2.3. Environmental planning/ management 2.4. Community needs and expectations 2.5. Resource availability 2.6. Environment-friendly/ environmental advocates 2.7. 5S of Good Housekeeping 2.8. 3Rs – Reduce, Reuse & Recycle	2.1. Communicating effectively 2.2. Performing research and analysis 2.3. Reading / interpreting data and information 2.4. Problem solving
3. Monitor activities on environmental protection/ programs	3.1 Activities are ***periodically*** monitored and evaluated according to the objectives of the environmental program	3.1. Features of an environmental management strategy 3.2. Environmental issues/concerns	3.1. Communicating effectively 3.2. Performing research and analysis

ELEMENTS	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	3.2 Feedback from stakeholders are gathered and considered in proposing enhancements to the program based on consultations 3.3 Data gathered are analyzed based on evaluation requirements 3.4 Recommendations are submitted based on the findings 3.5 Management support systems are set/ established to sustain and enhance the program 3.6 Environmental incidents are monitored and reported to concerned/proper authorities	3.3. International Environmental Protocols (Montreal, Kyoto) 3.4. Waste minimization hierarchy 3.5. Environmental planning/ management 3.6. Community needs and expectations 3.7. Resource availability 3.8. Environment-friendly/ environmental advocates 3.9. 5S of Good Housekeeping 3.10. 3Rs – Reduce, Reuse & Recycle 3.11. Sanitary Code 3.12. Environmental Code of practice	3.3. Reading / interpreting data and information 3.4. Problem solving

RANGE OF VARIABLES

VARIABLES	R A N G E
1. Legislations/Conventions	May include: 1.1 Clean Air act 1.2 Clean Water Act 1.3 Solid Waste Management 1.4 Montreal Protocol 1.5 Kyoto Protocol
2. Environmental aspects/impacts	2.1 Air pollution 2.2 Water pollution 2.3 Noise pollution 2.4 Solid waste 2.5 Flood control 2.6 Deforestation/Denudation 2.7 Radiation/Nuclear /Radio Frequency/ Microwaves 2.8 Situation 2.9 Soil erosion (e.g. Quarrying, Mining, etc.) 2.10 Coral reef/marine life protection
3. Industrial standards/ Environmental practices	3.1 ECC standards 3.2 ISO standards 3.3 company environmental management systems (EMS)
4. Periodic	4.1 hourly 4.2 daily 4.3 weekly 4.4 monthly 4.5 quarterly 4.6 yearly
5. Programs/Activities	5.1 Waste disposal (on-site and off-site) 5.2 Repair and maintenance of equipment 5.3 Treatment and disposal operations 5.4 Clean-up activities 5.5 Laboratory and analytical test 5.6 Monitoring and evaluation 5.7 Environmental advocacy programs

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:** 1.1 Demonstrated knowledge of environmental legislations and local ordinances according to the different environmental issues/concerns. 1.2 Described industrial standard environmental practices according to the different environmental issues/concerns. 1.3 Resolved problems/ constraints encountered based on management standard procedures 1.4 Implemented and monitored environmental practices on a periodic basis as per company guidelines 1.5 Recommended solutions for the improvement of the program 1.6 Monitored and reported to proper authorities any environmental incidents
2. Resource Implications	**The following resources should be provided:** 2.1 Workplace/Assessment location 2.2 Legislation, policies, procedures, protocols and local ordinances relating to environmental protection 2.3 Case studies/scenarios relating to environmental protection
3. Methods of Assessment	**Competency in this unit may be assessed through:** 3.1 Written/ Oral Examination 3.2 Interview/Third Party Reports 3.3 Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad) 3.4 Simulations and role-plays
4. Context for Assessment	4.1 Competency may be assessed in actual workplace or at the designated TESDA center.

COMMON COMPETENCIES

UNIT TITLE : APPLY QUALITY STANDARDS

UNIT CODE : UTL311203

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 ***Italicized Bold*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
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	1.1. Relevant production processes, materials and products 1.2. Characteristics of materials, software and hardware used in production processes 1.3. Quality checking procedures 1.4. Quality Workplace procedures 1.5. Identification of faulty materials related to work	1.1. Reading skills required to interpret work instruction 1.2. Critical thinking 1.3. Interpreting work instructions
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	2.1. Safety and environmental aspects of production processes 2.2. Fault identification and reporting 2.3. Workplace procedure in documenting completed work 2.4. Workplace Quality Indicators	2.1. Carry out work in accordance with OHS policies and procedures

ELEMENT	PERFORMANCE CRITERIA ***Italicized Bold*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
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	3.1. Quality improvement processes 3.2. Company customers defined	3.1. Solution providing and decision-making 3.2. Practice company process improvement procedure

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 1.1.3. Electrical tape, etc. 1.2. Components may include but not limited to: 1.2.1. Cross-arms and braces 1.2.2. Conductors and accessories 1.2.3. Insulators, etc.
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
5. Customer	5.1. Co-worker 5.2. Suppliers 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. Resource implication	The following resources should be provided: 2.1. Materials and component parts and equipment to be used in a real or simulated electronic production situation
3. Method of assessment	Competency in this unit may be assessed through: 3.1. Observation 3.2. Questioning 3.3. Practical demonstration
4. Context of Assessment	4.1. Assessment may be conducted in the workplace or in a simulated work environment.

UNIT TITLE : **COMPLY WITH ENVIRONMENTAL PROTECTION PROCEDURES**
UNIT CODE : **UTL311206**
UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to implement and monitor environmental protection policies and procedures including accessing relevant information concerning environmental protection regulations and procedures, and implementing and monitoring procedures concerning environmental hazards, related control procedures, environmental training arrangements, and required records and documentation

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Access information concerning environmental protection regulations and procedures	1.1. Relevant provisions of environmental legislation and codes of practice are accurately followed 1.2. Information on workplace environmental policies, procedures and programs is stored in a readily accessible location and manner 1.3. ***Information*** is accurately and clearly explained to the work team and updated according to change in workplace policy 1.4. Information about the outcomes of environmental risk identification and control procedures is provided to the appropriate personnel	1.1. Relevant environmental protection regulations & codes of practice 1.2. Environmental risks associated with workplace operations and related precautions to control the risk 1.3. Environmental protection standards required in the workplace	1.1. Workplace reporting and recording processes and procedures 1.2. Communication skills 1.3. Accessing information and data 1.4. Ability to recognize potential environmental risks and ways of minimizing them
2. Implement and monitor procedures concerning environmental hazards	2.1 Existing and potential ***environmental hazards*** in the workplace are identified and reported 2.2 Identified hazards are assessed in relation to relevant environmental protection policies 2.3 ***Workplace procedures for dealing with hazardous events*** are implemented wherever necessary to ensure that prompt control action is taken 2.4 ***Personal protective equipment (PPE)*** are obtained and used in	2.1. Relevant environmental protection regulations & codes of practice 2.2. Workplace procedures and guidelines for implementing and monitoring procedures concerning environmental hazards 2.3. Workplace environmental hazards and	2.1. Workplace reporting and recording processes and procedures 2.2. Communication skills 2.3. Problem solving skills 2.4. Ability to: 2.4.1. recognize potential environmental hazards and ways of minimizing them

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	accordance with job requirements 2.5 Hazardous events are investigated to identify causes, and control measures are implemented to prevent recurrence and minimize risks of such events	related hazard control measures 2.4. Equipment and resources required when implementing and monitoring environmental protection procedures 2.5. Organizational structure and site layout	2.4.2. counsel, advise and inform others on environmental protection matters 2.4.3. identify and correctly use equipment and vehicles in accordance with environmental protection regulations and guidelines
3. Implement and monitor environmental control procedures	3.1 Existing environmental protection measures are implemented, monitored and reviewed 3.2 Work procedures to protect environment are implemented and adherence to them by the work group is monitored 3.3 Required improvements to existing control measures are identified, including required resources for implementation, and reported to appropriate personnel	3.1. Relevant environmental protection regulations & codes of practice 3.2. Workplace procedures and guidelines for implementing and monitoring environmental control procedures 3.3. Equipment and resources required when implementing and monitoring environmental control procedures 3.4. Organizational structure and site layout	3.1. Workplace reporting and recording processes and procedures 3.2. Communication skills 3.3. Accessing information and data 3.4. Problem solving skills 3.5. Ability to: 3.5.1. counsel, advise and inform others on environmental control procedures 3.5.2. identify and correctly use equipment and vehicles in accordance with environmental control procedures, regulations and guidelines

RANGE OF VARIABLES

VARIABLE	RANGE
1 Environment	Environment may include: 1.1 indoor 1.2 outdoor 1.3 marine 1.4 atmospheric
2 Information	Information/documents may include: 2.1 Workplace procedures and practices related to environmental protection, including all financial, operating and customer service policies and procedures 2.2 OHS and environmental protection regulations 2.3 Workplace housekeeping procedures and policies 2.4 Code of practice for environmental protection 2.5 Material safety data sheets 2.6 Policies and procedures for entry and work in confined spaces 2.7 Manufacturer's instructions concerning the use and servicing of equipment 2.8 Emergency procedures 2.9 Regulations and policies concerning noise, waste disposal/reprocessing, handling of dangerous goods/hazardous substances and other environmental protection issues 2.10 Standards and certification requirements 2.11 Quality assurance procedures
3 Appropriate personnel	Appropriate personnel may include: 3.1 Workplace personnel including supervisors and management 3.2 Site visitors 3.3 Contractors 3.4 Official representatives
4 Environmental hazards	4.1 Oils and lubricants 4.2 Exhaust fumes 4.3 Gas 4.4 Smoke 4.5 Chemicals and detergents 4.6 Rubbish 4.7 Noise 4.8 wastes

VARIABLE	RANGE
5 Workplace procedures for dealing with hazardous events	Procedures may include: 5.1 Inspection and housekeeping 5.2 Maintenance including plant and equipment 5.3 Purchasing 5.4 Evacuation 5.5 Hazardous substance containment 5.6 Operational instruction 5.7 Environmental information including incident and management practices 5.8 Specific hazardous materials policies and procedures 5.9 Risk assessment and control 5.10 First aid
6 Personal protective equipment (PPE)	PPE may include: 6.1 Gloves 6.2 Safety headwear and footwear 6.3 Safety glasses 6.4 Two-way radios 6.5 High visibility clothing

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires that the candidate: 1.1 Identified and monitored environmental hazards in the workplace 1.2 Implemented effective procedures for dealing with hazardous events 1.3 Monitored workplace adherence to environmental practices 1.4 Communicated effectively with the team members
2. Resource implications	The following resources should be provided: 2.1 Environmental protection regulations and guidelines 2.2 OHS regulations and hazard prevention policies and procedures 2.3 workplace environmental protection policies, procedures and instructions 2.4 equipment/vehicle manufacturer's operating and servicing instructions
3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Direct observation 3.2 Oral or written questioning 3.3 Questions/interview Assessment of underpinning knowledge and practical skills may be combined
4. Context of assessment	4.1 Competency assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines 4.2 Assessment may be conducted in the workplace or a simulated environment

UNIT OF COMPETENCY: OBSERVE PROCEDURES, SPECIFICATIONS AND MANUALS OF INSTRUCTIONS

UNIT CODE : UTL311201

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes on identifying, interpreting, applying services to specifications and manuals and storing manuals.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Identify and access specification/ manuals	1.1 Appropriate manuals are identified and accessed as per job requirements 1.2 Version and date of manual are checked to ensure that correct specification and procedures are identified	1.1 Types of manuals used in transmission lines (T/L) 1.2 Identification of symbols used in the manuals	1.1 Reading and comprehension skills 1.2 Identifying and interpreting T/L manuals and specifications 1.3 Accessing information and data
2. Interpret manuals	2.1 Relevant sections, chapters of specifications/ manuals are located in relation to the work to be conducted 2.2 Information and procedure in the manual are interpreted in accordance with industry practices	2.1 Types of manuals used in transmission lines (T/L) 2.2 Types of symbols used in manuals 2.3 Identification of units of measurements 2.4 Unit conversion	2.1 Reading and comprehension skills 2.2 Identifying and interpreting T/L manuals and specifications 2.3 Accessing information and data 2.4 Applying conversion of units of measurements
3. Apply information in manual	3.1 ***Manual*** is interpreted according to job requirements 3.2 Work steps are correctly identified in accordance with manufacturer's specification 3.3 Manual data are applied according to the given task 3.4 All correct sequencing and adjustments are interpreted in accordance with information contained on the manual or specifications	3.1 Types of manuals used in transmission lines (T/L) 3.2 Types and application of symbols used in the manuals 3.3 Unit conversion	3.1 Reading and comprehension skills 3.2 Applying information from manuals
4. Store manuals	4.1 Manual or specification is stored appropriately to prevent damage, ready access and updating of information when required in accordance with company requirements	4.1 Types of manuals used in transmission lines (T/L) 4.2 Manual storing and maintaining procedures	4.1 Reading and comprehension skills 4.2 Storing and maintaining manuals

RANGE OF VARIABLES

VARIABLE	RANGE
1. Procedures, Specifications and Manuals of Instructions	Kinds of Manuals: 1.1 Manufacturer's Specification Manual 1.2 Repair Manual 1.3 Maintenance Procedure Manual 1.4 Periodic Maintenance Manual

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires that the candidate: 1.1 Identified and accessed specification/manuals as per job requirements 1.2 Interpreted manuals in accordance with industry practices 1.3 Applied information in manuals according to the given task 1.4 Stored manuals in accordance with company requirements
2. Resource implications	The following resources should be provided: 2.1 All manuals/catalogues relative to construction sector
3. Methods of assessment	Competency should be assessed through: 3.1 Direct observation 3.2 Questions/interview Assessment of underpinning knowledge and practical skills may be combined
4. Context of assessment	4.1 Competency assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines 4.2 Assessment may be conducted in the workplace or a simulated environment

UNIT OF COMPETENCY : OPERATE AND MAINTAIN LINE TOOLS AND EQUIPMENT

UNIT CODE : UTL311205

DESCRIPTOR : This unit covers the knowledge, skills and attitude to operate and maintain transmission line tools and equipment. This unit will involve working in a team environment.

ELEMENT	PERFORMANCE CRITERIA (***Italicized Bold*** terms are elaborated in the range of variables)	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Plan and prepare for work	1.1 Work instruction is secured and interpreted according to ***job requirements*** 1.2 Relevant ***occupational health and safety requirements*** are identified following job specifications 1.3 Relevant transmission line ***tools, equipment and hardware*** are identified and requested in accordance with job specifications	1.1 Relevant occupational health and safety standards 1.2 Types and usage of transmission line tools and equipment 1.3 Basic preventive maintenance servicing for transmission line equipment	1.1 Following and complying occupational health and safety standards 1.2 Following procedures for the safe use of transmission line tools and equipment 1.3 Performing basic preventive maintenance servicing for transmission line equipment
2. Prepare transmission line tools and equipment	2.1 Personal protective equipment (PPE) are obtained following job requirements 2.2 Transmission line tools, equipment and hardware are acquired and secured in line with job requirements 2.3 Transmission hot line tools are tested/set following manufacturer's standards or recommendation	2.1 Types and functions of PPEs 2.2 Types and usage of transmission line tools and equipment 2.3 Basic preventive maintenance servicing for transmission line equipment 2.4 Proper testing of transmission hot line tools	2.1 Following and complying occupational health and safety standards 2.2 Following procedures for the safe use of transmission line tools and equipment 2.3 Performing basic preventive maintenance servicing for transmission line equipment 2.4 Testing skills
3. Operate transmission line tools and equipment	3.1 PPE are used in line with job requirements 3.2 Transmission line tools and equipment are used in line with job requirements	3.1 Proper usage of PPEs 3.2 Proper procedure for the use of transmission line tools and equipment 3.3 Basic preventive maintenance servicing for transmission line equipment	3.1 Using PPEs 3.2 Following procedures for the safe use of transmission line tools and equipment 3.3 Performing basic preventive maintenance servicing for transmission line equipment

ELEMENT	PERFORMANCE CRITERIA (***Italicized Bold*** terms are elaborated in the range of variables)	REQUIRED KNOWLEDGE	REQUIRED SKILLS
4. Check condition of transmission line tools and equipment	4.1 Transmission line tools and equipment are identified according to classification and job requirements 4.2 Non-functional transmission line tools and equipment are segregated and labeled according to classification 4.3 Safety of transmission line tools and equipment are observed in accordance with manufacturer's instructions 4.4 Condition of PPE are checked in accordance with manufacturer's instructions	4.1 Classification of transmission line tools and equipment 4.2 Proper safety procedure for the use of transmission line tools and equipment 4.3 Basic preventive maintenance servicing for transmission line equipment	4.1 Classifying transmission line tools and equipment 4.2 Following and complying occupational health and safety standards 4.3 Following procedures for the safe use of transmission line tools and equipment 4.4 Performing basic preventive maintenance servicing for transmission line equipment
5. Perform basic preventive maintenance	5.1 Appropriate lubricants are identified according to types of equipment 5.2 Equipment are lubricated according to preventive maintenance schedule or manufacturer's specifications 5.3 Transmission line tools are cleaned and tested according to standard procedures 5.4 Transmission line tools and equipment are inspected, and repaired and replaced, if necessary, after use 5.5 Work place is cleaned and kept in safe state in line with OHSA regulations	5.1 Types and usage of lubricants for transmission line equipment 5.2 Proper procedure for the use and maintenance of transmission line tools and equipment 5.3 Basic preventive maintenance servicing for transmission line equipment 5.4 Applicable OHSA regulations in preventive maintenance	5.1 Identifying types and usage of lubricants 5.2 Following procedures for the safe use and maintenance of transmission line tools and equipment 5.3 Performing basic preventive maintenance servicing for transmission line equipment 5.4 Following OHSA regulations
6. Store tools and equipment	6.1 Inventory of transmission line tools and equipment are conducted and recorded as per company practices 6.2 Transmission line tools and equipment are stored safely in appropriate locations in accordance with manufacturer's specifications or company procedures	6.1 Proper procedure for the inventory and storage of transmission line tools and equipment	6.1 Following procedures for the inventory and storage of transmission line tools and equipment 6.2 Inventory skills 6.3 Proper storage and handling skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. Job requirements	1.1 Perform overhead transmission line work 1.2 Erect pole 1.3 Perform live-line maintenance work 1.4 Perform cold-line maintenance work 1.5 Perform ground line maintenance work 1.6 Perform emergency restoration structure
2. Occupational health and safety requirements	May include but not limited to: 2.1 Personal protective equipment (PPE) 2.1.1 Safety hat 2.1.2 Safety goggles 2.1.3 Safety gloves 2.1.4 Safety shoes 2.1.5 Safety harness/strap 2.2 Installation of grounding cluster
3. Transmission line tools, equipment and hardware	May include but not limited to: 3.1 Hand tools 3.1.1 Pliers 3.1.2 Screwdrivers 3.1.3 Adjustable wrenches 3.1.4 Ball peen hammer 3.1.5 Auger bit 3.1.6 Hacksaw/cutting tools 3.1.7 Steel tape 3.2 Equipment 3.2.1 Motorized capstan 3.2.2 Climbing gears 3.2.3 Line truck/Boom truck 3.3 Set of hot line trailer 3.4 Hardware 3.4.1 Insulator 3.4.2 Machine bolts 3.4.3 Suspension clamp assembly (ACSR/OHGW) 3.4.4 Strain clamp assembly(ACSR/OHGW) 3.4.5 Overhead ground wires 3.4.6 Cross-arms and braces 3.4.7 Conductors and accessories

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Demonstrates ability to identify and comply with occupational health and safety standards in operating and maintaining transmission line tools and equipment 1.2. Demonstrates ability to identify and safely use transmission tools and equipment 1.3. Demonstrates ability to perform basic preventive maintenance servicing for transmission line equipment
2. Resource Implications	The following resources should be provided: 2.1. Transmission line tools, equipment and PPE 2.2. Work area
3. Method of assessment	Competency in this unit may be assessed through: 3.1. Observation and Oral questioning 3.2. Demonstration with oral questioning 3.3. Written test
4. Context of assessment	4.1. Competency may be assessed in the workplace or in a simulated workplace setting 4.2. Assessment shall be undertaken either individually or part of team under limited supervision

UNIT TITLE : **PERFORM COMPUTER OPERATIONS**
UNIT CODE : **UTL311207**
UNIT DESCRIPTOR : This unit covers the knowledge, skills, (and) attitudes and values needed to perform computer operations which include inputting, accessing, producing and transferring data using the appropriate hardware and software

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Plan and prepare for task to be undertaken	1.1. Requirements of task are determined 1.2. Appropriate ***hardware*** and ***software*** are selected according to task assigned and required outcome 1.3. Task is planned to ensure ***OH&S guidelines*** and procedures are followed	1.1. Main types of computers and basic features of different operating systems 1.2. Main parts of a computer 1.3. Information on hardware and software 1.4. Data security guidelines	1.1. Reading and comprehension skills required to interpret work instruction and to interpret basic user manuals. 1.2. Communication skills to identify lines of communication, request advice, follow instructions and receive feedback. 1.3. Interpreting user manuals and security guidelines
2. Input data into computer	2.1. Data are entered into the computer using appropriate program/application in accordance with company procedures 2.2. Accuracy of information is checked and information is saved in accordance with standard operating procedures 2.3. Inputted data are stored in ***storage media*** according to requirements 2.4. Work is performed within ***ergonomic guidelines***	2.1. Basic ergonomics of keyboard and computer user 2.2. Storage devices and basic categories of memory 2.3. Relevant types of software	2.1. Technology skills to use equipment safely including keyboard skills. 2.2. Entering data
3. Access information using computer/ smartphone	3.1. Correct program/ application is selected based on job requirements 3.2. Program/application containing the information required is accessed according to company procedures 3.3. ***Desktop icons*** are correctly selected, opened and closed for navigation purposes	3.1. General security, privacy legislation and copyright 3.2. Productivity Application 3.3. Business Application	3.1. Accessing information 3.2. Searching and browsing files and data

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	3.4. Keyboard techniques are carried out in line with OH&S requirements for safe use of keyboards		
4. Produce/ output data using computer system	4.1. Entered data are processed using appropriate software commands 4.2. Data printed out as required using computer hardware/peripheral devices in accordance with standard operating procedures 4.3. Files, data are transferred between compatible systems using computer software, hardware/ peripheral devices in accordance with standard operating procedures	4.1. Computer application in printing, scanning and sending facsimile 4.2. Types and function of computer peripheral devices	4.1. Computer data processing 4.2. Printing of data 4.3. Transferring files and data
5. Maintain computer equipment and systems	5.1. Systems for cleaning, minor ***maintenance*** and replacement of consumables are implemented 5.2. Procedures for ensuring security of data, including regular back-ups and virus checks are implemented in accordance with standard operating procedures 5.3. Basic file maintenance procedures are implemented in line with the standard operating procedures	5.1. Basic internet operation 5.1.1. Web address 5.1.2. Types and functions of search engines 5.2. Different web browser security features and maintenance	5.1. Locating information using browser 5.2. Internet browsing

RANGE OF VARIABLES

VARIABLE	RANGE
1. Hardware and peripheral devices	May include: 1.1. Personal computers 1.2. Networked systems 1.3. Communication equipment 1.4. Printers 1.5. Scanners 1.6. Keyboard 1.7. Mouse
2. Software	Software includes the following but not limited to: 2.1. Word processing packages 2.2. Data base packages 2.3. Internet 2.4. Spreadsheets
3. OH & S guidelines	3.1. OHS guidelines 3.2. Enterprise procedures
4. Storage media	Storage media include the following but not limited to: 4.1. CDs 4.2. zip disks 4.3. hard disk drives, local and remote 4.4. cloud storage
5. Ergonomic guidelines	5.1. Types of equipment used 5.2. Appropriate furniture 5.3. Seating posture 5.4. Lifting posture 5.5. Visual display unit screen brightness
6. Desktop icons	Icons include the following but not limited to: 6.1. directories/folders 6.2. files 6.3. network devices 6.4. recycle bin
7. Maintenance	7.1. Creating more space in the hard disk 7.2. Reviewing programs 7.3. Deleting unwanted files 7.4. Backing up files 7.5. Checking hard drive for errors 7.6. Using up to date anti-virus programs 7.7. Cleaning dust from internal and external surfaces

EVIDENCE GUIDE

1. Critical aspect of competency	Assessment requires evidence that the candidate: 1.1. Selected and used hardware components correctly and according to the task requirement 1.2. Identified and explain the functions of both hardware and software used, their general features and capabilities 1.3. Produced accurate and complete data in accordance with the requirements 1.4. Used appropriate devices and procedures to transfer files/data accurately 1.5. Maintained computer system
2. Resource implication	The following resources should be provided: 2.1. Computer hardware with peripherals 2.2. Appropriate software
3. Method of assessment	Competency in this unit may be assessed through: 3.1. Observation 3.2. Questioning 3.3. Practical demonstration
4. Context of Assessment	4.1. Assessment may be conducted in the workplace or in a simulated work environment

CORE COMPETENCIES

UNIT OF COMPETENCY : PLAN ASSIGNED MAINTENANCE WORK

UNIT CODE : UTL741309

UNIT DESCRIPTOR : This unit describes the knowledge, skills and attitudes in planning assigned transmission line maintenance work. This include competency in evaluating job site, preparing list of tools, equipment and hardware and discussing assigned maintenance work preparation.

ELEMENTS	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Evaluate job site	1.1 Maintenance orders (MO) are received and interpreted based on ***job requirements***. 1.2 Job site inspection is performed in accordance to company procedures 1.3 ***Potential problems*** in job site are determined and referred to ***appropriate personnel.*** 1.4 ***Job hazards*** are determined and referred to ***concerned personnel.***	1.1 Structural design and specification 1.2 Usage and function of tools, materials 1.3 OSH requirement 1.4 DOLE-OSHS Rule 1212 - Electrical Safety Inspection 1.5 Natural and manmade threats. 1.6 Written and oral communication (written and comprehension)	1.1 Communication skills 1.2 Inspection skills 1.3 Analytic skills 1.4 Interpretation skills
2. Prepare list of tools, equipment and hardware	2.1 Tools, equipment and materials are identified based on job requirements. 2.2 List of equipment and materials to be obtained is submitted to appropriate personnel. 2.3 Condition and quantity of equipment, instruments, and materials are ensured/ confirmed prior to maintenance work.	2.1 Structure design specification 2.2 Usage and function of tools and equipment 2.3 Basic math (MDAS) 2.4 Written and oral communication	2.1 Communication skills 2.2 Interpretative skills 2.3 Mathematical skills 2.4 Analytic skills
3. Discuss assigned maintenance work preparation	3.1 ***Maintenance work requirements*** are presented during pre-maintenance meeting. 3.2 Supplement requirements are complied based on the pre-maintenance meeting agreement. 3.3 Pre-maintenance meeting agreement is relayed with team members in accordance with company standards and procedures.	3.1 Structure design specification 3.2 IMS procedures 3.3 Basic math(MDAS) 3.4 Written and oral communication	3.1 Communication skills 3.2 Interpretation skills 3.3 Mathematical skills 3.4 Analytical skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. Job requirements	Maintenance orders include: 1.1. Corrective maintenance 1.2. Preventive maintenance
2. Potential problems	May include but not limited to: 2.1. Right-of-way problems 2.2. Security problems
3. Appropriate personnel	May include but not limited to: 3.1. Lineman 3.2. Line engineer 3.3. ROW officer 3.4. Driver 3.5. Heavy Equipment Operator 3.6. Security officer
4. Job Hazards	May include but not limited to : 4.1. Terrain 4.2. Sabotage and pilferage 4.3. Energized under built, parallel or lateral lines
5. Concerned personnel	May include but not limited to : 5.1. Lineman 5.2. Line Engineer 5.3. Driver Mechanic 5.4. HEO
6. Work assignments	May include but not limited to: 6.1. Overhead works assignment 6.2. Ground works assignment
7. Safety precautions	May include but not limited to: 7.1. Use of PPE's 7.2. Use of voltage detector 7.3. Installation of grounding cluster 7.4. Use of tagging system 7.5. Use of early warning device (traffic cone, traffic vest, caution tape)
8. Team members	May include but not limited to: 8.1. heavy equipment operator 8.2. driver-mechanic 8.3. Lineman
9. Maintenance work requirements	May include but not limited to: 9.1. Job site evaluation 9.2. Materials 9.3. Tools and equipment 9.4. Manpower

EVIDENCE GUIDE

1. Critical aspect of competency	Assessment requires evidence that the candidate: 1.1. Evaluated job site 1.2. Prepared list of T/L tools, equipment and hardware. 1.3. Presented maintenance work preparation
2. Resource implication	The following resources must be available: 2.1. Materials relevant to the activity 2.2. Sample maintenance Order 2.3. Sample Pole/Tower Inspection checklist 2.4. Assessment area
3. Method of assessment	Competency may be assessed through 3.1. Demonstration with oral questioning 3.2. Written Exam 3.3. Portfolio assessment with interview
4. Context of Assessment	4.1. Competency may be assessed in the workplace or in a simulated workplace setting

UNIT OF COMPETENCY : SUPERVISE TRANSMISSION LINE MAINTENANCE WORK

UNIT CODE : UTL741310

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes in supervising/directing field work for corrective and preventive maintenance of overhead transmission lines.

ELEMENTS	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Prepare job site and haul resources	1.1 Job site is prepared for maintenance work in accordance with ***job requirements*** 1.2 ***Safety*** is stressed and enforced in accordance with job requirements 1.3 Hauling of tools, equipment and materials to job site is coordinated with ***concerned personnel***	1.1 OSH requirements 1.2 Structural design and specification 1.3 Rigging/ reeving methods 1.4 Usage of tools, equipment and materials 1.5 Soil bearing capacity 1.6 DOLE-OSHS Rule 1150 – Materials Handling and Storage 1.7 Basic Math (MDAS) 1.8 Oral and hand signal communication	1.1 Communication skills 1.2 Mathematical skills 1.3 Analytical skills 1.4 Interpretation skills 1.5 Hand signal skills 1.6 Rigging skills
2. Conduct toolbox meeting with team members	2.1 Responsibilities of team members are discussed and confirmed in job site 2.2 Team members' queries and concerns are recognized, discussed and addressed based on working environment. 2.3 Safety procedures are discussed with team members based on working environment 2.4 ***Job hazards*** and controls are discussed with team members.	2.1 OSH requirements 2.2 Structural design and specification 2.3 Usage of tools, equipment and materials 2.4 IMS requirements 2.5 Written and oral communication 2.6 Clean Air Act	2.1 Communication skills 2.2 Interpretation skills 2.3 Analytic skills

ELEMENTS	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Oversee maintenance work	3.1 ***Safety procedures*** are enforced during actual work. 3.2 Guidance/Assistance is provided to newly hired and OJTs ensure work quality and safety 3.3 Rigging of heavy loads and components are performed based on company policies and standards 3.4 Communication with ***appropriate personnel*** is maintained to ensure quick response in case of problems or emergencies *3.5* ***Unforeseen events*** are responded in accordance with company procedures to ensure work quality and safety 3.6 Work completion is confirmed and reported to immediate supervisor. 3.7 ***Documentation*** is done and submitted to immediate supervisor.	3.1 OSH requirements 3.2 Structural design and specification 3.3 Safe rigging/ reeving methods 3.4 Usage of tools, equipment and materials 3.5 Safety procedures 3.6 Decision making principles 3.7 Supervisory principles 3.8 DOLE-OSHS Rule 1210 – Electrical Safety 3.9 DOLE-OSHS Rule 1410 – Construction Safety 3.10 DOLE-OSHS Rule 1428 - Lines, Blocks, Rigging 3.11 Basic math(MDAS) 3.12 Oral and hand signal communication	3.1 Communication skills 3.2 Mathematical skills 3.3 Analytical skills 3.4 Interpretation skills 3.5 Hand signal skills 3.6 Rigging skills 3.7 Decision making skills 3.8 Supervisory skills
4. Administer good housekeeping	4.1. Work site is cleared and kept in safe state in accordance with established housekeeping procedures. 4.2. Tools, equipment and retrieved excess materials are accounted and returned according to company procedures 4.3. Tools and equipment are checked based on normal operational condition	4.1. OSH requirements 4.2. Integrated Management System (IMS) requirements 4.3. Oral and hand signal communication 4.4. 5S and 3Rs principles 4.5. DOLE-OSHS Rule 1150 – Materials Handling and Storage	4.1. Communication skills 4.2. Hand signal skills 4.3. Mathematical skills 4.4. Analytical skills 4.5. Interpretation skills 4.6. housekeeping skills 4.7. Documentation skills

RANGE OF VARIABLES

VARIABLE	RANGE	
1. Job Requirements	May include but not limited to: 1.1. ERS erection 1.2. Hotline maintenance work 1.3. ROW vegetation clearing 1.4. Earth ground resistance testing 1.5. Replacement of missing tower parts 1.6. Overhead line works 1.7. Ground line works	
2. Safety	May include but not limited to: 2.1. Proper Lifting 2.2. Reeving 2.3. Proper Rigging 2.4. Knots and hitches 2.5. Use of PPE's 2.6. Use of early warning device (traffic cone, traffic vest, caution tape	
3. Concerned Personnel	May include but not limited to : 3.1. Lineman 3.2. Line Engineer 3.3. Driver Mechanic 3.4. Heavy Equipment Operator	
4. Job Hazard	May include but not limited to: 4.1. Climbing hazards 4.2. Electrical hazards 4.3. Structural hazards	
5. safety procedures	May include but not limited to: 5.1 Use of PPE's 5.2 Use of voltage detector 5.3 Installation of grounding cluster 5.4 Use of tagging system 5.5 Use of early warning device (traffic cone, traffic vest, caution tape)	
6. appropriate personnel	May include but not limited to: 6.1. Lineman 6.2. Line engineer 6.3. ROW officer	6.4. Driver 6.5. Heavy Equipment Operator 6.6. Security officer
7. Unforeseen events	May include but not limited to: 7.1. ROW problems 7.2. Security problems 7.3. Structural problems 7.4. Safety related problems 7.5. Problems in terrain and weather condition	
8. Documentation	May include: 8.1. Toolbox meeting form 8.2. Maintenance Order form 8.3. Photo's of works before, during and after	

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Prepared job site and hauled resources 1.2. Conduct toolbox meeting with team members 1.3. Monitored/Supervised maintenance work 1.4. Administered good housekeeping
2. Resource Implications	The following resources must be available: 2.1. Materials relevant to the activity 2.2. Sample maintenance Order 2.3. Sample toolbox meeting form 2.4. Assessment area
3. Methods of assessment	Competency may be assessed through 3.1. Demonstration with oral questioning 3.2. Written exam and oral questioning 3.3. Portfolio assessment with interview
4. Context of assessment	4.1. Competency may be assessed in the workplace or in a simulated workplace setting

UNIT OF COMPETENCY : CONDUCT INITIAL ROOT CAUSE ANALYSIS

UNIT CODE : UTL741311

UNIT DESCRIPTOR : This unit describes the knowledge, skills and attitudes, required to gather, interpret, convey information to determine initial root cause of problem encountered in transmission line operation and maintenance.

ELEMENTS	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Identify problems	1.1. ***Information*** is gathered regarding reported problem/fault 1.2. The gathered information is analyzed based on available records 1.3. ***Structures*** and ***Right-Of-Way (ROW)*** conditions indicative of a problem are identified based on Inspection Report 1.4. ***Identified problems*** are reported to immediate supervisor based on company protocol	1.1. Indicators of transmission line operation and maintenance problem 1.2. Principles of the process sufficient to undertake an initial RCA 1.3. Structures conditions 1.4. Conductor clearance to structure and vegetation 1.5. Structural science (steel, wood, concrete) 1.6. Basic Mathematics (MDAS) 1.7. Written and oral communication	1.1. Analyzing Skills 1.2. Problem solving 1.3. Communication Skills 1.4. Documentation Skills
2. Apply immediate correction	2.1. ***Immediate correction*** within the scope of competency and authority is recommended and applied based on company policy 2.2. Ongoing solution to the problem is reported to immediate supervisor 2.3. Correction methods for immediate solution to the problem are implemented based on job requirements 2.4. Completion of work is confirmed to appropriate personnel based on company protocol	2.1. Usage of PPE's 2.2. Usage of Transmission Line Tools and equipment 2.3. OSH requirements 2.4. Quick Fix on common problems in transmission line operation and maintenance 2.5. DOLE-OSHS Rule 1210 – Electrical Safety 2.6. Good housekeeping 2.7. Basic Mathematics (MDAS) 2.8. Hand signal, written and oral communication	2.1. Analytical Skills 2.2. Problem solving 2.3. Communication Skills 2.4. Interpretative Skills 2.5. Manipulative Skills 2.6. Housekeeping skills

ELEMENTS	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Determine initial root cause	3.1. Possible range of causes are enumerated based on identified problem 3.2. Possible causes are identified based on information gathered 3.3. Initial root cause analysis is relayed to supervisor based on job requirements 3.4. Initial root cause documentation is submitted to immediate supervisor based on company policy	3.1. Proper operation of high-resolution camera. 3.2. Indicators of transmission line problem 3.3. Principles of the process sufficient to undertake an Initial Root Cause Analysis (RCA) 3.4. Preparation of RCA report 3.5. Written and oral communication	3.1. Analytical Skills 3.2. Problem solving 3.3. Communication Skills 3.4. Interpretative Skills 3.5. Manipulative Skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. Information	May include but not limited to: 1.1. Relay Indications 1.2. Fault Indicators 1.3. Structure list
2. Structures	May include but not limited to: 2.1. Wood pole 2.2. Steel pole 2.3. Concrete pole 2.4. Tower structure
3. Right Of Way	May include but not limited to: 3.1. Trees 3.2. Bamboo 3.3. Buildings 3.4. Houses 3.5. Billboards 3.6. Underbuilt/ Overbuilt Lines
4. Identified problems	May include but not limited to: 4.1. Man-made 4.2. Force Majeure 4.3. Structural 4.4. Vegetation
5. Immediate correction	May include but not limited to: 5.1. ROW clearing 5.2. Reinforcement of structures and appurtenances 5.3. Replacement of components

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Identified problems/fault 1.2. Applied immediate solution 1.3. Determined root cause
2. Resource Implications	The following resources must be available: 2.1. Materials relevant to the activity 2.2. Assessment area
3. Methods of assessment	Competency may be assessed through 3.1. Demonstration with oral questioning 3.2. Written Exams 3.3. Portfolio assessment with interview
4. Context of assessment	4.1. Competency may be assessed in the workplace or in a simulated workplace setting

SECTION 3 TRAINING ARRANGEMENTS

This set of standards provides Technical and Vocational Education and Training (TVET) providers with information and other important requirements to consider when designing training programs for Transmission Line Installation and Maintenance NC IV.

This includes information on curriculum design; training delivery; trainee entry requirements; tools and equipment; training facilities; and trainer's qualification and institutional assessment.

3.1 CURRICULUM DESIGN

TESDA shall provide the training on the development of competency-based curricula to enable training providers develop their own curricula with the components mentioned below.

Delivery of knowledge requirements for the basic, common and core units of competency specifically in the areas of mathematics, science/technology, communication/language and other academic subjects shall be contextualized. To this end, TVET providers shall develop a Contextual Learning Matrix (CLM) to accompany their curricula.

Course Title: Transmission Line Installation and Maintenance **NC Level:** NC IV

Nominal Training Duration:

30 hrs – Basic Competencies
60 hrs – Common Competencies
64 hrs – Core Competencies
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154 hrs - Total

Course Description:

This course is designed to develop & enhance the knowledge, skills, & attitudes of a transmission line foreman, in accordance with industry standards. It covers the basic and common competencies in addition to the core competencies such as planning of assigned transmission line maintenance work, supervising transmission line maintenance works and conducting initial root cause analysis.

To obtain this, all units prescribed for this qualification must be achieved:

BASIC COMPETENCIES

30 hrs

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Method	Nominal Duration
1. Utilize specialized communication skills	1.1. Meet common and specific communication needs of clients and colleagues	1.1.1. Read 1.1.1.1. Communication process 1.1.1.2. Dynamics of groups and different styles of group leadership 1.1.2. Identify different approaches to meet the needs of clients and colleagues	1.1.1. Lecture	1.1.1. Written examination	1 hr.
	1.2. Contribute to the development of communication strategies	1.2.1. Apply communication skills to fulfill job roles as specified by the organization 1.2.2. Apply communication techniques in communicating with clients and colleagues 1.2.2.1. Active listening 1.2.2.2. Feedback 1.2.2.3. Interpretation 1.2.2.4. Role boundaries setting 1.2.2.5. Negotiation 1.2.2.6. Establishing empathy 1.2.3. Describe strategies for internal and external dissemination of information	1.2.1. Demonstration 1.2.2. Group discussion	1.2.1. Observation 1.2.2. Oral evaluation	1 hr.
	1.3. Represent the organization	1.3.1. Describe criteria for a good presentation 1.3.2. Prepare presentation material for internal or external forums to promote the organization 1.3.3. Use appropriate media to enhance the presentation	1.3.1. Demonstration	1.3.1. Observation	1 hr.
	1.4. Facilitate group discussion	1.4.1. Gather relevant information 1.4.2. Apply values in facilitating differences in views	1.4.1. Demonstration	1.4.1. Observation	1 hr.

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Method	Nominal Duration
	1.5. Conduct interview	1.5.1. Describe communication strategies employed in interview situations 1.5.2. Conduct interview 1.5.3. Apply organizations procedure in maintaining records of interviews 1.5.4. Use questioning, listening and nonverbal communication techniques to client groups	1.5.1. Group discussion 1.5.2. Demonstration	1.5.1. Oral evaluation 1.5.2. Observation	1 hr.
2. Develop teams and individuals	2.1. Provide team leadership	2.1.1. Lecture and discussion on: 2.1.1.1. Coaching and mentoring principles 2.1.1.2. working effectively with team members who have diverse work styles, aspirations, cultures and perspective 2.1.1.3. facilitating team development and improvement 2.1.2. Read 2.1.2.1. methods for identifying and prioritizing personal development opportunities and options 2.1.2.2. methods and techniques for eliciting and interpreting feedback 2.1.3. Apply communication skills in receiving feedback and reporting, maintaining effective relationships and conflict management	2.1.1. Group discussion 2.1.2. Lecture	2.1.1. Oral evaluation 2.1.2. Written examination	1 hr.
		2.1.4. Apply team leadership skills to support colleagues: 2.1.4.1. Planning skills 2.1.4.2. Coaching and mentoring skills 2.1.4.3. Reporting skills 2.1.4.4. Facilitation skills	2.1.3. Group discussion	2.1.3. Oral evaluation	

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Method	Nominal Duration
	2.2. Foster individual and organizational growth	2.2.1. Describe Learning and development program goals and objectives 2.2.2. Apply learning delivery methods in preparing learning and program goals and objectives 2.2.3. Identify and prioritize personal development opportunities and options for career paths and competency standards in the industry	2.2.1. Group discussion 2.2.2. Demonstration 2.2.3. Lecture	2.2.1. Oral evaluation 2.2.2. Observation 2.2.3. Written examination	1 hr.
	2.3. Monitor and evaluate workplace learning	2.3.1. Use feedback system to identify and implement future learning arrangements improvements 2.3.2. Assess and record outcomes and performance of individuals/teams 2.3.3. Negotiate learning plan modifications for learning efficiency and effectiveness 2.3.4. Maintain records and reports of competency	2.3.1. Demonstration	2.3.1. Observation	1 hr.
	2.4. Develop team commitment and cooperation	2.4.1. Use open communication processes to obtain and share information by team 2.4.2. Apply decisions making skills in team agreed roles and responsibilities 2.4.3. Demonstrate mutual concern and camaraderie in the team	2.4.1. Demonstration	2.4.1. Observation	1 hr.
	2.5. Facilitate accomplishment of organizational goals	2.5.1. Describe team activities and communication processes 2.5.2. Apply individual and joint responsibility with team members 2.5.3. Prepare organizational goals in collaboration with team members	2.5.1. Group discussion 2.5.2. Demonstration	2.5.1. Oral evaluation 2.5.2. Observation	1 hr.

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Method	Nominal Duration
3. Apply problem solving techniques in the workplace (Critical thinking and problem solving techniques)	3.1. Analyze the problem *(Use system thinking)*	3.1.1. Describe 3.1.1.1. organizational systems and functions 3.1.1.2. help desk and maintenance practices 3.1.2. Read 3.1.2.1. hardware and software products 3.1.2.2. operating system 3.1.2.3. client business domain 3.1.2.4. industry practices on escalation procedures 3.1.2.5. diagnostic tools 3.1.3. Video presentation on applying problem solving techniques in the workplace 3.1.4. Apply in problem solving: 3.1.4.1. Decision making skills 3.1.4.2. Communication skills 3.1.4.3. Teamwork 3.1.4.4. Time management 3.1.4.5. General customer service skills 3.1.4.6. Questioning and active listening 3.1.5. Gather data for evaluated Issues/concerns 3.1.6. Use problem solving tools/analytical techniques to identify possible causes of problem	3.1.1. Group discussion 3.1.2. Lecture 3.1.3. Video viewing 3.1.4. Demonstration	3.1.1. Written examination 3.1.2. Oral evaluation 3.1.3. Observation	2 hrs.

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Method	Nominal Duration
	3.2. Identify possible solutions	3.2.1. Apply possible options to consider in preparing: 3.2.1.1. Resolution of the problem 3.2.1.2. Strengths and weaknesses 3.2.1.3. Corrective action	3.2.1. Demonstration	3.2.1. Observation	1 hr.
	3.3. Recommend solution to higher management *(Make judgment and decisions/ Solve problems)*	3.3.1. Prepare documentation to appropriate personnel: 3.3.1.1. communication or documentation Report 3.3.1.2. Recommendations 3.3.2. Coordinate follow-up if required	3.3.1. Demonstration	3.3.1. Observation	1 hr.
	3.4. Implement solution	3.4.1. Identify 3.4.1.1. Measurable objectives 3.4.1.2. Resource needs 3.4.1.3. Timelines	3.4.1. Lecture	3.4.1. Written examination	1 hr.
	3.5. Evaluate/ Monitor results and outcome	3.5.1. Read evaluative assessment of problem 3.5.1. Evaluate results and outcome of problem 3.5.2. Prepare and submit recommendations to superiors	3.5.1. Demonstration	3.5.3. Observation	1 hr.
4. Collect, Analyze and Organize Information (access and evaluate information)	4.1. Study information requirements	4.1.1. Describe 4.1.1.1. Data processing, Information analysis and interpretation 4.1.2. Read 4.1.2.1. Research methods: – Qualitative – Quantitative – Statistical	4.1.1. Group discussion 4.1.2. Lecture 4.1.3. Demonstration	4.1.1. Oral evaluation 4.1.2. Written examination 4.1.3. Observation	1 hr.

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Method	Nominal Duration
		4.1.2.2. Report writing 4.1.2.3. Use of relevant software – Spreadsheets – Presentation graphics – Work processor – Statistical package 4.1.3. Identify research procedures 4.1.4. Use relevant forms and recording systems to gather information 4.1.5. Conduct survey / research to selected respondents based on established procedures			
	4.2. Process data	4.2.1. Use prescribed researched method in: 4.2.1.1. Collecting data 4.2.1.2. Referencing relevant data 4.2.1.3. Compiling information in required form	4.2.1. Demonstration	4.2.1. Observation	1 hr.
	4.3. Analyze, interpret and organize	4.3.1. Prepare analysis of data using: 4.3.1.1. relevant methodologies 4.3.1.2. statistical analysis/methods 4.3.1.3. graphs and other visual presentations	4.3.1. Demonstration	4.3.1. Observation	1 hr.
	4.4. Present findings/ recommendations	4.4.1. Gather inputs to finalize report 4.4.2. Prepare draft report in standard format 4.4.3. Prepare and package summary of findings 4.4.4. Submit and disseminate technical report to concerned offices	4.4.1. Demonstration	4.4.1. Observation	1 hr.

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Method	Nominal Duration
5. Plan and organize work (manage projects)	5.1. Set objectives	5.1.1. Describe Organization's strategic plan, policies rules and regulations, laws and objectives related to: 5.1.1.1. work unit activities and priorities 5.1.1.2. role of the work unit 5.1.2. Video presentation on planning and organizing work 5.1.3. Prepare objectives consistent with work activities and according to organizational aims with: 5.1.3.1. measurable targets 5.1.3.2. realistic and attainable 5.1.3.3. support and commitment of team members	5.1.1. Group discussion 5.1.2. Video viewing 5.1.3. Demonstration	5.1.1. Oral evaluation 5.1.2. Observation	1 hr.
	5.2. Plan and schedule work activities	5.2.1. Identify and prioritize tasks/work as directed 5.2.2. Prepare tasking of activities with 5.2.2.1. Set time frames 5.2.2.2. Allocated Resources 5.2.2.3. Schedule of work activities of concerned personnel	5.2.1. Lecture 5.2.2. Demonstration	5.2.1. Written examination 5.2.2. Observation	1 hr.
	5.3. Implement work plans	5.3.1. Identify work methods and practices 5.3.2. Implement work plans with set time frames, resources and standards	5.3.1. Lecture 5.3.2. Demonstration	5.3.1. Written examination 5.3.2. Observation	2 hrs.
	5.4. Monitor work activities	5.4.1. Monitor: 5.4.1.1. work activities with set objectives 5.4.1.2. Work performance	5.4.1. Demonstration	5.4.1. Observation	1 hr.

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Method	Nominal Duration
		5.4.2. Use recommended format and reporting requirements in preparing report 5.4.3. Prepare report and recommendations of deviations from work activities			
	5.5. Review and evaluate work plans and activities	5.5.1. Use accurate, relevant and current information in the review and implementation of work plans and strategies 5.5.2. Review outcomes of work plans and strategies in consultation to appropriate personnel 5.5.3. Prepare adjustments/simplifications on policies, processes and activities on results of review provided by concerned parties 5.5.4. Prepare Performance appraisal report as per organization requirements 5.5.5. Prepare and present recommendations to appropriate personnel/authorities 5.5.6. Implement feedback mechanisms in line with organization policies	5.5.1. Demonstration	5.5.1. Observation	1 hr.

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Method	Nominal Duration
6. Promote environmental protection	6.1. Study guidelines for environmental concerns	6.1.1. Lecture and discussion on: 6.1.1.1. environmental legislations/conventions and local ordinances 6.1.1.2. International Environmental Protocols (Montreal, Kyoto) 6.1.1.3. Industrial standard/environmental practices 6.1.1.4. Sanitary Code 6.1.1.5. Environmental Code of practice 6.1.2. Read 6.1.2.1. Features of an environmental management strategy 6.1.2.2. Waste minimization hierarchy 6.1.2.3. Environmental planning/management 6.1.3. Prepare environment research and analysis 6.1.4. Apply: 6.1.4.1. 5S of Good Housekeeping 6.1.4.2. 3Rs – Reduce, Reuse & Recycle 6.1.5. Video presentation on Environment	6.1.1. Group discussion 6.1.2. Lecture 6.1.3. Demonstration 6.1.4. Video viewing	6.1.1. Oral evaluation 6.1.2. Written examination 6.1.3. Observation 6.1.4. Oral evaluation	1 hr.

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Method	Nominal Duration
	6.2. Implement specific environmental programs	6.2.1. identify environmental programs/activities according to organizations policies and guidelines 6.2.2. Perform individual roles/responsibilities based on the identified activities 6.2.3. Apply problem solving skill in resolving encountered problems/constraints according to organizations policies and guidelines 6.2.4. Coordinate environmental programs/ activities with stakeholders based on company guidelines	6.2.1. Lecture 6.2.2. Demonstration 6.2.3. Simulation/ Role Play	6.2.1. Written examination 6.2.2. Observation	2 hrs.
	6.3. Monitor activities on environmental protection/ programs	6.3.1. Monitor activities on environmental protection/ programs 6.3.2. Follow management support system in sustaining and enhancing the program 6.3.3. Prepare environmental incidents report and submit to concerned / proper authorities 6.3.4. Gather feedback from stakeholders on proposed program enhancements 6.3.5. Evaluate and analyze findings for the enhanced program according to: 6.3.5.1. gathered data 6.3.5.2. submitted recommendations	6.3.1. Demonstration	6.3.1. Observation	1 hr.

Note: Basic competencies may be embedded in the core competencies.

COMMON COMPETENCIES

(60 hrs)

Unit of Competency	Learning Outcomes	Learning Activities	Methodologies	Assessment Methods	Nominal Duration
1. Apply Quality Standards	1.1 Assess quality of received materials	1.1.1. Identify relevant production processes, materials and products 1.1.2. Study and interpret characteristics of materials, software and hardware used in production processes 1.1.3. Perform quality checking procedures 1.1.4. Apply quality Workplace procedures 1.1.5. Identify faulty materials 1.1.6. Check quality of materials or component parts as per manufacturer's standards 1.1.7. Interpret specifications or symbols	1.1.1. Lecture 1.1.2. Field trip 1.1.3. Symposium 1.1.4. Video clips 1.1.5. Simulation/ Role playing	1.1.1. Written test 1.1.2. Demonstration & questioning 1.1.3. Observation & questioning	3 hours
	1.2 Assess own work	1.2.1 Perform workplace procedure in documenting completed work 1.2.2 Perform fault identification and reporting 1.2.3 Observe safety and environmental aspects of production processes 1.2.4 Utilize workplace quality indicators 1.2.5 Document and report deviations from specified quality standards	1.2.1. Field trip 1.2.2. Symposium 1.2.3. Simulation 1.2.4. On the job training	1.2.1. Demonstration & questioning 1.2.2. Observation & questioning	3 hours
	1.3 Engage in quality improvement	1.3.1 Participate in quality improvement processes a. IEC/ISO standards b. Environmental and safety standards 1.3.2 Carry out work as per process improvement procedures 1.3.3 Monitor operation performance 1.3.4 Implement continuous improvement	1.3.1. Field trip 1.3.2. Symposium 1.3.3. Simulation 1.3.4. On the job training	1.3.1. Demonstration & questioning 1.3.2. Observation & questioning	2 hours
2. Comply with environmental protection procedures	2.1 Access information concerning environmental protection	2.1.1. Lecture on relevant environmental protection regulations & codes of practice 2.1.2. Lecture/Discussion on environmental risks associated with workplace operations and related precautions to control the risk	2.1.1. Lecture 2.1.2. Discussion 2.1.3. Demonstration 2.1.4. Viewing multimedia	2.1.1. Observation in workplace 2.1.2. Demonstration 2.1.3. Oral questioning	4 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodologies	Assessment Methods	Nominal Duration
	regulations and procedures	2.1.3. Lecture/Discussion on environmental protection standards required in the workplace 2.1.4. Lecture on workplace reporting and recording processes and procedures 2.1.5. Accessing information and data 2.1.6. Identifying potential environmental risks and ways of minimizing them	2.1.5. Hands on practice	2.1.4. Third Party Report	
	2.2 Implement and monitor procedures concerning environmental hazards	2.2.1 Applying environmental protection regulations & codes of practice concerning environmental hazards 2.2.2 Lecture/Discussion on workplace procedures and guidelines for implementing and monitoring procedures concerning environmental hazards 2.2.3 Lecture/Discussion on workplace environmental hazards and related hazard control measures 2.2.4 Using equipment and resources required when implementing and monitoring environmental protection procedures 2.2.5 Lecture/Discussion on Organizational structure and site layout 2.2.6 Reporting and recording processes and procedures 2.2.7 Application of problem solving techniques 2.2.8 Identifying potential environmental hazards and ways on minimizing them 2.2.9 identifying and correctly using equipment and vehicles in accordance with environmental protection regulations and guidelines	2.2.1. Lecture 2.2.2. Discussion 2.2.3. Demonstration 2.2.4. Viewing multimedia 2.2.5. Hands on practice	2.2.1. Observation in workplace 2.2.2. Demonstration 2.2.3. Oral questioning 2.2.4. Third Party Report	4 hours
	2.3 Implement and monitor environmental	2.3.1 Applying relevant environmental protection regulations & codes of practice for environmental control procedures	2.3.1 Lecture 2.3.2 Discussion 2.3.3 Demonstration	2.3.1 Observation in workplace 2.3.2 Demonstration 2.3.3 Oral questioning	4 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodologies	Assessment Methods	Nominal Duration
	control procedures	2.3.2 Lecture/Discussion on workplace procedures and guidelines for implementing and monitoring environmental control procedures 2.3.3 Using equipment and resources required when implementing and monitoring environmental control procedures 2.3.4 Carry out workplace reporting and recording processes and procedures 2.3.5 Application of problem solving techniques 2.3.6 counsel, advise and inform others on environmental control procedures 2.3.7 identifying and correctly using equipment and vehicles in accordance with environmental control procedures, regulations and guidelines	2.3.4 Viewing multimedia 2.3.5 Hands on practice		
3. Observe procedures, Specifications and Manuals of Instructions	3.1. Identify and access specification/ manuals	3.1.1. Familiarization on types of manuals used in transmission lines 3.1.2. Identification of symbols used in the manuals 3.1.3. Discussion on manuals and specifications 3.1.4. Accessing information and data	3.1.1. Lecture-demonstration	3.1.1. Oral questioning 3.1.2. Written test or examination	2 Hours
	3.2. Interpret manuals	3.2.1. Interpretation of symbols used in manuals 3.2.2. Lecture and discussion on system of measurements 3.2.3. Lecture on Unit conversion 3.2.4. Accessing information and data	3.2.1. Actual demonstration 3.2.2. Group discussion	3.2.1. Direct observation 3.2.2. Written test or examination	2 Hours
	3.3. Apply information in manual	3.3.1. Application of symbols in manuals 3.3.2. Applying conversion of units of measurements 3.3.3. Applying information from manuals	3.3.1. Demonstration 3.3.2. Group discussion	3.3.1. Demonstration (able to impart knowledge and skills) 3.3.2. Practical and oral exam	2 Hours
	3.4. Store Manual	3.4.1. Manual storing and maintaining procedures	3.4.1. Demonstration	3.4.1. Demonstration	2 Hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodologies	Assessment Methods	Nominal Duration
		3.4.2. Storing and maintaining manuals	3.4.2. Group discussion	3.4.2. Practical and oral exam	
4. Maintain and operate line tools and equipment	4.1 Plan and prepare for work to operate and maintain T/L tools and equipment	4.1.1. Acquire sample work instruction 4.1.2. Interpret sample work instruction 4.1.3. Identify necessary and appropriate occupational health and safety requirements based on job specification 4.1.4. Identify relevant transmission line tools, equipment and hardware based on job specifications	4.1.1. Lecture 4.1.2. Discussion 4.1.3. Demonstration 4.1.4. Viewing multimedia 4.1.5. Hands on practice	4.1.1. Observation in workplace 4.1.2. Demonstration 4.1.3. Oral questioning 4.1.4. Third Party Report	2 hours
	4.2 Prepare T/L hardware, tools and equipment for operation and maintenance	4.2.1 Enumerate the personal protective equipment in preparing T/L tools, hardware and equipment as per job requirements 4.2.2 Procedures in acquiring transmission line tools, equipment and hardware 4.2.3 Perform functionality test of transmission hot line tools as per manufacturers standards	4.2.1. Lecture 4.2.2. Discussion 4.2.3. Demonstration 4.2.4. Viewing multimedia 4.2.5. Hands on practice	4.2.1. Observation in workplace 4.2.2. Demonstration 4.2.3. Oral questioning	2 hours
	4.3 Operate T/L tools and equipment	4.3.1 Enumerate the personal protective equipment in operating T/L tools, hardware and equipment as per job requirements 4.3.2 Discuss procedures in proper handling and application of T/L tools and equipment based on job assignments 4.3.3 Discuss special features and function of identified T/L tools and equipment	4.3.1. Lecture 4.3.2. Discussion 4.3.3. Demonstration 4.3.4. Viewing multimedia 4.3.5. Hands on practice	4.3.1. Observation in workplace 4.3.2. Demonstration 4.3.3. Oral questioning	4 hours
	4.4 Check condition of T/L tools and equipment	4.4.1 Discuss and classify T/L tools and equipment based on different usage and requirements 4.4.2 Study proper segregation of functional and non-functional T/L tools and equipment 4.4.3 Analyze different safety procedures in handling tools and equipment as per manufacturer's instructions	4.4.1. Lecture 4.4.2. Discussion 4.4.3. Demonstration 4.4.4. Viewing multimedia 4.4.5. Hands on practice	4.4.1. Observation in workplace 4.4.2. Demonstration 4.4.3. Oral questioning	4 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodologies	Assessment Methods	Nominal Duration
		4.4.4 Examine condition of Personal protective equipment and tools			
	4.5 Perform basic preventive maintenance	4.5.1 Identify appropriate and different types of lubricants for different type and condition of equipment. 4.5.2 Review lubrication procedures in every preventive maintenance 4.5.3 Explain and perform testing and cleaning of transmission line tools and equipment 4.5.4 Practice inspection of working and non-working tools and equipment 4.5.5 Perform repair and replacement of components and parts for damage and non-working equipment 4.5.6 Discuss good housekeeping after preventive maintenance procedure	4.5.1. Lecture 4.5.2. Discussion 4.5.3. Demonstration 4.5.4. Viewing multimedia 4.5.5. Hands on practice	4.5.1. Observation in workplace 4.5.2. Demonstration 4.5.3. Oral questioning	4 hours
	4.6 Store tools and equipment	4.6.1 Discuss proper inventory and auditing of tools and equipment as per company procedure 4.6.2 Describe and determine different storage places for different tools and equipment 4.6.3 Identify conditions, weather and surroundings appropriate and not appropriate for storage of tools and equipment 4.6.4 Create checklist for inventory and auditing of T/L tools and equipment	4.6.1. Lecture 4.6.2. Discussion 4.6.3. Demonstration 4.6.4. Viewing multimedia 4.6.5. Hands on practice	4.6.1. Observation in workplace 4.6.2. Demonstration 4.6.3. Oral questioning	4 hours
5. Perform Computer Operations	5.1 Plan and prepare for task to be undertaken	5.1.1 Plan and prepare computer operation activity 5.1.2 Determine task requirements based on required output 5.1.3 Determine appropriate hardware and software 5.1.4 Identify/Select types of computers and basic features of different operating systems	5.1.1. Lecture 5.1.2. Modular 5.1.3. Computer based training (e-learning) 5.1.4. Project method	5.1.1. Written/Oral examination 5.1.2. Practical demonstration	2 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodologies	Assessment Methods	Nominal Duration
		5.1.5 Interpret and follow client-specific guidelines & procedures 5.1.6 Plan task as per data security guidelines	5.1.5. On the job training		
	5.2 Input data into computer	5.2.1 Apply basic ergonomics of keyboard and computer user 5.2.2 Enter/Encode data using appropriate computer programs/applications 5.2.3 Check accuracy of encoded data/information per SOP 5.2.4 Save and store inputted data in storage media 5.2.5 Storage devices and basic categories of memory 5.2.6 Identify and define relevant types of software	5.2.1. Lecture 5.2.2. Modular 5.2.3. Group discussion 5.2.4. Project method 5.2.5. On the job training	5.2.1. Written/Oral examination 5.2.2. Practical demonstration	2 hour
	5.3 Access information using computer/ smartphone	5.3.1 Select correct program/ application based on job requirements 5.3.2 Access computer data/files 5.3.3 Interpret general security, privacy legislation & copyright 5.3.4 Use Productivity Application o Microsoft office applications 5.3.5 Learn Business Application o Introduction to Basic Programming software 5.3.6 Apply basic ergonomics of keyboard and computer user	5.3.1. Lecture 5.3.2. Computer based training (e-learning) 5.3.3. On the job training	5.3.1. Written/Oral examination 5.3.2. Practical demonstration	2 hours
	5.4 Produce/ output data using computer system	5.4.1 Identify types and function of computer peripheral devices 5.4.2 Print and scan office documents and materials 5.4.3 Send office/ business documents through facsimile 5.4.4 Transfer files or data between compatible systems using computer software, hardware/ peripheral devices 5.4.5 Save documents in storage devices	5.4.1. Lecture 5.4.2. Group discussion 5.4.3. Modular 5.4.4. On the job training	5.4.1. Written/Oral examination 5.4.2. Practical demonstration	2 hour

Unit of Competency	Learning Outcomes	Learning Activities	Methodologies	Assessment Methods	Nominal Duration
		5.4.5.1 CD/DVD 5.4.5.2 USB drives 5.4.5.3 Hard disk drives 5.4.5.4 Cloud storage			
	5.5 Maintain computer equipment and systems	5.5.1 Perform computer equipment/ system basic maintenance procedures 5.5.1.1 Perform basic file maintenance procedures 5.5.1.2 Perform cleaning of PC parts/ hardware components 5.5.1.3 Scan/Debug computer software and applications 5.5.1.4 Perform cleaning and defragmentation of computer files 5.5.1.5 Perform backup of computer files 5.5.2 Enumerate and define different types of computer viruses	5.5.1. Demonstration 5.5.2. Simulation 5.5.3. Modular 5.5.4. Video clips 5.5.5. Computer based training (e-learning)	5.5.1. Written/Oral examination 5.5.2. Practical demonstration	4 hours

CORE COMPETENCIES
(64 hours)

Unit of Competency	Learning Outcomes	Learning Activities	Methodologies	Assessment Methods	Nominal Duration
1. Plan assigned maintenance Work **(16 hours)**	1.1. Evaluate job site	1.1.1. Lecture and discussion on the contents of Maintenance Order (MO) 1.1.2. Lecture and discussion on potential problems and Job hazard 1.1.3. Lecture on DOLE-OSHS Rule 1212 - Electrical Safety Inspection 1.1.4. Lecture and discussion on transmission line structural designs (Dimensions and capacity)	1.1.1. Lecture Discussion 1.1.2. PowerPoint presentation	1.1.1. Written Exam 1.1.2. Oral interview	**4 hrs**
	1.2. Prepare list of tools, equipment and hardware	1.2.1. Discussion on operational function of Transmission line tools and Equipment 1.2.2. Discussion on transmission line structural designs (components) 1.2.3. Prepare sample list of transmission hardware of specific structure 1.2.4. Prepare sample list of tools and equipment for specific activity	1.2.1. Lecture Discussion 1.2.2. PowerPoint presentation 1.2.3. Actual Demonstration	1.2.1. Written Exam 1.2.2. Oral interview 1.2.3. Demonstration	**4 hrs**
	1.3. Discuss assigned maintenance work preparation	1.3.1. Discussion on maintenance activities such as but not limited to : 1.3.1.1. Pole replacement 1.3.1.2. Cross-arm replacement 1.3.1.3. Insulator replacement 1.3.1.4. Line to line to ground clearance correction 1.3.1.5. Cutting/trimming of hazardous improvements 1.3.2. Explain company work procedures	1.3.1. Lecture Discussion 1.3.2. PowerPoint presentation	1.3.1. Written Exam 1.3.2. Oral interview	**8 hrs**
2. Supervise transmission line maintenance work	2.1. Prepare job site and haul resources	2.1.1. Discussion on activities for job site preparation 2.1.2. Discussion on safety procedures	2.1.1. Lecture Discussion 2.1.2. PowerPoint presentation	2.1.1. Written Exam 2.1.2. Oral interview	**4 hrs**

Unit of Competency	Learning Outcomes	Learning Activities	Methodologies	Assessment Methods	Nominal Duration
(24 hours)		2.1.3. Discussion on safe rigging/reeving methods during hauling of tools equipment and materials 2.1.4. Lecture on DOLE-OSHS Rule 1150 – Materials Handling and Storage			
	2.2. Conduct toolbox meeting with team members	2.2.1. Discussion on hazard/risk identification and controls 2.2.2. Lecture on team members responsibilities 2.2.3. Lecture on IMS requirements 2.2.4. Lecture on Clean Air Act	2.2.1. Lecture Discussion 2.2.2. PowerPoint presentation 2.2.3. Actual Demonstration	2.2.1. Written Exam 2.2.2. Oral interview 2.2.3. Demonstration	**8 hrs**
	2.3. Oversee maintenance work	2.3.1. Discussion on safety procedures on actual maintenance works 2.3.2. Discussion on maintenance activities such as but not limited to : 2.3.2.1. Pole replacement 2.3.2.2. Crossarm replacement 2.3.2.3. Insulator replacement 2.3.2.4. Line to line to ground clearance correction 2.3.2.5. Cutting/trimming of hazardous improvements 2.3.2.6. ERS erection 2.3.2.7. Hotline maintenance 2.3.3. Lecture and discussion on DOLE-OSHS Rules – o 1210 - Electrical Safety o 1410 – Construction Safety o 1428 – Lines, Blocks, Rigging 2.3.4. Discuss unforeseen events 2.3.5. Prepare and accomplish maintenance order and toolbox meeting forms	2.3.1. Lecture Discussion 2.3.2. PowerPoint presentation 2.3.3. Demonstration	2.3.1. Written Exam 2.3.2. Oral interview 2.3.3. Demonstration	**8 hrs**
	2.4. Administer good house keeping	2.4.1. Discussion on the use and application of good housekeeping in line works	2.4.1. Lecture Discussion	2.4.1. Written Exam 2.4.2. Oral interview	**4 hours**

Unit of Competency	Learning Outcomes	Learning Activities	Methodologies	Assessment Methods	Nominal Duration
		2.4.2. Discussion on solid waste management in line works 2.4.3. Lecture on proper usage and maintenance of tools and equipment 2.4.4. Identification of proper storage of tools, equipment and materials used in line works.	2.4.2. PowerPoint presentation		
3. Conduct initial root cause analysis **(24 hours)**	3.1. Identify line problems	3.1.1. Lecture and discussion on functions of line fault indicators 3.1.2. Lecture and discussion on possible causes of line problems based on fault indications 3.1.3. Discuss and analyze inspection checklist 3.1.4. Discussion on design and specification of structures 3.1.5. Enumeration of right- of-way conditions indicative of problems	3.1.1. Lecture Discussion 3.1.2. PowerPoint presentation 3.1.3. Demonstration	3.1.1. Written Exam 3.1.2. Oral interview 3.1.3. Demonstration	**8 hrs**
	3.2. Apply immediate correction	3.2.1. Discussion on immediate corrections to line problems 3.2.2. Lecture and discussion on different line correction methods based on job requirements 3.2.3. Lecture and discussion on DOLE-OSHS Rule 1210 – Electrical Safety	3.2.1. Lecture Discussion 3.2.2. PowerPoint presentation	3.2.1. Written Exam 3.2.2. Oral interview	**8 hrs**
	3.3. Determine initial root cause	3.3.1. Discuss possible range of causes of line problems 3.3.2. Explain root cause information 3.3.3. Prepare sample initial root cause documentation	3.3.1. Lecture Discussion 3.3.2. PowerPoint presentation 3.3.3. Demonstration	3.3.1. Written Exam 3.3.2. Oral interview 3.3.3. Demonstration	**8 hrs**

3.2 TRAINING DELIVERY

1. The delivery of training shall adhere to the design of the curriculum. Delivery shall be guided by the principles of competency-based TVET.

    a. Course design is based on competency standards set by the industry or recognized industry sector; **(Learning system is driven by competencies written to industry standards)**

    b. Training delivery is learner-centered and should accommodate individualized and self-paced learning strategies;

    c. Training can be done on an actual workplace setting, simulation of a workplace and/or through adoption of modern technology.

    d. Assessment is based in the collection of evidence of the performance of work to the industry required standards;

    e. Assessment of competency takes the trainee's knowledge and attitude into account but requires evidence of actual performance of the competency as the primary source of evidence.

    f. Training program allows for recognition of prior learning (RPL) or current competencies;

    g. Training completion is based on satisfactory performance of all specified competencies.

2. 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 and their variations/components may be adopted singly or in combination with other modalities when designing and delivering training programs:

    ### 2.1. Institution- Based:

    - Dual Training System (DTS)/ Dualized Training Program (DTP) which contain both in-school and in-industry training or fieldwork components. Details can be referred to the Implementing Rules and Regulations of the DTS Law and the TESDA Guidelines on the DTP;

    - Distance learning is a formal education process in which majority of the instruction occurs when the students and instructor are not in the same place. Distance learning may employ correspondence study, audio, video, computer technologies or other modern technology that can be used to facilitate learning and formal and non-formal training. Specific guidelines on this mode shall be issued by the TESDA Secretariat.

    - The traditional classroom-based or in-center instruction may be enhanced through use of learner-centered methods as well as laboratory or field-work components.

2.2. Enterprise-Based:

- Formal Apprenticeship – Training within employment involving a contract between an apprentice and an enterprise on an approved apprenticeable occupation.

- Informal Apprenticeship - is based on a training (and working) agreement between an apprentice and a master craftsperson wherein the agreement may be written or oral and the master craftsperson commits to training the apprentice in all the skills relevant to his or her trade over a significant period of time, usually between one and four years, while the apprentice commits to contributing productively to the work of the business. Training is integrated into the production process and apprentices learn by working alongside the experienced craftsperson.

- Enterprise-based Training- where training is implemented within the company in accordance with the requirements of the specific company. Specific guidelines on this mode shall be issued by the TESDA Secretariat.

2.3. Community-Based:

- Community-Based – short term programs conducted by non-government organizations (NGOs), LGUs, training centers and other TVET providers which are intended to address the specific needs of a community. Such programs can be conducted in informal settings such as barangay hall, basketball courts, etc. These programs can also be mobile training program (MTP).

3.3 TRAINEE ENTRY REQUIREMENTS

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

- A holder of Transmission Line Installation and Maintenance NC III
- At least 3-yrs of relevant experience in transmission line installation, construction and maintenance
- Able to communicate both oral and/or written (either in English or local dialect)
- Must be physically fit

This list does not include specific institutional requirements, such as height and age requirements, 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

Recommended list of tools, equipment and materials for the training of 20 trainees for Transmission Line Installation and Maintenance NC IV:

TOOLS		EQUIPMENT		MATERIALS	
QTY	**ITEM**	**QTY**	ITEM	**QTY**	**ITEM**
4	Measuring tape, open reel, 150ft.	1	Range finder	1 ream	Bond paper, A4
4	Steel tape, 5m	2	Laptop/desktop PC	1	Stapler
2	Camera, 16Mpix, 50x optical zoom	1	Portable printer, Laserjet	5	Whiteboard marker, black/blue
		1	White board	2	Whiteboard eraser
		1	multimedia projector	5	Permanent marker
		20	Ballpen	5	masking tape
		20	Pencil	1	Puncher
				5	Highlighter/Marker, assorted color
			PPE	20	Sample Maintenance Order form
		20	Hard hat	20	Sample toolbox meeting form
		20	Safety shoes	20	Sample inspection checklist
		20	Safety goggles		
		20	Working gloves		
		20	Working clothes		
		1	First-aid kit set		

3.5 TRAINING FACILITIES

Based on class size of 20 students/trainees the space requirements for the teaching/learning and circulation areas are as follows:

TEACHING/LEARNING AREAS	SIZE IN METERS	AREA IN SQ. METERS	QTY	TOTAL AREA IN SQ. METERS
Lecture Area	5 x 8	40	1	40
Training Area	10 x 12	120	1	120
Learning Resource Area	4 x 5	20	1	20
Tool Room / Storage Area	4 x 5	20	1	20
Wash ,Toilet & Locker Room	1 x 2	2	1	2
Total				202
Facilities / Equipment / Circulation**				60
Total Area				**262**

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

3.6 TRAINERS QUALIFICATIONS

- Holder of National TVET Trainer's Certificate (NTTC) Level 1 in Transmission Line Installation and Maintenance NC IV;
- Minimum of five (5) years of work experience on transmission line installation, construction and maintenance within the last 10 years;
- Must have completed the 40 hours Construction Occupational Safety and Health (COSH) Course per Department Order No. 13 s. 1998, Guidelines Governing Occupational Safety and Health in the Construction Industry conducted by OSHC and DOLE accredited Safety Training Organizations; and
- Must be computer literate;

3.7 INSTITUTIONAL 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. The institutional assessment is administered by the trainer/assessor.

The result of the institutional assessment may be considered as evidence for the assessment for national certification.

SECTION 4 ASSESSMENT AND CERTIFICATION ARRANGEMENTS

Competency Assessment is the process of collecting evidence and making judgments whether competency has been achieved. The purpose of assessment is to confirm that an individual can perform to the standards expected at the workplace as expressed in relevant competency standards.

The assessment process is based on evidence or information gathered to prove achievement of competencies. The process may be applied to an employable unit(s) of competency in partial fulfillment of the requirements of the national qualification.

4.1 NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

4.1.1. To attain the National Qualification of the **Transmission Line Installation and Maintenance NC IV**, the candidate must demonstrate competence in all the units listed in Section 1. Successful candidates shall be awarded a **National Certificate IV** signed by the TESDA Director General.

4.1.2. The Qualification of **Transmission Line Installation and Maintenance NC IV** may be attained through demonstration of competence through project-type assessment covering all the units required.

4.1.3. Assessment shall cover all competencies, with basic and common integrated or assessed concurrently with the core units of competency.

4.1.4. Any of the following are qualified to apply for assessment and certification:

4.1.4.1 Holder of national certificate for Transmission Line Installation and Maintenance NC III with at least 5 yrs. work experience in transmission line installation, construction and maintenance.

4.1.4.2 Graduate of formal training on Transmission Line Installation and Maintenance NC IV.

4.1.4.3 Graduate of similar trainings provided by enterprise/s with at least 5 yrs work experience in transmission line installation, construction and maintenance. He/she must have experience working in tasks related to “Emergency Restoration Structure (ERS)”.

4.1.5 A person may also opt for **Portfolio assessment with Interview** if he/she has at least **8** years of relevant work experience (within the last 10 years) in transmission line installation, construction and maintenance. He/she must have experience working in tasks related to “Emergency Restoration Structure (ERS)”.

The candidate must show sufficient evidences on the above requirements in his/her portfolio. Necessary documents to be submitted are: Certificate of Employment (indicating position, nature of work and period), Training Certificate/s (local or international) on transmission line installation,

construction and maintenance, line ranger program and other relevant trainings.

4.1.5. The guidelines on assessment and certification are discussed in detail in the "Operating Procedures on Assessment and Certification" and "Guidelines on the Implementation of the Philippine TVET Competency Assessment and Certification System (PTCACS)".

4.2 COMPETENCY ASSESSMENT REQUISITE

4.2.1 Self-Assessment Guide. The Self-Assessment Guide (SAG) is accomplished by the candidate prior to actual competency assessment. SAG is a pre-assessment tool to help the candidate and the assessor determine what evidence is available, where gaps exist, including readiness for assessment.

This document can:

a. Identify the candidate's skills and knowledge
b. Highlight gaps in candidate's skills and knowledge
c. Provide critical guidance to the assessor and candidate on the evidence that need to be presented
d. Assist the candidate to identify key areas in which practice is needed or additional information or skills that should be gained prior `

4.2.2 Accredited Assessment Center. Only assessment center accredited by TESDA is authorized to manage the assessment activities of candidates for national certification.

4.2.3 Accredited Competency Assessor. Only competency assessor accredited by TESDA is authorized to assess the competencies of candidates for national certification.

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

19) **Resource Implication -** refer 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

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

21) **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

22) **Underpinning 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

23) **Underpinning 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

24) **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. **ACSR** - abbreviation of Aluminum Cable Steel Reinforced, a cable type having aluminum strands and a core of one or more steel strands. ACSR are primarily used for medium and high voltage lines and may also be used for overhead services to individual customers.
2. **Anchor Rod** – used for securing a machine, structure or part to masonry or other material.
3. **Block and Tackle -** is a combination or set of single or several sheaved blocks used to obtain a mechanical advantage in handling heavy loads**.**
4. **Cable Height Meter** - to determine the height of overhead cables
5. **Conductor –** is a conductive material usually made of aluminum or copper used to carry current along the overhead transmission line
6. **Extra High Voltage** (Transmission) – over 230 kV, up to about 800 kV, used for long distance, very high power transmission.
7. **Full Body Harness** - form of protective equipment designed to protect a person from injury due to falling
8. **Grounding Cluster** – used to protect personnel working in de-energized lines, from induced voltage, fault current feed, lightning strikes, erroneous switching & accidental contact with adjacent lines
9. **Ground line maintenance work –** refers to activities in the ground done by transmission line personnel which do not require climbing activity
10. **Groundworks** - a person working at ground level in support of a lineman working overhead.
11. **Guy Wire.** The wire or cable normally used in a down guy is seven-strand galvanized steel wire or seven-strand aluminum clad wire. Alum weld wire consists of steel wire strands coated with a layer of aluminum to prevent corrosion. Guy wire is used in various sizes with diameters from ¼ to 1 ¼ in.
12. **Guy-wire assembly** -is a tensioned cable designed to add stability to structures (frequently ship masts, radio masts, wind turbines, utility poles, and tents). One end of the cable is attached to the structure, and the other is anchored to the ground at a distance from the structure's base.
13. **Handline** - used for lifting or lowering small objects and also for holding equipment away from the pole as it is being raised
14. **Hazard** - a dangerous condition, potential or inherent, that can bring about an interruption or interfere with the expected orderly progress of an activity. It is any work materials, equipment, methods or practices that have the potential to cause harm to life, health, property or environment.
15. **Hazardous** - an atmosphere that may expose employees to the risk of death, atmosphere incapacitation, impaired ability to self-rescue unaided, injury, or acute illness.
16. **Hazardous atmospheres** - include flammable gas, vapor, or mist, airborne combustible dust, oxygen concentration below 19.5 percent or above 23.5 percent,

concentrations of substances that exceed dose or permissible exposure limits, or other atmospheric condition immediately dangerous to life or health.

17. **High Voltage** (Sub-transmission if 33-115kV and transmission if 115kV+) – between 33 kV and about 230 kV, used for sub-transmission and transmission of bulk quantities of electric power and connection to very large consumers.
18. **Hot Line Order** - a statement with documentation from the Operations Supervisor to the Job Supervisor that specific work may be done on or near a line or other equipment without requiring that it be disconnected from all sources of energy. The equipment is to be considered energized or "hot."
19. **Hotstick** - an insulated stick, usually made of fiberglass, that is used to work energized overhead conductors and operate electrical equipment that is overhead, underground and pad mounted.
20. **Insulator** - a device that is used to electrically isolate a conductor or electrical device from ground or a different electrical potential. Insulators must support the conductors and withstand both the normal operating voltage and surges due to switching and lightning. Insulators are broadly classified as either pin-type, which support the conductor above the structure, or suspension type, where the conductor hangs below the structure. Up to about 33 kV (69 kV in North America) both types are commonly used. At higher voltages only suspension-type insulators are common for overhead conductors. Insulators are usually made of wet-process porcelain or toughened glass, with increasing use of glass-reinforced polymer insulators.
21. **Line to line clearance** – refers to the distance of live conductors to another live conductor.
22. **Line to ground clearance** - refers to the distance of live conductors to the ground
23. **Lineman** - a payroll classification or title given a craftsperson whose duties include climbing wood poles or steel structures to perform work on electric power transmission and distribution circuits.
24. **Low voltage** – less than 1000 volts, used for connection between a residential or small commercial customer and the utility.
25. **Medium Voltage** (Distribution) – between 1000 volts (1 kV) and to about 33 kV, used for distribution in urban and rural areas.
26. **OHSAS 18001** – is a framework for an Occupational Health and Safety (OHS) Management Systems and is part of the OHSAS 18000 series of standards, along with OHSAS 18002.
27. **Overhead ground wire (OHGW)** – is an electrical conductor which provides protection to transmission lines against direct lightning strokes.
28. **Overhead power line -** is an electric power transmission line suspended by towers or poles. Since most of the insulation is provided by air, overhead power lines are generally the lowest-cost method of transmission for large quantities of electric power. Towers for support of the lines are made of wood (as-grown or laminated), steel (either lattice structures or tubular poles), concrete, aluminum, and occasionally reinforced plastics. The bare wire conductors on the line are generally made of aluminum (either plain or reinforced with steel or sometimes composite materials), though some copper wires are used in medium-voltage distribution and low-voltage connections to customer premises.

29. **Personal Protective Equipment (PPE) -** refers to protective clothing, helmets, goggles, or other garment or equipment designed to protect line personnel from job-related occupational hazards
30. **Personal Protective Equipment (PPE) -** the term shall include, but is not limited to, devices designed to be worn by workers for eye, face, head, respiratory, hand, arm, body, leg, foot, and fall protection.
31. **Philippine Grid Code -** establishes and documents the basic rules, requirements, procedures and standards that govern the operation, maintenance and development of the high-voltage backbone transmission system in the Philippines (Republic Act No. 9136, also known as the “Electric Power Industry Reform Act of 2001)
32. **Pole Dressing** – refers to installation of structure components, such as cross arms, insulators and etc.
33. **Pole Setting** – refers to pole positioning, pole erection and pole facing.
34. **Pre-formed Armor Rod -** a spiral-formed aluminum rod, a group of which is placed around a conductor at the point of suspension to minimize vibration and to protect the conductor from burning in case of a flashover.
35. **Reeving** - The operation of passing the rope around the sheaves of blocks.
36. **Rigging –** is the term used to described the process of moving/lifting both heavy and light loads using rope, blocks, and other special equipment.
37. **Right of way (ROW)** – the legal right, established by usage or grant, to pass along a specific route through grounds or property belonging to another.
38. **Risks -** a probability or threat of damage, injury, liability, loss or any other negative occurrence that is caused by external or internal vulnerabilities, and that may be avoided through preemptive action.
39. **Slings** - provide a method of attaching rigging tools to structures or equipment. They can be made of rope, webbing or steel. Some slings are made with a continuous loop while others are made with an eye on each end.
40. **Slope Protection –** The protection of an embankment slope against wave action or erosion.
41. **Tag Line** - A rope used to control the position of equipment being lifted. This is not to be confused with the rope used to actually lift the equipment.
42. **Transmission line** - is the material medium or structure that forms all or part of a path from one place to another for directing the transmission of energy, such as electromagnetic waves or acoustic waves, as well as electric power transmission. Components of transmission lines include wires, coaxial cables, dielectric slabs, optical fibers, electric power lines, and waveguides.
43. **Ultra High Voltage** – higher than 800 kV.
44. **Vibration Damper** - a device used to dissipate the vibration of conductors on a transmission line.
45. **Voltage Detector**- is a sensor used to detect presence of electricity in a wire.

ANNEX A - COMPETENCY MAP

TRANSMISSION LINE INSTALLATION & MAINTENANCE NC IV COMPETENCY MAP

BASIC COMPETENCIES

Receive and 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 and safety procedures	Lead Workplace Communication	Lead Small Working Teams	Develop and Practice Negotiating Skills With Team Members	Guide Effective Solutions to Problems Arising from Work Activities	Check and Develop the Use of Mathematical Concepts & Techniques	Use Relevant Technologies Applicable to Assigned Work
Lead in Utilizing Specialized Communication Skills	**Assist in Developing Team and Individuals**	**Apply Problem Solving Techniques in the Workplace**	**Collect, analyze and organize information**	**Plan and Organize Work for Several Working Teams**	**Promote Environmental Protection**	

COMMON COMPETENCIES

Apply quality standards	**Comply with environmental protection procedures**	**Observe procedures, specifications and manual of instruction**	**Operate and Maintain T/L tools and equipment**	**Operate a personal computer**

CORE COMPETENCIES

Tender Diesel Engine	Operate Diesel Power plant	Maintain and Repair Diesel Engine Systems and Alternator	Service Alternator/ Generator	Diagnose and Repair Diesel Engine	Diagnose and Repair Electrical System	Overhaul Diesel Engine
Perform transmission line pole erection	Perform overhead transmission line work	Perform cold-line maintenance work	Perform live-line maintenance work	Perform ground line maintenance work	Plan transmission line maintenance job	Install emergency restoration structure (ERS)
Inspect/Assess transmission line components' conditions	Implement transmission line maintenance works	Inspect transmission line, poles, towers and appurtenances	Erect distribution line poles	Climb pole and install pole assembly/conductors	Install distribution line equipment and devices	Install consumer service connection facility
Conduct initial root cause analysis	Perform ground transmission line works	Perform overhead maintenance works	Install/construct new transmission line structures	Perform overhead transmission line works	Install emergency restoration structure (ERS)	Perform earth/ground resistance testing
Plan assigned maintenance work	**Supervise transmission line maintenance work**					

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