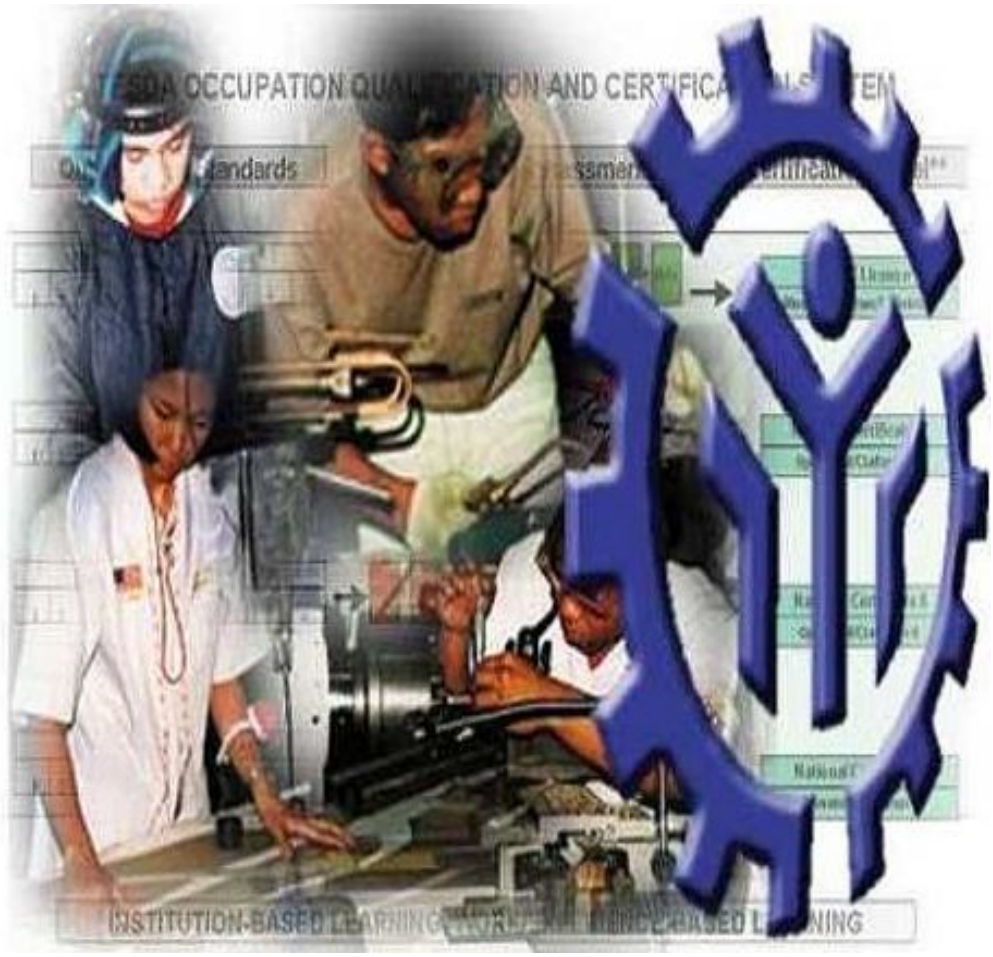
TRAINING REGULATIONS



CONSUMER ELECTRONICS SERVICING NC IV

ELECTRONICS SECTOR

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

TABLE OF CONTENTS

ELECTRONICS SECTOR

CONSUMER ELECTRONICS SERVICING

NATIONAL CERTIFICATE LEVEL IV

TRAINING REGULATIONS FOR
CONSUMER ELECTRONICS EQUIPMENT SERVICING NC IV

Section 1 CONSUMER ELECTRONICS SERVICING NC IV QUALIFICATIONS

The **CONSUMER ELECTRONICS SERVICING NC IV** Qualification consists of competencies that must possess to enable a person to manage servicing system for consumer electronic products and systems and to train service technician supervisor.

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

The units of competency comprising this qualification include the following:

Code	BASIC COMPETENCIES
5 00 311 1 15	Utilize specialized communication skills
5 00 311 1 16	Develop teams and individuals
5 00 311 1 17	Apply problem solving techniques in the workplace
5 00 311 1 18	Collect, analyze and organize information
5 00 311 1 19	Plan and organize work
5 00 311 1 20	Promote environmental protection

Code	COMMON COMPETENCIES
ELC724201	Use Hand Tools
ELC311201	Perform Mensuration and Calculation
ELC311202	Prepare and Interpret Technical Drawing
ELC315202	Apply Quality Standards
ELC311203	Perform Computer Operations
ELC724202	Terminate and Connect Electrical Wiring and Electronic Circuits

Code	CORE COMPETENCIES
	All core units in NC II and NC III, plus
ELC724329	Manage servicing systems for consumer electronics products and systems
ELC724330	Train Service Technician Supervisors

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

- Consumer Electronics Product Assembly Supervisor
- Domestic Appliance Service Technician Supervisor
- Cellular Phone Service Technician Supervisor
- Audio-video Service Technician Supervisor

SECTION 2: COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common, and core units of competency required for **CONSUMER ELECTRONICS SERVICING 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
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
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 2.6 Communication with clients and colleagues is appropriate to individual needs and organizational objectives
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
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
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 accordance with organizational procedures 5.3 Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated

RANGE OF VARIABLES

VARIABLE	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. Underpinning Knowledge	2.1 Communication process 2.2 Dynamics of groups and different styles of group leadership 2.3 Communication skills relevant to client groups
3. Underpinning Skills	3.1 Full range of communication techniques including: 3.1.1 Full range of communication 3.1.2 Active listening 3.1.3 Feedback 3.1.4 Interpretation 3.1.5 Role boundaries setting 3.1.6 Negotiation 3.1.7 Establishing empathy 3.2 Communication skills required to fulfill job roles as specified by the organization
4. Resource Implications	4.1 Access to appropriate workplace where assessment can take place
5. Methods of Assessment	Competency may be assessed through 5.1 Direct observation 5.2 Oral Interview
6. Context for Assessment	6.1 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
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
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 individual and team achievement of competencies 2.4. Resources and timelines required for learning activities are identified and approved in accordance with organizational requirements
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

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
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
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

RANGE OF VARIABLES

VARIABLE	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 2.3 Safety policies, procedures and programs 2.4 Confidentiality and security requirements 2.5 Business and performance plans 2.6 Ethical standards 2.7 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. Underpinning Knowledge	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 how to facilitate team development and improvement 2.4. Understanding methods and techniques for eliciting and interpreting feedback 2.5. Understanding methods for identifying and prioritizing personal development opportunities and options 2.6. Knowledge of career paths and competency standards in the industry
3. Underpinning Skills	3.1. Ability to read and understand a variety of texts, prepare general information and documents according to target audience; spell with accuracy; use grammar and punctuation effective relationships and conflict management 3.2. Communication skills including receiving feedback and reporting, maintaining effective relationships and conflict management 3.3. Planning skills to organize required resources and equipment to meet learning needs 3.4. Coaching and mentoring skills to provide support to colleagues 3.5. Reporting skills to organize information; assess information for relevance and accuracy; identify and elaborate on learning outcomes 3.6. Facilitation skills to conduct small group training sessions 3.7. Ability to relate to people from a range of social, cultural, physical and mental backgrounds

4. Resource Implications	The following resources **MUST** be provided: 4.1. Access to relevant workplace or appropriately simulated environment where assessment can take place 4.2. Materials relevant to the proposed activity or tasks
5. Methods of Assessment	Competency may be assessed through: 5.1. Observation of work activities of the individual member in relation to the work activities of the group 5.2. Observation of simulation and or role play involving the participation of individual member to the attainment of organizational goal 5.3. Case studies and scenarios as a basis for discussion of issues and strategies in teamwork
6. Context for Assessment	6.1. Competency may be assessed in workplace or in a simulated workplace setting 6.2. Assessment shall be observed while task are being undertaken whether individually or in-group

UNIT OF COMPETENCY : APPLY PROBLEM SOLVING TECHNIQUES IN THE WORKPLACE

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.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Analyze the problem	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
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
3. Recommend solution to higher management	3.1 Report/***communication*** or ***documentation*** are prepared 3.2 Recommendations are presented to appropriate personnel 3.3 Recommendations are followed-up, if required
4. Implement solution	4.1 Measurable objectives are identified 4.2 Resource needs are identified 4.3 Timelines are identified in accordance with plan
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.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Area of responsibility	Variables may include but are limited to: 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	Variables may include but are not limited to: 3.1. both hand written and printed material 3.2. internal memos 3.3. electronic mail 3.4. briefing notes and 3.5. 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. Underpinning Knowledge	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 incorporating current industry practices related to escalation procedures 2.7. Broad knowledge based of diagnostic tools 2.8. General principles of OHS 2.8. Divisional/unit responsibilities
3. Underpinning Skills	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. 3.7. Questioning and active listening is employed to clarify general information
4. Resource Implications	4.1. 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.

5. Methods of Assessment	Competency may be assessed through: 5.1. 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
6. Context for Assessment	6.1. Competency may be assessed in the work place or in a simulated work place setting 6.2. 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

UNIT CODE : 500311118

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

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ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
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.
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.
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
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.

RANGE OF VARIABLES

VARIABLE	R A N G E
1. Research procedures	May include but are not limited to: 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 but are not limited to: 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. Data	3.1. Raw Data
4. Information	4.1. Processed and packaged data
5. Methodologies	5.1 Qualitative methods 5.2 Quantitative methods
6. Statistical analysis/methods	6.1. Averages (Mean, Median, Mode) 6.2. Percentage 6.3. Ranks 6.4. Frequency Distribution 6.5 Statistical test

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. Underpinning Knowledge	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 2.4 Use of relevant software 2.4.1 Spreadsheets 2.4.2 Presentation graphics 2.4.3 Work processor 2.4.4 Statistical package
3. Underpinning Skills	3.1 Communicating effectively 3.2 Performing research and analysis 3.3 Reading / interpreting data and information 3.4 Problem solving
4. Resource Implications	The following resources **MUST** be provided: 4.1 Workplace or assessment location 4.2 Access to office equipment and facilities relevant to the unit 4.3 Case studies/scenarios
5. Methods of Assessment	Competency may be assessed through: 5.1 Written/ Oral Examination 5.2 Interviews 5.3 Portfolio
6. Context for Assessment	6.1 Competency may be assessed in actual workplace or TESDA Accredited Assessment Center

UNIT OF COMPETENCY : **PLAN AND ORGANIZE WORK**

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.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
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
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
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***
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

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
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

RANGE OF VARIABLES

VARIABLE	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	Appropriate personnel include: 7.1. Management 7.2. Line Staff	
8. Feedback mechanisms	Feedback mechanisms include: 8.1. Verbal feedback 8.2. Informal feedback 8.3. Formal feedback	8.4. Questionnaire 8.5. Survey 8.6. 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. Underpinning Knowledge	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
3. Underpinning Skills	3.1. Planning 3.2. Leading 3.3. Organizing 3.4. Coordinating 3.5. Communication Skills 3.6. Inter-and intra-person/motivation skills 3.7. Presentation skills
4. Resource Implications	The following resources **MUST** be provided 4.1. Tools, equipment and facilities appropriate to the proposed activities 4.2. Materials relevant to the proposed activities 4.3. Work plan schedules 4.4. Drawings, sketches or blueprint
5. Methods of Assessment	Competency may be assessed through: 5.1. Direct observation/questioning 5.2. Practical exercises on Planning and Scheduling Work Activities 5.3. Third Party Report (collection of competency evidence)
6. Context for Assessment	6.1. 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

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
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.
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. 2.4 Problems/ constraints encountered are resolved in accordance with organizations' policies and guidelines 2.5 Stakeholders are consulted based on company guidelines.
3. Monitor activities on environmental protection /programs	3.1 Activities are ***periodically*** monitored and evaluated according to the objectives of the environmental program 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.

RANGE OF VARIABLES

VARIABLE	R A N G E
1. Legislations/Conventions	May include but are not limited to: 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. Underpinning Knowledge	2.1 Features of an environmental management strategy 2.2 Environmental issues/concerns 2.3 International Environmental Protocols (Montreal, Kyoto) 2.4 Waste minimization hierarchy 2.5 Environmental planning/management 2.6 Community needs and expectations 2.7 Resource availability 2.8 Environment-friendly/environmental advocates 2.9 5S of Good Housekeeping 2.10 3Rs – Reduce, Reuse & Recycle 2.11 Sanitary Code 2.12 Environmental Code of practice
3. Underpinning Skills	3.1 Communicating effectively 3.2 Performing research and analysis 3.3 Reading / interpreting data and information 3.4 Problem solving
4. Resource Implications	The following resources **MUST** be provided: 4.1 Workplace/Assessment location 4.2 Legislation, policies, procedures, protocols and local ordinances relating to environmental protection 4.3 Case studies/scenarios relating to environmental protection
5. Methods of Assessment	Competency may be assessed through: 5.1 Written/ Oral Examination 5.2 Interview/Third Party Reports 5.3 Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad) 5.4 Simulations and role-plays
6. Context for Assessment	6.1 Competency may be assessed in actual workplace or at the designated TESDA center.

COMMON COMPETENCIES

UNIT TITLE : **USE HAND TOOLS**
UNIT CODE : **ELC724201**
UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes on the safe use, handling and maintenance of tools.

ELEMENT	PERFORMANCE CRITERIA ***Italicized Bold*** terms are elaborated in the Range of Variables
1. Plan and prepare for tasks to be undertaken	1.1. Tasks to be undertaken are properly identified 1.2. Appropriate ***hand tools*** are identified and selected according to the task requirements
2. Prepare hand tools	2.1. Appropriate hand tools are checked for proper operation and safety 2.2. Unsafe or faulty tools are identified and marked for repair according to standard company procedure
3. Use appropriate hand tools and test equipment	3.1. Tools are used according to tasks undertaken 3.2. All safety procedures in using tools are observed at all times and appropriate ***personal protective equipment*** (PPE) are used 3.3. Malfunctions, unplanned or unusual events are reported to the supervisor
4. Maintain hand tools	4.1. Tools are handled without damage according to procedures 4.2. Routine ***maintenance*** of tools undertaken according to standard operational procedures, principles and techniques 4.3. Tools are stored safely in appropriate locations in accordance with manufacturer's specifications or standard operating procedures

RANGE OF VARIABLES

VARIABLE	RANGE
1. Hand tools	1.1. Hand tools for adjusting, dismantling, assembling, finishing, cutting. Tool set includes the following but not limited to: screw drivers, pliers, punches, wrenches, files
2. Personal Protective Equipment (PPE)	2.1. Gloves 2.2. Protective eyewear 2.3. Apron/overall
3. Maintenance	3.1. Cleaning 3.2. Lubricating 3.3. Tightening 3.4. Simple tool repairs 3.5. Hand sharpening 3.6. Adjustment using correct procedures

EVIDENCE GUIDE

1. Critical aspect of competency	Assessment requires evidence that the candidate: 1.1. Demonstrated safe working practices at all times 1.2. Communicated information about processes, events or tasks being undertaken to ensure a safe and efficient working environment 1.3. Planned tasks in all situations and reviewed task requirements as appropriate 1.4. Performed all tasks to specification 1.5. Maintained and stored tools in appropriate location
2. Underpinning knowledge	2.1. Safety 2.1.1. Safety requirements in handling tools 2.2. Tools : 2.2.1. Function, Operation, Common faults 2.3. Processes, Operations, Systems 2.3.1. Maintenance of tools 2.3.2. Storage of Tools
3. Underpinning skills	3.1. Reading skills required to interpret work instruction and numerical skills 3.2. Communication skills 3.3. Problem solving in emergency situation
4. Method of assessment	Competency in this unit must be assessed through: 4.1. Observation 4.2. Oral questioning
5. Resource Implication	5.1. Tools may include the following but not limited to: 5.1.1. screw drivers 5.1.2. pliers 5.1.3. punches 5.1.4. wrenches, files
6. Context of Assessment	6.1. Assessment may be conducted in the workplace or in a simulated environment

UNIT TITLE : **PERFORM MENSURATION AND CALCULATION**
UNIT CODE : **ELC311201**
UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes and values needed identify, care, handle and use measuring instruments

ELEMENT	PERFORMANCE CRITERIA ***Italicized Bold*** terms are elaborated in the Range of Variables
1. Select measuring instruments	1.1. Object or component to be measured is identified according to procedures 1.2. Correct specifications are obtained from relevant source 1.3. Measuring tools are selected in line with job requirements
2. Carry out measurements and calculation	2.1. Appropriate ***measuring instrument*** is selected to achieve required outcome 2.2. Accurate measurements are obtained for job 2.3. ***Calculation*** needed to complete work tasks are performed using the four basic process of addition (+), subtraction (-), multiplication (x), and division (/) 2.4. Calculation involving fractions, percentages and mixed numbers are used to complete workplace tasks. 2.5. Numerical computation is checked and corrected for accuracy 2.6. Instruments are read to the limit of accuracy of the tool.
3. Maintain measuring instruments	3.1. Measuring instruments are handled without damage according to procedures 3.2. Measuring instruments are cleaned before and after using. 3.3. Proper storage of instruments are undertaken according to manufacturer's specifications and standard operating procedures.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Measuring instruments	1.1. Straight edge 1.2. Torque gauge 1.3. Try square 1.4. Protractor 1.5. Combination gauge 1.6. Steel rule
2. Calculation	Kinds of part mensuration includes the following but not limited to 2.1. Volume 2.2. Area 2.3. Displacement 2.4. Inside diameter 2.5. Circumference 2.6. Length 2.7. Thickness 2.8. Outside diameter 2.9. Taper 2.10. Out of roundness

EVIDENCE GUIDE

1. Critical aspect of competency	Assessment requires evidence that the candidate: 1.1. Selected proper measuring instruments according to tasks 1.2. Carried out measurement and calculations 1.3. Maintained and stores instruments
2. Underpinning knowledge	2.1. Types of measuring instruments and their uses 2.2. Safe handling procedures in using measuring instruments 2.3. Four fundamental operation of mathematics 2.4. Formula for volume, area, perimeter and other geometric figures
3. Underpinning skills	3.1. Reading skills required to interpret work instruction 3.2. Communication skills 3.3. Handling measuring instruments 3.4. Performing mathematical calculations using the four fundamental operations 3.5. Visualizing objects and shapes 3.6. Interpreting formulae
4. Method of assessment	Competency in this unit must be assessed through: 4.1. Observation 4.2. Oral questioning
5. Resource implication	5.1. Place of assessment 5.2. Measuring instruments 5.3. Straight edge 5.4. Torque gauge 5.5. Try square 5.6. Protractor 5.7. Combination gauge 5.8. Steel rule
6. Context of Assessment	6.1. Assessment may be conducted in the workplace or in a simulated environment

UNIT TITLE : **PREPARE AND INTERPRET TECHNICAL DRAWING**
UNIT CODE : **ELC311202**
UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes and values needed to prepare/interpret diagrams, engineering abbreviation and drawings, symbols, dimension.

ELEMENT	PERFORMANCE CRITERIA ***Italicized Bold*** terms are elaborated in the Range of Variables
1. Identify different kinds of technical drawings	1.1. Correct ***technical drawing*** is selected according to job requirements. 1.2. Technical drawings are segregated in accordance with the types and kinds of drawings
2. Interpret technical drawing	2.1. Components, assemblies or objects are recognized as required. 2.2. ***Dimensions*** of the key features of the objects depicted in the drawing are correctly identified. 2.3. ***Symbols*** used in the drawing are identified and interpreted correctly. 2.4. Drawing is checked and validated against job requirements or equipment in accordance with standard operating procedures.
3. Prepare/make changes to electrical/electronic schematics and drawings	3.1. Electrical/electronic schematic is drawn and correctly identified. 3.2. Correct drawing is identified, equipment are selected and used in accordance with job requirements.
4. Store technical drawings and equipment /instruments	4.1. Care and maintenance of drawings are undertaken according to company procedures. 4.2. Technical drawings are recorded and inventory is prepared in accordance with company procedures. 4.3. Proper storage of instruments is undertaken according to company procedures.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Technical drawings	Technical drawings include the following but not limited to: 1.1. Schematic diagrams 1.2. Charts 1.3. Block diagrams 1.4. Lay-out plans 1.5. Location plans 1.6. Process and instrumentation diagrams 1.7. Loop diagrams 1.8. System Control Diagrams
2. Dimensions	Dimensions may include but not limited to: 2.1. Length 2.2. Width 2.3. Height 2.4. Diameter 2.5. Angles
3. Symbols	May include but not limited to: 3.1. NEC- National Electric Code 3.2. IEC -International Electrotechnical Commission 3.3. ASME - American Society of Mechanical Engineers 3.4. IEEE - Institute of Electrical and Electronics Engineers 3.5. ISA - Instrumentation System and Automation Society
4. Instruments/Equipment	4.1. Components/dividers 4.2. Drawing boards 4.3. Rulers 4.4. T-square 4.5. Calculator

EVIDENCE GUIDE

1. Critical aspect of competencies	Assessment requires evidence that the candidate: 1.1. Selected correct technical drawing in line with job requirements 1.2. Correctly identified the objects represented in the drawing 1.3. Identified and interpreted symbols used in the drawing correctly 1.4. Prepared/Produced electrical/electronic drawings including all relevant specifications 1.5. Stored diagrams/equipment
2. Underpinning knowledge	2.1. Drawing conventions 2.2. Symbols 2.3. Dimensioning Conventions 2.4. Mark up/Notation of Drawings 2.5. Mathematics 2.5.1. Four fundamental operations 2.5.2. Percentage 2.5.3. Fraction 2.5.4. Trigonometric Functions 2.5.5. Algebra 2.5.6. Geometry
3. Underpinning skills	3.1. Reading skills required to interpret work instruction 3.2. Communication skills 3.3. Interpreting electrical/electronic signs and symbols
4. Method of assessment	Competency in this unit must be assessed through: 4.1. Practical tasks involving interpretation of a range of technical drawings 4.2. Oral questioning
5. Resource implication	5.1. Drawings 5.2. Diagrams 5.3. Charts 5.4. Plans
6. Context of Assessment	Assessment may be conducted in the workplace or in a simulated environment

UNIT TITLE : **APPLY QUALITY STANDARDS**
UNIT CODE : **ELC315202**
UNIT DESCRIPTOR : This unit covers the knowledge, skills, (and) attitudes and values 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
1. Assess quality of received materials or components	1.1. Work instructions are obtained and work is carried out in accordance with standard operating procedures 1.2. Received ***materials or component parts*** are checked against workplace standards and specifications 1.3. Faulty material or components related to work are identified and isolated 1.4. ***Faults*** and any identified causes are recorded and/or reported to the supervisor concerned in accordance with workplace procedures 1.5. Faulty materials or components are replaced in accordance with workplace procedures
2. Assess own work	2.1. ***Documentation*** relative to quality within the company is identified and used 2.2. Completed work is checked against workplace standards relevant to the task undertaken 2.3. Faulty pieces are identified and isolated 2.4. Information on the quality and other indicators of production performance is recorded in accordance with workplace procedures 2.5. Deviations from specified ***quality standards***, causes are documented and reported in accordance with the workplace' standards operating procedures
3. Engage in quality improvement	3.1. Process improvement procedures are participated in relation to workplace assignment 3.2. Work is carried out in accordance with process improvement procedures 3.3. Performance of operation or quality of product or service to ensure ***customer*** satisfaction is monitored

RANGE OF VARIABLES

VARIABLE	RANGE
1. Materials/components	1.1. Materials may include but not limited to: 1.1.1. wires 1.1.2. cables, soldering lead 1.1.3. electrical tape 1.2. Components may include but not limited to: 1.2.1. ICs 1.2.2. Diodes
2. Faults	Faults may include but not limited to: 2.1. Components/materials not according to specification 2.2. Components/materials contain manufacturing defects 2.3. Components/materials do not conform with government regulation i.e., PEC, environmental code 2.4. Components/materials have safety defect
3. Documentation	3.1. Organization work procedures 3.2. Manufacturer's instruction manual 3.3. Customer requirements 3.4. Forms
4. Quality standards	4.1. Quality standards may relate but not limited to the following: 4.1.1.materials 4.1.2.component parts 4.1.3.final product 4.1.4. production processes
5. Customer	5.1. Co-worker 5.2. Supplier 5.3. Client 5.4. Organization receiving the product or service

EVIDENCE GUIDE

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

UNIT TITLE : **PERFORM COMPUTER OPERATIONS**
UNIT CODE : **ELC311203**
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 Bold*** terms are elaborated in the Range of Variables
1. Plan and prepare for task to be undertaken	1.1. Requirements of task are determined according to job specifications 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
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***
3. Access information using computer	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 3.4. 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
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

RANGE OF VARIABLES

VARIABLE	RANGE
1. Hardware and peripheral devices	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. diskettes 4.2. CDs 4.3. zip disks 4.4. hard disk drives, local and remote
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 explained 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. Underpinning knowledge	2.1. Basic ergonomics of keyboard and computer use 2.2. Main types of computers and basic features of different operating systems 2.3. Main parts of a computer 2.4. Storage devices and basic categories of memory 2.5. Relevant types of software 2.6. General security 2.7. Viruses 2.8. OH & S principles and responsibilities 2.9. Calculating computer capacity
3. Underpinning skills	3.1. Reading skills required to interpret work instruction 3.2. Communication skills
4. Method of assessment	4.1. The assessor may select two of the following assessment methods to objectively assess the candidate: 4.1.1. Observation 4.1.2. Questioning 4.1.3. Practical demonstration
5. Resource implication	5.1. Computer hardware with peripherals 5.2. Appropriate software
6. Context of Assessment	6.1. Assessment may be conducted in the workplace or in a simulated environment

UNIT TITLE : **TERMINATE AND CONNECT ELECTRICAL WIRING AND ELECTRONICS CIRCUIT**
UNIT CODE : **ELC724202**
UNIT DESCRIPTOR : This unit covers the knowledge, skills, attitudes and values needed to terminate and connect electrical wiring and electronic circuits

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Plan and prepare for termination/connection of electrical wiring/electronics circuits	1.1. ***Materials*** are checked according to specifications and tasks 1.2. Appropriate ***tools and equipment*** are selected according to tasks requirements 1.3. Task is planned to ensure OH & S guidelines and procedures are followed 1.4. Electrical wiring/electronic circuits are correctly prepared for connecting/termination in accordance with instructions and work site procedures
2. Terminate/connect electrical wiring/electronic circuits	2.1. Safety procedures in using tools are observed at all times and appropriate ***personal protective equipment*** are used 2.2. Work is undertaken safely in accordance with the workplace and standard procedures 2.3. Appropriate range of ***methods*** in termination/connection are used according to specifications, manufacturer's requirements and safety 2.4. Correct sequence of operation is followed according to job specifications 2.5. ***Accessories*** used are adjusted, if necessary 2.6. Confirm termination/connection undertaken successfully in accordance with job specification
3. Test termination/connections of electrical wiring/electronics circuits	3.1. Testing of all completed termination/ connections of electric wiring/electronic circuits is conducted for compliance with specifications and regulations using appropriate procedures and equipment 3.2. Wiring and circuits are checked using specified testing procedures 3.3. Unplanned events or conditions are responded to in accordance with established procedures

RANGE OF VARIABLES

VARIABLE	RANGE
1. Materials	1.1 Materials included the following but not limited to: 1.1.1 Soldering lead 1.1.2 Cables 1.1.3 Wires
2. Tools and equipment	2.1 Tools for measuring, cutting, drilling, assembling/disassembling. Tool set includes the following but not limited to: 2.1.1 Pliers 2.1.2 Cutters 2.1.3 Screw drivers 2.2 Equipment 2.2.1 Soldering gun 2.2.2 Multi-tester
3. Personal protective equipment	3.1 goggles 3.2 gloves 3.3 apron/overall
4. Methods	4.1 Clamping 4.2 Pin connection 4.3 Soldered joints 4.4 Plugs
5. Accessories	5.1 Accessories may include the following but not limited to: 5.1.1 brackets 5.1.2 clamps

EVIDENCE GUIDE

1. Critical aspect of competency	Assessment requires evidence that the candidate: 1.1. Undertook work safely and according to workplace and standard procedures 1.2. Used appropriate termination/ connection methods 1.3. Followed correct sequence in termination / connection process 1.4. Conducted testing of terminated connected electrical wiring/electronic circuits using appropriate procedures and standards
2. Underpinning knowledge	2.1. Use of tools 2.2. Use of test instruments/equipment 2.3. Electrical theory 2.4. Single phase AC principles 2.5. Wiring techniques 2.6. DC power supplies 2.7. Soldering
3. Underpinning skills	3.1. Reading skills required to interpret work instruction 3.2. Communication skills 3.3. Soldering techniques
4. Method of assessment	4.1. The assessor may select two (2) of the following assessment methods to objectively assess the candidate: 4.1.1. Observation 4.1.2. Oral Questioning 4.1.3. Practical demonstration
5. Resource implication	5.1. Tools for measuring, cutting, drilling, assembling/disassembling, connecting. Tool set includes the following but not limited to: 5.1.1. screw drivers 5.1.2. pliers 5.1.3. cutters
6. Context of Assessment	6.1. Assessment may be conducted in the workplace or in a simulated environment

CORE COMPETENCIES

UNIT OF COMPETENCY : **MANAGE SERVICING SYSTEMS FOR CONSUMER ELECTRONICS PRODUCTS**

UNIT CODE : **ELC724329**

DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to manage servicing system.

ELEMENTS	PERFORMANCE CRITERIA (***Italicized Bold*** terms are elaborated in the range of variables)
1. Plan and prepare management of servicing system	1.1 Management of servicing and maintenance of ***OH&S policies and procedures*** is planned and prepared to ensure that the work sequence is in accordance with ***requirements*** 1.2 ***Appropriate personnel*** are consulted and directed to ensure the programs for servicing and maintenance are coordinated effectively with others involved on the work site 1.3 Programs to be managed for servicing and maintenance are checked against job requirements 1.4 Materials necessary to complete the work are identified and detailed in accordance with established procedures and checked against job requirements 1.5 Tools, equipment and testing devices needed to carry out the work are identified and detailed in accordance with established procedures 1.6 Procurement management plan is formulated for servicing and maintenance in accordance with established procedures and checked against requirements
2 Manage and monitor servicing system	2.1 Normal function of ***consumer electronics products*** and associated circuits are ascertained and detailed in accordance with requirements 2.2 Mechanisms are used to measure, record and report progress of activities in relation to the agreed servicing and maintenance schedules and plans 2.3 Servicing and maintenance system is managed and monitored in accordance with ***established procedures and requirements*** to achieve designated objectives 2.4 Response to ***unplanned events or conditions*** in accordance with established procedures are detailed 2.5 Records and documentation of servicing and maintenance activities are maintained in accordance with established procedures to facilitate quality management and to provide an audit trail.

	2.6	Results of routine maintenance activities are monitored in accordance with established procedures to determine compliance with agreed quality standards
	2.7	Shortfalls in quality outcomes are acted upon in accordance with established procedures to enable appropriate action to be initiated
3 Evaluate and document servicing system	3.1	Quality management issues and responses are reported in accordance with established procedures
	3.2	Completion of servicing and maintenance is reported in accordance with established procedures

RANGE OF VARIABLES

1. OH&S policies and procedures	Arrangements of an organization or enterprise to meet the legal and ethical obligations of ensuring that the workplace is safe and without risk to health. This may include: 1.1 Hazardous and risk assessment mechanisms 1.2 Implementation of safety regulations 1.3 Safety training 1.4 Safety systems incorporating, 1.4.1 Work clearance procedures 1.4.2 Isolation procedures 1.4.3 Gas and vapor 1.4.4 Monitoring/testing procedures 1.4.5 Use of protective equipment and clothing 1.5 Use of codes of practice
2. Requirements	Requirements may include: 2.1 statutory regulations 2.2 codes of practice 2.3 Job specifications 2.4 Transport documentation 2.5 Standards called-up in specifications 2.6 Procedures and work instructions 2.7 Quality assurance systems 2.8 Manufacturers' specifications 2.9 Maintenance manuals, schedules and specifications/standards 2.10 Circuit/cable schedules 2.11 Design specifications 2.12 Customer/client requirements and specifications 2.13 Specified underpinning knowledge (specified in units' Evidence Guides) 2.14 National and State guidelines , policies and imperatives relating to the environment
3. Appropriate personnel	Individuals with responsibilities for co-ordination, design installation, maintenance, production, or servicing activities may include: 3.1 Site managers 3.2 Project managers 3.3 Engineers and technicians 3.4 Technical experts 3.5 Line managers/supervisors 3.6 Regulatory personnel 3.7 Team leaders 3.8 Other personnel designated by an organization or enterprise

4. Consumer electronics products	4.1 Audio & video product 4.2 Electronically-controlled domestic appliances 4.3 Cellular phones
5. Established procedures	Formal arrangements of an organization, enterprise or statutory authority of how work is to be done. These may include 5.1 Quality assurance systems incorporating, for example: 5.1.1 Continues quality improvement procedures 5.1.2 Work orders / instructions 5.1.3 Reporting procedures 5.1.4 Procurement procedures 5.1.5 Accounting procedures 5.1.6 Human resources development procedures 5.2 Work clearance systems incorporating, for example: 5.2.1 Work permits 5.2.2 Municipal permits 5.2.3 Monitoring and clearance procedures 5.2.4 Isolation procedures 5.3 OH&S practices 5.4 Procedures for operating safety systems, operating plant and equipment and reporting work activities 5.5 Maintenance, modification or supply of relevant schematic drawings and technical data 5.6 Arrangements for dealing with emergency situations.
6. Unplanned events or conditions	May include but not limited to: 6.1 Accidents/incidents 6.2 Brownout 6.3 Equipment breakdown 6.4 Force majeure e.g., earthquake, fire, typhoon

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Planned and prepared management of servicing and maintenance in accordance with OH&S policies and procedures 1.2. Checked programs to be developed for servicing and maintenance according to job requirements 1.3. Identified and detailed tools, equipment and materials needed to carry out work as specified in the user's manual and established procedures 1.4. Used mechanisms to measure, record and report progress of activities in relation to the agreed servicing and maintenance schedules and plans 1.5. Maintained records and documentation of servicing and maintenance activities 1.6. Reported quality management issues and responses in accordance with established procedures
2. Underpinning knowledge and attitude	2.1. Basic Electronics 2.2. Computer operations 2.3. Flow charting 2.4. Business plan development 2.4.1. Marketing plan 2.4.2. Production plan 2.4.3. Organization and management plan 2.4.4. Financial plan 2.5. Laws, and regulation, Electrical and electronic code 2.6. Quality improvement 2.6.1. Continuous process Improvement Philosophies and principals 2.6.2. Product/Service Development 2.6.3. Manufacturing Product/providing services 2.6.4. Inspection of raw materials and outgoing product 2.7. Management 2.7.1. HR Recourses management 2.7.2. Fiscal management 2.7.3. ISO 9000 2.7.4. Procurement management 2.7.5. Records management 2.7.6. Property management

3. Underpinning skills	3.1. Formulating Continuous Improvement policies and guidelines 3.2. Benchmarking 3.3. Preparing process capability control chart 3.4. Skills in operation of Basic computer system application 3.5. Drawing system and process flow chart 3.6. Partnering with suppliers
4. Resource implications	Includes but not limited to: 4.1. Personal computer 4.2. Working table 4.3. Diagram/manuals and other repair reference of different consumer electronic product 4.4. ISO 9000 Handbook 4.5. Work and financial plan
5. Method of assessment	The assessor must select at least two of the following assessment methods to objectively assess the candidate: 5.1. Direct observation of application to tasks and questions related to underpinning knowledge 5.2. Case study problem/Written report 5.3. Interview 5.4. Portfolio 5.5. Third Party Report
6. Context of assessment	6.1. Competency maybe assessed in the workplace or in a simulated workplace setting

UNIT OF COMPETENCY : **TRAIN SERVICE TECHNICIAN SUPERVISORS**

UNIT CODE : **ELC724330**

DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to train service technician supervisors.

ELEMENTS	PERFORMANCE CRITERIA (***Italicized Bold*** terms are elaborated in the range of variables)
1. Plan and prepare training activities	1.1 Required tools, materials and equipment are prepared in the worksite. 1.2 Stage of development is determined from discussion with the service technician supervisor, observation of the service technician supervisor and/or a formal assessment being carried out 1.3 Measures are taken to ensure the service technician supervisor understands ***OH&S requirements*** **and safe working** ***procedures*** and practices for the particular worksite and the activities to be undertaken 1.4 Preparation for particular training includes deciding which activities are to be undertaken by the service technician supervisor and the level of supervision 1.5 Confirmations from the service technician supervisor are sought regarding the level of understanding of the training activity to be performed
2 Guide/mentor service technician supervisors	2.1 Service technician supervisors training is conducted in accordance with training plan 2.2 Service technician supervisor is provided with clear instructions on the work to be undertaken and the respective responsibilities associated with the work and to others involved 2.3 Service technician supervisor is guided/mentored and on-going checks of performance(s) are made at a level appropriate to the stage of development in accordance with industry standards 2.4 Measures are taken to ensure the service technician supervisor completes relevant documentation of the work performed in accordance with established procedures
3 Document and provide feedback	3.1 Service technician supervisor progress is monitored in accordance with ***established procedures*** *and* ***documentation requirements*** 3.2 Work activities and assessment undertaken are documented and verified in accordance with established procedures 3.3 Assessment feedback is provided to service technician supervisor and training evaluation report is submitted to ***responsible person*** in accordance with established procedures

RANGE OF VARIABLES

1. Established procedures	Established procedures may include: 1.1 Quality assurance systems incorporating, for example: 1.1.1 Specifications, requirements and procedures 1.1.2 Work orders / instructions 1.1.3 Reporting procedures 1.1.4 Improvement mechanisms 1.1.5 Compliance requirements 1.1.6 Safety management 1.2 Work clearance systems incorporating, for example: 1.2.1 Work permits 1.2.2 Monitoring and clearance procedures 1.2.3 Isolation procedures 1.3 OH&S practices 1.4 Procedures for operating safety systems, operating plant and equipment and reporting work activities 1.5 Maintenance, modification or supply of relevant schematic drawings and technical data 1.6 Arrangements for dealing with emergency situations.
2. OH&S policies and procedures	Arrangements of an organization or enterprise to meet their legal and ethical obligations of ensuring the workplace is safe and without risk to health. This may include: 2.1 Hazardous and risk assessment mechanisms 2.2 Implementation of safety regulations 2.3 Safety training 2.4 Safety systems incorporating, 2.4.1 Work clearance procedures 2.4.2 Isolation procedures 2.4.3 Gas and vapor 2.4.4 Monitoring/testing procedures 2.4.5 Use of protective equipment and clothing 2.5 Use of codes of practice
3 Responsible person	Individuals with responsibilities for coordination, design installation, maintenance, production, or servicing activities may include: 3.1 Site managers 3.2 Project managers 3.3 Engineers and technicians 3.4 Technical experts 3.5 Line managers/supervisors 3.6 Regulatory personnel 3.7 Team leaders 3.8 Other personnel designated by an organization or enterprise
4 Documentation requirements	Requirements may include: 4.1 GANTT chart 4.2 Progress chart/report 4.3 Training evaluation report 4.4 Training plan

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Planned and prepared training activities 1.2. Mentored technician service supervisor 1.3. Monitored and check program 1.4. Document the training program 1.5. Provide feedback technical supervisor 1.6. Submitted requirement report to responsible person
2. Underpinning knowledge and attitude	2.1 Fundamentals of maintaining and servicing audio-video products and systems 2.2. Fundamentals of maintaining and servicing cellular phones 2.3. Fundamentals of maintaining and servicing of electronically-controlled domestic appliances 2.4. Fundamentals of coaching and mentoring 2.5. Theories of adult learning 2.6. Methods of teaching 2.7. Fundamentals of continues improvement 2.8. Fundamentals of supervisor knowledge and skills 2.9. Enterprise policies and guidelines
3. Underpinning skills	3.1. Work efficiency 3.2. Communication skills in providing instruction to service technician supervisor 3.3. Implementing training plan 3.4. Skills in troubleshooting consumer electronics 3.5. Applying work safety practices and time management 3.6. Skills in operation of basic computer software application 3.7. Applying principle of continuous quality improvement
4. Resource implications	May includes but not limited to: 4.1. Lecture room 4.2. monitoring report 4.3. Training plan 4.4. work procedures
5. Method of assessment	The assessor must select at least two of the following assessment methods to objectively assess the candidate: 5.1. Direct observation of application to tasks and questions related to underpinning knowledge 5.2. Case Study/Written report

	5.3. Interview 5.4. Portfolio 5.5. Third Party Report
6. Context of assessment	6.1. Competency maybe assessed in the workplace or in a simulated workplace setting

SECTION 3 TRAINING STANDARDS

3.1 CURRICULUM DESIGN

Course Title: Consumer Electronics Servicing **NC Level:** NC IV

Nominal Training Duration: 36 hrs – Basic Competencies
60 hrs – Common Competencies
80 hrs – Core Competencies
176 hrs

Course Description:

This course is designed to develop & enhance the knowledge, skills, & attitudes of a Consumer Electronics Technician, in accordance with industry standards. It covers the basic & common competencies in addition to the core competencies such as commissioning consumer electronic products system, developing servicing system for consumer electronic products and training service technician supervisor. The nominal duration of 176 hr covers the required units at NC IV. TVET providers can however, offer a longer, ladderized course covering both NC II and NC III basic, common and core units.

BASIC COMPETENCIES
36 hrs

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Utilize specialized communication skills	1.1 Meet common and specific communication needs of clients and colleagues 1.2 Contribute to the development of communication strategies 1.3 Represent the organization 1.4 Facilitate group discussion 1.5 Conduct interview	• Group discussion • Role Play • Brainstorming	• Observation • Interviews
2. Develop teams and individuals	2.1 Provide team leadership 2.2 Foster individual and organizational growth 2.3 Monitor and evaluate workplace learning 2.4 Develop team commitment and cooperation 2.5 Facilitate accomplishment of organizational goals	• Lecture • Demonstration • Self-paced (modular)	• Demonstration • Case studies
3. Apply problem solving techniques in the workplace	3.1 Analyze the problem 3.2 Identify possible solutions 3.3 Recommend solution to higher management 3.4 Implement solution 3.5 Evaluate/Monitor results and outcome	• Direct observation • Simulation/role playing • Case studies	• Written test • Practical/ performance test

4. Collect, analyze and organize information	4.1 Study information requirements 4.2 Process data 4.3 Analyze, interpret and organize information gathered 4.4 Present findings/ Recommendations	• Direct observation • Simulation/role playing • Case studies	• Written test • Practical/ performance test
5. Plan and organize work	5.1 Set objectives 5.2 Plan and schedule work activities 5.3 Implement work plans 5.4 Monitor work activities 5.5 Review and evaluate work plans and activities	• Direct observation • Simulation/role playing • Case studies	• Written test • Practical/ performance test
6. Promote environmental protection	6.1 Study guidelines for environmental concerns 6.2 Implement specific environmental programs 6.3 Monitor activities on environmental protection /programs	• Direct observation • Simulation/role playing • Case studies	• Written test • Practical/ performance test

COMMON COMPETENCIES

60 hrs

Note: *Those who have completed the course on Consumer Electronics Servicing NC III or have acquired the Consumer Electronics Servicing NC III qualification can skip this portion on common competencies.*

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Apply Quality Standards	1.1 Asses quality of received materials 1.2 Assess own work 1.3 Engage in quality improvement	▪ Field trip ▪ Symposium ▪ Film showing ▪ Simulation ▪ On the job training	▪ Demonstration & questioning ▪ Observation & questioning ▪ Third party report
2. Perform Computer Operation	2.1 Plan and prepare for task to be undertaken 2.2 Input data into computer 2.3 Access information using computer 2.4 Produce output/data using computer system 2.5 Use basic functions of a web browser to locate information 2.6 Maintain computer equipment and systems	• Modular • Film showing • Computer based training (e-learning) • Project method • On the job training	• Demonstration & questioning • Observation & questioning • Third party report • Assessment of output product • Portfolio • Computer-based assessment

3. Use Hand Tools	3.1 Identify, explain and apply the use of different types of hand tools 3.2 Perform basic maintenance and proper storage of hand tools according to the standard operating procedures 3.3 Document and record the sequence of events in safe keeping hand tools.	▪ Lecture / Demonstration ▪ Distance education ▪ Film Showing	▪ Written/Oral examination ▪ Practical demonstration
4. Perform Mensurations and Calculation	4.1 Select measuring instruments; 4.2 Carry-out measurements and calculations;	▪ Self- paced/ modular ▪ Demonstration ▪ Small group discussion ▪ Distance education	▪ Written/Oral examination ▪ Practical demonstration
5. Interpret Technical Drawings And Plans	5.1 Select and interpret technical drawing 5.2 Perform freehand sketching	▪ Lecture/ demonstration ▪ Dualized ▪ Distance learning	▪ Written /oral ▪ examinations ▪ Direct ▪ observation ▪ Project method ▪ interview
6. Terminate and Connect Electrical wiring and Electronic Circuit	6.1 Terminate or join non-soldered connections 6.2 Terminate or join soldered connections	▪ Film Viewing ▪ Individualized Learning ▪ Direct Student Laboratory Experience ▪ On the Job Training ▪ Project ▪ Method	▪ Demonstration and Questioning ▪ Assessment of Output Product

CORE COMPETENCIES
80 hrs

Note: This course design covers only NC IV level core units.

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Manage Servicing System for Consumer Electronic Products	1.1 Identify the tools, equipment, testing devices, & materials needed for maintenance & repair. 1.2 Identify the PPE & OHS policies & procedures required for the maintenance & repair job 1.3 Identify and organized resources and financial requirements 1.4 Develop a business/ operation plan according to organizational standards	• Lecture • Discussion • Demonstration • Viewing multimedia • Case study	• Written exam • Practical exam • Observation in workplace • Interviews/ questioning
2. Train Service Technician Supervisors	2.1 Develop a supervisor training plan condition 2.2 Conduct training of service technician supervisor 2.3 Apply skills in enhancing work productivity 2.4 Evaluate progress of training according to plan	• Lecture • Discussion • Demonstration • Viewing multimedia	• Written exam • Practical exam • Observation in workplace • Interviews/ questioning

3.2 TRAINING DELIVERY

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

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

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

- The dualized mode of training delivery is preferred and recommended. Thus programs would contain both in-school and in-industry training or fieldwork components. Details can be referred to the Dual Training System (DTS) Implementing Rules and Regulations.
- Modular/self-paced learning is a competency-based training modality wherein the trainee is allowed to progress at his own pace. The trainer only facilitates the training delivery.
- Peer teaching/mentoring is a training modality wherein fast learners are given the opportunity to assist the slow learners.
- Supervised industry training or on-the-job training is an approach in training designed to enhance the knowledge and skills of the trainee through actual experience in the workplace to acquire a specific competencies prescribed in the training regulations.
- Distance learning is a formal education process in which majority of the instruction occurs when the students and instructors are not in the same place. Distance learning may employ correspondence study, or audio, video or computer technologies.

3.3 TRAINEE ENTRY REQUIREMENTS

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

- Must have completed Consumer Electronics Servicing NCIII program or equivalent
- Must have interest and potential in managerial functions

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

3.4 LIST OF TOOLS, EQUIPMENT AND MATERIALS

Recommended list of tools, equipment and materials for the training of 25 trainees for Consumer Electronics Servicing NC IV.

TOOLS		EQUIPMENT		MATERIAL	
Qty.	Description	Qty.	Description	Qty.	Description
		1 pc	LCD Projector	10 pcs	Whiteboard marker, red
		1 pc	Large projection screen	10 pcs	Whiteboard marker, black
		25 set	Writing table and chair	10 pcs	Whiteboard marker, blue
		1 pc	Laptop computer	5 pcs	Whiteboard eraser
		1 set	Audio video system	25 pcs	Flow chat template

3.5 TRAINING FACILITIES

Based on class size of 25 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
Learning Resource Area	4 x 5	20	1	20
Wash ,Toilet & Locker Room	2 x 5	10	2	20
Total				80
Facilities / Equipment / Circulation**				30
Total Area				**110**

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

3.6 TRAINERS QUALIFICATIONS

Consumer Electronics Technician NC IV
Trainer's Qualification TQ IV

- Must be a holder of TESDA Consumer Electronics Servicing NCIV or equivalent
- Must have completed Training Methodology IV (TM IV) course or equivalent
- Must have at least 2-years relevant industry experience.
- Must be physically & mentally fit.

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.

SECTION 4. NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

4.1 To attain the National Qualification of **Consumer Electronics Servicing 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.

4.2 The qualification of **Consumer Electronics Servicing NC IV** may be attained through demonstration of competence through a single comprehensive project-type assessment covering all required units of competency of the qualification.

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

4.4 Accumulation and submission of all COCs acquired for the relevant units of competency comprising a qualification, an individual shall be issued the corresponding National Certificate.

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

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

4.5.2. Experienced workers (wage employed or self employed)

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

DEFINITION OF TERMS

GENERAL

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

22) **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

23) **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

24) **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

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

SECTOR SPECIFIC

1. **Equipment -** A component part of an installation used for a particular purpose. Equipment includes, but is not limited to, that contained in the following divisions. It will necessarily include new and emerging technologies:

    - **Audio/visual equipment** including televisions, radios, monitors, cameras, closed circuit television, mono and stereo sound systems, gaming machines, electronic display panels, cassette recorders, video cassette recorders, CDROM players, tape recorders, sound and video duplication equipment, digital versatile discs, digital audio tapes, professional and domestic speaker systems, mixer desks.

    - **Appliances** including portable electric tools, motor driven pumps, vacuum cleaners, food preparation equipment, hair dryers, refrigerators, washing machines, dish washers, paper shredders, water coolers, clothes dryers, pest exterminators, electric motor driven industrial tools and equipment, sanitary disposal units, radial and tangential fans and blowers.

2. **Appliances -** A fixed (for support only), hand-held (held in hand during normal use), portable (moved whilst in operation or easily moved from one place to another while connected to the supply) or stationary (can be moved, but not easily) consuming device, other than a lamp.

3. **Competent person -** A person who has the relevant competencies described in this competency

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ANNEX A - COMPETENCY MAP – CONSUMER ELECTRONICS SERVICING NC IV

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 Team
Develop and practice negotiation skills	Solve Problems Related to Work Activities	Use mathematical concepts and techniques	Use relevant technologies	**Utilize Specialist Communication Skills**
Develop Team and Individuals	**Apply Problem Solving Techniques in the Workplace**	**Collect, analyze and organize information**	**Plan and Organize Work**	**Promote environmental protection**

COMMON COMPETENCIES

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

CORE COMPETENCIES

Install Instrumentation and Control Devices	Calibrate Instrumentation and Control Devices	Configure Instrumentation and Control Devices	Loop Check Instrumentation and Control Devices	Maintain and Repair Instrumentation & Control Devices
Start-up Instrumentation and Control Systems	Diagnose and Troubleshoot Instrumentation and Control Systems	Install Mechatronic Devices	Configure and Adjust Mechatronic Devices	Develop Mechatronic Control Circuits and Software Application Programs
Maintain and Repair Mechatronic Systems	Commission Mechatronic Systems	Diagnose and Troubleshoot Mechatronic Systems	Service and Repair Audio Systems and Products	Service and Repair Video Systems and Products
Service and Repair Business Machines	Assemble and Disassemble Consumer Electronic Products	Maintain and Repair Electronically Controlled Domestic Appliances	Maintain and Repair Audio-Video Products and Systems	Maintain and Repair Cellular Phones
Commission Consumer Electronic Products and Systems	Develop Servicing Systems for Consumer Electronic Products	Train service technician	**Manage Servicing Systems for Consumer Electronics Products and Systems**	**Train service technician supervisors**

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