COMPETENCY STANDARDS

DATA ANALYTICS LEVEL III

INFORMATION AND COMMUNICATIONS TECHNOLOGY SECTOR

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY
East Service Road, South Luzon Expressway (SLEX), 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 skills 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 Competency Standards (CS) serve as basis for the:

1 Registration and delivery of training programs;
2 Development of curriculum and assessment instruments; and

Each CS has two sections:

Section 1   **Definition of Qualification** describes the qualification and defines the competencies that comprise the qualification.

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

TABLE OF CONTENTS

**INFORMATION AND COMMUNICATIONS TECHNOLOGY SECTOR
DATA ANALYTICS LEVEL III**

Page No.

COMPETENCY STANDARDS FOR
DATA ANALYTICS LEVEL III

SECTION 1: DEFINITION OF QUALIFICATION

The **DATA ANALYTICS LEVEL III** Qualification consists of competencies that a person must achieve to apply statistical analysis concepts, prepare data sets, summarize data sets and prepare data visualization.

The Units of Competency comprising this Qualification include the following:

UNIT CODE	BASIC COMPETENCIES
400311319	Lead workplace communication
400311320	Lead small teams
400311321	Apply critical thinking and problem solving techniques in the workplace
400311322	Work in a diverse environment
400311323	Propose methods of applying learning and innovation in the organization
400311324	Use information systematically
400311325	Evaluate occupational safety and health work practices
400311326	Evaluate environmental work practices
400311327	Facilitate entrepreneurial skills for micro-small-medium enterprises (MSMEs)

UNIT CODE	COMMON COMPETENCIES
ICT315202	Apply quality standards
ICT311203	Perform Computer Operations

Unit Code	CORE COMPETENCIES
CS-ICT251205	Apply statistical concepts and analysis
CS-ICT251206	Prepare data sets
CS-ICT251207	Summarize data sets
CS-ICT251208	Prepare data visualization

A person who has achieved this Qualification is competent to be:
- Junior Data Analyst

SECTION 2: COMPETENCY STANDARDS

This section gives the details of the contents of the units of competency required in **DATA ANALYTICS LEVEL III**

BASIC COMPETENCIES

UNIT OF COMPETENCY : LEAD WORKPLACE COMMUNICATION

UNIT CODE : 400311319

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to lead in the dissemination and discussion of ideas, information and issues in the workplace.

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Communicate information about workplace processes	1.1 Relevant ***communication method*** is selected based on workplace procedures 1.2 Multiple operations involving several topics/areas are communicated following enterprise requirements 1.3 Questioning is applied to gain extra information 1.4 Relevant sources of information are identified in accordance with workplace/ client requirements 1.5 Information is selected and organized following enterprise procedures 1.6 Verbal and written reporting is undertaken when required 1.7 Communication and negotiation skills are applied and maintained in all relevant situations	1.1. Organization requirements for written and electronic communication methods 1.2. Effective verbal communication methods 1.3. Business writing 1.4. Workplace etiquette	1.1. Organizing information 1.2. Conveying intended meaning 1.3. Participating in a variety of workplace discussions 1.4. Complying with organization requirements for the use of written and electronic communication methods 1.5. Effective business writing 1.6. Effective clarifying and probing skills 1.7. Effective questioning techniques (clarifying and probing)
2. Lead workplace discussions	2.1 Response to workplace issues are sought following enterprise procedures 2.2 Response to workplace issues are provided immediately	2.1 Organization requirements for written and electronic communication methods	2.1 Organizing information 2.2 Conveying intended meaning 2.3 Participating in variety of

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.3 Constructive contributions are made to **workplace discussions** on such issues as production, quality and safety 2.4 Goals/objectives and action plans undertaken in the workplace are communicated promptly	2.2 Effective verbal communication methods 2.3 Workplace etiquette	workplace discussions 2.4 Complying with organization requirements for the use of written and electronic communication methods 2.5 Effective clarifying and probing skills
3. Identify and communicate issues arising in the workplace	3.1 Issues and problems are identified as they arise 3.2 Information regarding problems and issues are organized coherently to ensure clear and effective communication 3.3 Dialogue is initiated with appropriate personnel 3.4 Communication problems and issues are raised as they arise 3.5 Identify barriers in communication to be addressed appropriately	3.1 Organization requirements for written and electronic communication methods 3.2 Effective verbal communication methods 3.3 Workplace etiquette 3.4 Communication problems and issues 3.5 Barriers in communication	3.1 Organizing information 3.2 Conveying intended meaning 3.3 Participating in a variety of workplace discussions 3.4 Complying with organization requirements for the use of written and electronic communication methods 3.5 Effective clarifying and probing skills 3.6 Identifying issues 3.7 Negotiation and communication skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. Methods of communication	May include: 1.1. Non-verbal gestures 1.2. Verbal 1.3. Face-to-face 1.4. Two-way radio 1.5. Speaking to groups 1.6. Using telephone 1.7. Written 1.8. Internet
2. Workplace discussions	May include: 2.1. Coordination meetings 2.2. Toolbox discussion 2.3. Peer-to-peer discussion

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Dealt with a range of communication/information at one time 1.2. Demonstrated leadership skills in workplace communication 1.3. Made constructive contributions in workplace issues 1.4. Sought workplace issues effectively 1.5. Responded to workplace issues promptly 1.6. Presented information clearly and effectively written form 1.7. Used appropriate sources of information 1.8. Asked appropriate questions 1.9. Provided accurate information
2. Resource Implications	The following resources should be provided: 2.1. Variety of Information 2.2. Communication tools 2.3. Simulated workplace
3. Methods of Assessment	Competency in this unit must be assessed through 3.1. Case problem 3.2. Third-party report 3.3. Portfolio 3.4. Interview 3.5. Demonstration/Role-playing
4. Context for Assessment	4.1. Competency may be assessed in the workplace or in simulated workplace environment

UNIT OF COMPETENCY	:	LEAD SMALL TEAMS
UNIT CODE	:	400311320
UNIT DESCRIPTOR	:	This unit covers the knowledge, skills and attitudes to lead small teams including setting, maintaining and monitoring team and individual performance standards.

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Provide team leadership	1.1. **Work requirements** are identified and presented to team members based on company policies and procedures 1.2. Reasons for instructions and requirements are communicated to team members based on company policies and procedures 1.3. **Team members' queries and concerns** are recognized, discussed and dealt with based on company practices	1.1 Facilitation of Team work 1.2 Company policies and procedures relating to work performance 1.3 Performance standards and expectations 1.4 Monitoring individual's and team's performance vis a vis client's and group's expectations	1.1 Communication skills required for leading teams 1.2 Group facilitation skills 1.3 Negotiating skills 1.4 Setting performance expectation
2. Assign responsibilities	2.1. Responsibilities are allocated having regard to the skills, knowledge and aptitude required to undertake the assigned task based on company policies. 2.2. Duties are allocated having regard to individual preference, domestic and personal considerations, whenever possible	2.1 Work plan and procedures 2.2 Work requirements and targets 2.2 Individual and group expectations and assignments 2.3 Ways to improve group leadership and membership	2.1 Communication skills 2.2 Management skills 2.3 Negotiating skills 2.4 Evaluation skills 2.5 Identifying team member's strengths and rooms for improvement
3. Set performance	3.1 Performance expectations are	3.1 One's roles and responsibilities in the team	3.1 Communication skills

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
expectations for team members	established based on client needs 3.2 Performance expectations are based on individual team members knowledge, skills and aptitude 3.3 Performance expectations are discussed and disseminated to individual team members	3.2 Feedback giving and receiving 3.3 Performance expectation	3.2 Accurate empathy 3.3 Congruence 3.4 Unconditional positive regard 3.5 Handling of Feedback
4. Supervised team performance	4.1 Performance is *monitored* based on defined performance criteria and/or assignment instructions 4.2 Team members are provided with *feedback*, positive support and advice on strategies to overcome any deficiencies based on company practices 4.3 **Performance issues** which cannot be rectified or addressed within the team are referenced to appropriate personnel according to employer policy 4.4 Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on client/customer needs and satisfaction 4.5 Team operations are monitored to ensure that employer/client	4.1 Performance Coaching 4.2 Performance management 4.3 Performance Issues	4.1 Communication skills required for leading teams 4.2 Coaching skill

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	needs and requirements are met 4.6 Follow-up communication is provided on all issues affecting the team 4.7 All relevant documentation is completed in accordance with company procedures		

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work requirements	May include: 1.1. Client Profile 1.2. Assignment instructions
2. Team member's concerns	May include: 2.1. Roster/shift details
3. Monitor performance	May include: 3.1. Formal process 3.2. Informal process
4. Feedback	May include: 4.1. Formal process 4.2. Informal process
5. Performance issues	May include: 5.1. Work output 5.2. Work quality 5.3. Team participation 5.4. Compliance with workplace protocols 5.5. Safety 5.6. Customer service

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate:	
	1.1. Maintained or improved individuals and/or team performance given a variety of possible scenario	
	1.2. Assessed and monitored team and individual performance against set criteria	
	1.3. Represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf	
	1.4. Allocated duties and responsibilities, having regard to individual's knowledge, skills and aptitude and the needs of the tasks to be performed	
	1.5. Set and communicated performance expectations for a range of tasks and duties within the team and provided feedback to team members	
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 task	
3. Methods of Assessment	Competency in this unit may be assessed through:	
	3.1. Written Examination	
	3.2. Oral Questioning	
	3.3. Portfolio	
4. Context for Assessment	4.1. Competency may be assessed in actual workplace or at the designated TESDA Accredited Assessment Center	

UNIT OF COMPETENCY: APPLY CRITICAL THINKING AND PROBLEM SOLVING TECHNIQUES IN THE WORKPLACE

UNIT CODE : 400311321

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to solve problems in the workplace including the application of problem solving techniques and to determine and resolve the root cause/s of specific problems in the workplace.

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Examine specific workplace challenges	1.1. Variances are examined from normal operating **parameters;** and product quality. 1.2. Extent, cause and nature of the specific problem are defined through observation, investigation and *analytical techniques*. 1.3. *Problems* are clearly stated and specified.	1.1. Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations. 1.2. Competence to include the ability to apply and explain, enough for the identification of fundamental causes of specific workplace challenges. 1.3. Relevant equipment and operational processes. 1.4. Enterprise goals, targets and measures. 1.5. Enterprise quality OHS and environmental requirement. 1.6. Enterprise information systems and data collation 1.7. Industry codes and standards.	1.1. Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 1.2. Identifying extent and causes of specific challenges in the workplace.
2. Analyze the causes of specific workplace challenges.	2.1. Possible causes of specific problems are identified based on experience and the use of problem solving tools / analytical techniques.	2.1 Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and	2.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.2. Possible cause statements are developed based on findings. 2.3. Fundamental causes are identified per results of investigation conducted.	product quality to recognize non-standard situations. 2.2 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations. 2.3 Relevant equipment and operational processes. 2.4 Enterprise goals, targets and measures. 2.5 Enterprise quality OSH and environmental requirement. 2.6 Enterprise information systems and data collation. 2.7 Industry codes and standards.	processing of information) in examining specific challenges in the workplace. 2.2 Identifying extent and causes of specific challenges in the workplace. 2.3 Providing clear-cut findings on the nature of each identified workplace challenges.
3. Formulate resolutions to specific workplace challenges	3.1. All possible options are considered for resolution of the problem. 3.2. Strengths and weaknesses of possible options are considered. 3.3. Corrective actions are determined to resolve the problem and possible future causes. 3.4. **Action *plans*** are developed identifying measurable objectives, resource needs and timelines in accordance with safety and operating procedures	3.1. Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations 3.2. Relevant equipment and operational processes 3.3. Enterprise goals, targets and measures 3.4. Enterprise quality OSH and environmental requirement 3.5. Principles of decision making strategies and techniques	3.1. Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 3.2. Identifying extent and causes of specific challenges in the workplace. 3.3. Providing clear-cut findings on the nature of each identified workplace challenges.

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
		3.6. Enterprise information systems and data collation 3.7. Industry codes and standards	3.4. Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.
4. Implement action plans and communicate results	4.1. Action plans are implemented and evaluated. 4.2. Results of plan implementation and recommendations are prepared. 4.3. Recommendations are presented to appropriate personnel. 4.4. Recommendations are followed-up, if required.	4.1 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations 4.2. Relevant equipment and operational processes 4.3 Enterprise goals, targets and measures 4.4 Enterprise quality, OSH and environmental requirement 4.5 Principles of decision making strategies and techniques 4.6 Enterprise information systems and data collation 4.7 Industry codes and standards	4.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 4.2 Identifying extent and causes of specific challenges in the workplace. 4.3 Providing clear-cut findings on the nature of each identified workplace challenges. 4.4 Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.

RANGE OF VARIABLES

VARIABLES	RANGE
1. Parameters	May include: 1.1 Processes 1.2 Procedures 1.3 Systems
2. Analytical techniques	May include: 2.1. Brainstorming 2.2. Intuitions/Logic 2.3. Cause and effect diagrams 2.4. Pareto analysis 2.5. SWOT analysis 2.6. Gant chart, Pert CPM and graphs 2.7. Scattergrams
3. Problem	May include: 3.1. Routine, non – routine and complex workplace and quality problems 3.2. Equipment selection, availability and failure 3.3. Teamwork and work allocation problem 3.4. Safety and emergency situations and incidents 3.5. Risk assessment and management
4. Action plans	May include: 4.1. Priority requirements 4.2. Measurable objectives 4.3. Resource requirements 4.4. Timelines 4.5. Co-ordination and feedback requirements 4.6. Safety requirements 4.7. Risk assessment 4.8. Environmental requirements

EVIDENCE GUIDE

1.	Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Examined specific workplace challenges. 1.2. Analyzed the causes of specific workplace challenges. 1.3. Formulated resolutions to specific workplace challenges. 1.4. Implemented action plans and communicated results on specific workplace challenges.
2.	Resource Implications	2.1. 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 reason behind the observable action.
3.	Methods of Assessment	Competency in this unit may be assessed through: 3.1. Observation 3.2. Case Formulation 3.3. Life Narrative Inquiry 3.4. Standardized test The unit will be assessed in a holistic manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual workplace and will include walk through of the relevant competency components. These assessment activities should include a range of problems, including new, unusual and improbable situations that may have happened.
4.	Context for Assessment	4.1. In all workplace, it may be appropriate to assess this unit concurrently with relevant teamwork or operation units.

UNIT OF COMPETENCY : WORK IN A DIVERSE ENVIRONMENT
UNIT CODE : 400311322
UNIT DESCRIPTOR : **This unit covers the outcomes required to work effectively in a workplace characterized by diversity in terms of religions, beliefs, races, ethnicities and other differences.**

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Develop an individual's cultural awareness and sensitivity	1.1. Individual differences with clients, customers and fellow workers are recognized and respected in accordance with enterprise policies and core values. 1.2. Differences are responded to in a sensitive and considerate manner 1.3. *Diversity* is accommodated using appropriate verbal and non-verbal communication.	1.1. Understanding cultural diversity in the workplace 1.2. Norms of behavior for interacting and dialogue with specific groups (e. g., Muslims and other non-Christians, non-Catholics, tribes/ethnic groups, foreigners) 1.3. Different methods of verbal and non-verbal communication in a multicultural setting	1.1. Applying cross-cultural communication skills (i.e. different business customs, beliefs, communication strategies) 1.2. Showing affective skills – establishing rapport and empathy, understanding, etc. 1.3. Demonstrating openness and flexibility in communication 1.4. Recognizing diverse groups in the workplace and community as defined by divergent culture, religion, traditions and practices
2. Work effectively in an environment that acknowledges and values cultural diversity	2.1 Knowledge, skills and experiences of others are recognized and documented in relation to team objectives. 2.2 Fellow workers are encouraged to utilize and share their specific qualities, skills or backgrounds with other team members and clients to enhance work outcomes. 2.3 Relations with customers and clients are maintained to show that	2.1 Value of diversity in the economy and society in terms of Workforce development 2.2 Importance of inclusiveness in a diverse environment 2.3 Shared vision and understanding of and commitment to team, departmental, and organizational goals and objectives	2.1 Demonstrating cross-cultural communication skills and active listening 2.2 Recognizing diverse groups in the workplace and community as defined by divergent culture, religion, traditions and practices 2.3 Demonstrating collaboration skills

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	diversity is valued by the business.	2.4 Strategies for customer service excellence	2.4 Exhibiting customer service excellence
3. Identify common issues in a multicultural and diverse environment	3.1 ***Diversity-related conflicts*** within the workplace are effectively addressed and resolved. 3.2 Discriminatory behaviors towards customers/stakeholders are minimized and addressed accordingly. 3.3 Change management policies are in place within the organization.	3.1 Value, and leverage of cultural diversity 3.2 Inclusivity and conflict resolution 3.3 Workplace harassment 3.4 Change management and ways to overcome resistance to change 3.5 Advanced strategies for customer service excellence	3.1 Addressing diversity-related conflicts in the workplace 3.2 Eliminating discriminatory behavior towards customers and co-workers 3.3 Utilizing change management policies in the workplace

RANGE OF VARIABLES

VARIABLE	RANGE
1. Diversity	This refers to diversity in both the workplace and the community and may include divergence in : 1.1 Religion 1.2 Ethnicity, race or nationality 1.3 Culture 1.4 Gender, age or personality 1.5 Educational background
2. Diversity-related conflicts	May include conflicts that result from: 2.1 Discriminatory behaviors 2.2 Differences of cultural practices 2.3 Differences of belief and value systems 2.4 Gender-based violence 2.5 Workplace bullying 2.6 Corporate jealousy 2.7 Language barriers 2.8 Individuals being differently-abled persons 2.9 Ageism (negative attitude and behavior towards old people)

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Adjusted language and behavior as required by interactions with diversity 1.2 Identified and respected individual differences in colleagues, clients and customers 1.3 Applied relevant regulations, standards and codes of practice
2. Resource Implications	The following resources should be provided: 2.1 Access to workplace and resources 2.2 Manuals and policies on Workplace Diversity
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Demonstration or simulation with oral questioning 3.2 Group discussions and interactive activities 3.3 Case studies/problems involving workplace diversity issues 3.4 Third-party report 3.5 Written examination 3.6 Role Plays
4. Context for Assessment	Competency assessment may occur in workplace or any appropriately simulated environment

UNIT OF COMPETENCY: PROPOSE METHODS OF APPLYING LEARNING AND INNOVATION IN THE ORGANIZATION

UNIT CODE : 400311323

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to assess general obstacles in the application of learning and innovation in the organization and to propose practical methods of such in addressing organizational challenges.

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Assess work procedures, processes and systems in terms of innovative practices	1.1. R*easons* for innovation are incorporated to work procedures. 1.2. **Models of innovation** are researched. 1.3. G*aps or barriers* to innovation in one's work area are analyzed. 1.4. Staff who can support and foster innovation in the work procedure are identified.	1.1 Seven habits of highly effective people. 1.2 Character strengths that foster innovation and learning (Christopher Peterson and Martin Seligman, 2004) 1.3 Five minds of the future concepts (Gardner, 2007). 1.4 Adaptation concepts in neuroscience (Merzenich, 2013). 1.5 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).	1.1 Demonstrating collaboration and networking skills. 1.2 Applying basic research and evaluation skills 1.3 Generating insights on how to improve organizational procedures, processes and systems through innovation.
2. Generate practical action plans for improving work procedures, processes	2.1 Ideas for innovative work procedure to foster innovation using individual and group techniques are conceptualized 2.2 Range of ideas with other team members and colleagues are evaluated and discussed 2.3 Work procedures and processes subject to change are selected based on **workplace requirements** (feasible and innovative). 2.4 Practical action plans are proposed to facilitate simple changes in the work procedures, processes and systems. 2.5 **Critical inquiry** is applied and used to	2.1 Seven habits of highly effective people. 2.2 Character strengths that foster innovation and learning (Christopher Peterson and Martin Seligman, 2004) 2.3 Five minds of the future concepts (Gardner, 2007). 2.4 Adaptation concepts in neuroscience (Merzenich, 2013). 2.5 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).	2.1 Assessing readiness for change on simple work procedures, processes and systems. 2.2 Generating insights on how to improve organizational procedures, processes and systems through innovation. 2.3 Facilitating action plans on how to apply innovative procedures in the organization.

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	facilitate discourse on adjustments in the simple work procedures, processes and systems.		
3. Evaluate the effectiveness of the proposed action plans	3.1 Work structure is analyzed to identify the impact of the new work procedures 3.2 Co-workers/key personnel is consulted to know who will be involved with or affected by the work procedure 3.3 Work instruction operational plan of the new work procedure is developed and evaluated. 3.4 Feedback and suggestion are recorded. 3.5 Operational plan is updated. 3.6 Results and impact on the developed work instructions are reviewed 3.7 Results of the new work procedure are evaluated 3.8 Adjustments are recommended based on results gathered	3.1 Five minds of the future concepts (Gardner, 2007). 3.2 Adaptation concepts in neuroscience (Merzenich, 2013). 3.3 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).	3.1 Generating insights on how to improve organizational procedures, processes and systems through innovation. 3.2 Facilitating action plans on how to apply innovative procedures in the organization. 3.3 Communicating results of the evaluation of the proposed and implemented changes in the workplace procedures and systems. 3.4 Developing action plans for continuous improvement on the basic systems, processes and procedures in the organization.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Reasons	May include: 1.1. Strengths and weaknesses of the current systems, processes and procedures. 1.2. Opportunities and threats of the current systems, processes and procedures.
2. Models of innovation	May include: 2.1. Seven habits of highly effective people. 2.2. Five minds of the future concepts (Gardner, 2007). 2.3. Neuroplasticity and adaptation strategies.
3. Workplace requirements	May include: 3.1. Feasible 3.2. Innovative
4. Gaps or barriers	May include: 4.1. Machine 4.2. Manpower 4.3. Methods 4.4. Money
5. Critical Inquiry	May include: 5.1. Preparation. 5.2. Discussion. 5.3. Clarification of goals. 5.4. Negotiate towards a Win-Win outcome. 5.5. Agreement. 5.6. Implementation of a course of action. 5.7. Effective verbal communication. See our pages: Verbal Communication and Effective Speaking. 5.8. Listening. 5.9. Reducing misunderstandings is a key part of effective negotiation. 5.10. Rapport Building. 5.11. Problem Solving. 5.12. Decision Making. 5.13. Assertiveness. 5.14. Dealing with Difficult Situations.

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Established the reasons why innovative systems are required 1.2. Established the goals of a new innovative system 1.3. Analyzed current organizational systems to identify gaps and barriers to innovation. 1.4. Assessed work procedures, processes and systems in terms of innovative practices. 1.5. Generated practical action plans for improving work procedures, and processes. 1.6. Reviewed the trial innovative work system and adjusted reflect evaluation feedback, knowledge management systems and future planning. 1.7. Evaluated the effectiveness of the proposed action plans.
2. Resource Implications	The following resources should be provided: 2.1. Pens, papers and writing implements. 2.2. Cartolina. 2.3. Manila papers
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1. Psychological and behavioral Interviews. 3.2. Performance Evaluation. 3.3. Life Narrative Inquiry. 3.4. Review of portfolios of evidence and third-party workplace reports of on-the-job performance. 3.5. Sensitivity analysis. 3.6. Organizational analysis. 3.7. Standardized assessment of character strengths and virtues applied.
4. Context for Assessment	Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY: USE INFORMATION SYSTEMATICALLY

UNIT CODE   :   400311324

UNIT DESCRIPTOR   : This unit covers the knowledge, skills and attitudes required to use technical information systems, apply information technology (IT) systems and edit, format & check information.

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Use technical information	1.1. ***Information*** are collated and organized into a suitable form for reference and use 1.2. Stored information are classified so that it can be quickly identified and retrieved when needed 1.3. Guidance are advised and offered to people who need to find and use information	1.1. Application in collating information 1.2. Procedures for inputting, maintaining and archiving information 1.3. Guidance to people who need to find and use information 1.4. Organize information 1.5. classify stored information for identification and retrieval 1.6. Operate the technical information system by using agreed procedures	1.1. Collating information 1.2. Operating appropriate and valid procedures for inputting, maintaining and archiving information 1.3. Advising and offering guidance to people who need to find and use information 1.4. Organizing information into a suitable form for reference and use 1.5. Classifying stored information for identification and retrieval 1.6. Operating the technical information system by using agreed procedures
2. Apply information technology (IT)	2.1. ***Technical information*** system is operated using agreed procedures 2.2. Appropriate and valid procedures are operated for inputting, maintaining and archiving information 2.3. ***Software*** required are utilized to execute the project activities 2.4. Information and data obtained are handled, edited, formatted and checked from a range of	2.1. Attributes and limitations of available software tools 2.2. Procedures and work instructions for the use of IT 2.3. Operational requirements for IT systems 2.4. Sources and flow paths of data 2.5. Security systems and measures that can be used 2.6. Extract data and format reports	2.1. Identifying attributes and limitations of available software tools 2.2. Using procedures and work instructions for the use of IT 2.3. Describing operational requirements for IT systems 2.4. Identifying sources and flow paths of data

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	internal and external *sources* 2.5. Information are extracted, entered, and processed to produce the outputs required by *customers* 2.6. Own skills and understanding are shared to help others 2.7. Specified *security measures* are implemented to protect the confidentiality and integrity of project data held in IT systems	2.7. Methods of entering and processing information 2.8. WWW enabled applications	2.5. Determining security systems and measures that can be used 2.6. Extracting data and format reports 2.7. Describing methods of entering and processing information 2.8. Using WWW applications
3. Edit, format and check information	3.1 Basic editing techniques are used 3.2 Accuracy of documents are checked 3.3 Editing and formatting tools and techniques are used for more complex documents 3.4 Proof reading techniques is used to check that documents look professional	3.1 Basic file-handling techniques 3.2 Techniques in checking documents 3.3 Techniques in editing and formatting 3.4 Proof reading techniques	3.1 Using basic file-handling techniques is used for the software 3.2 Using different techniques in checking documents 3.3 Applying editing and formatting techniques 3.4 Applying proof reading techniques

RANGE OF VARIABLES

VARIABLE	RANGE
1. Information	May include: 1.1. Property 1.2. Organizational 1.3. Technical reference
2. Technical information	May include: 2.1. paper based 2.2. electronic
3. Software	May include: 3.1. spreadsheets 3.2. databases 3.3. word processing 3.4. presentation
4. Sources	May include: 4.1. other IT systems 4.2. manually created 4.3. within own organization 4.4. outside own organization 4.5. geographically remote
5. Customers	May include: 5.1. colleagues 5.2. company and project management 5.3. clients
6. Security measures	May include: 6.1. access rights to input; 6.2. passwords; 6.3. access rights to outputs; 6.4. data consistency and back-up; 6.5. recovery plans

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Used technical information systems and information technology 1.2. Applied information technology (IT) systems 1.3. Edited, formatted and checked information
2. Resource Implications	The following resources should be provided: 2.1. Computers 2.2. Software and IT system
3. Methods of Assessment	Competency in this unit MUST be assessed through: 3.1. Direct Observation 3.2. Oral interview and written test
4. Context for Assessment	4.1. Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : EVALUATE OCCUPATIONAL SAFETY AND HEALTH WORK PRACTICES

UNIT CODE : 400311325

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to interpret-Occupational Safety and Health practices, set OSH work targets, and evaluate effectiveness of Occupational Safety and Health work instructions

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Interpret Occupational Safety and Health practices	1.1 **OSH work practices issues** are identified relevant to work requirements 1.2 OSH work standards and procedures are determined based on applicability to nature of work 1.3 Gaps in work practices are identified related to relevant OSH work standards	1.1. OSH work practices issues 1.2. OSH work standards 1.3. General OSH principles and legislations 1.4. Company/ workplace policies/ guidelines 1.5. Standards and safety requirements of work process and procedures	1.1. Communication skills 1.2. Interpersonal skills 1.3. Critical thinking skills 1.4. Observation skills
2. Set OSH work targets	2.1 Relevant work information are gathered necessary to determine OSH work targets 2.2 **OSH Indicators** based on gathered information are agreed upon to measure effectiveness of workplace OSH policies and procedures 2.3 Agreed OSH indicators are endorsed for approval from appropriate personnel 2.4 **OSH work instructions** are received in accordance with workplace policies and procedures*	2.1. OSH work targets 2.2. OSH Indicators 2.3. OSH work instructions 2.4. Safety and health requirements of tasks 2.5. Workplace guidelines on providing feedback on OSH and security concerns 2.6. OSH regulations Hazard control procedures 2.7. OSH trainings relevant to work	2.1. Communication skills 2.2. Collaborating skills 2.3. Critical thinking skills 2.4. Observation skills
3. Evaluate effectiveness of Occupational Safety and Health work instructions	3.1 OSH Practices are observed based on workplace standards 3.2 Observed OSH practices are measured against approved **OSH metrics** 3.3 Findings regarding effectiveness are assessed and gaps identified are implemented based on OSH work standards	3.1. OSH Practices 3.2. OSH metrics 3.3. OSH Evaluation Techniques 3.4. OSH work standards	3.1. Critical thinking skills 3.2. Evaluating skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. OSH Work Practices Issues	May include: 1.1 Workers' experience/observance on presence of work hazards 1.2 Unsafe/unhealthy administrative arrangements (prolonged work hours, no break-time, constant overtime, scheduling of tasks) 1.3 Reasons for compliance/non-compliance to use of PPEs or other OSH procedures/policies/ guidelines
2. OSH Indicators	May include: 2.1 Increased of incidents of accidents, injuries 2.2 Increased occurrence of sickness or health complaints/symptoms 2.3 Common complaints of workers' related to OSH 2.4 High absenteeism for work-related reasons
3. OSH Work Instructions	May include: 3.1 Preventive and control measures, and targets 3.2 Eliminate the hazard (i.e., get rid of the dangerous machine 3.3 Isolate the hazard (i.e. keep the machine in a closed room and operate it remotely; barricade an unsafe area off) 3.4 Substitute the hazard with a safer alternative (i.e., replace the machine with a safer one) 3.5 Use administrative controls to reduce the risk (i.e. give trainings on how to use equipment safely; OSH-related topics, issue warning signages, rotation/shifting work schedule) 3.6 Use engineering controls to reduce the risk (i.e. use safety guards to machine) 3.7 Use personal protective equipment 3.8 Safety, Health and Work Environment Evaluation 3.9 Periodic and/or special medical examinations of workers
4. OSH metrics	May include: 4.1 Statistics on incidence of accidence and injuries 4.2 Morbidity (Type and Number of Sickness) 4.3 Mortality (Cause and Number of Deaths) 4.4 Accident Rate

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate:
	1.1. Identify OSH work practices issues relevant to work requirements
	1.2. Identify gaps in work practices related to relevant OSH work standards
	1.3. Agree upon OSH Indicators based on gathered information to measure effectiveness of workplace OSH policies and procedures
	1.4. Receive OSH work instructions in accordance with workplace policies and procedures
	1.5. Compare Observed OSH practices with against approved OSH work instructions
	1.6. Assess findings regarding effectiveness based on OSH work standards
2. Resource Implications	The following resources should be provided:
	2.1 Facilities, materials, tools and equipment necessary for the activity
3. Methods of Assessment	Competency in this unit may be assessed through:
	3.1 Observation/Demonstration with oral questioning
	3.2 Third party report
	3.3 Written exam
4. Context for Assessment	4.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT OF COMPETENCY : **EVALUATE ENVIRONMENTAL WORK PRACTICES**
UNIT CODE : **400311326**
UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitude to interpret environmental Issues, establish targets to evaluate environmental practices and evaluate effectiveness of environmental practices

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Interpret environmental practices, policies and procedures	1.1 Environmental work practices issues are identified relevant to work requirements 1.2 Environmental Standards and Procedures nature of work are determined based on Applicability to nature of work 1.3 Gaps in work practices related to Environmental Standards and Procedures are identified	1.1 Environmental Issues 1.2 Environmental Work Procedures 1.3 Environmental Laws 1.4 Environmental Hazardous and Non-Hazardous Materials 1.5 Environmental required license, registration or certification	1.1. Analyzing Environment al Issues and Concerns 1.2. Critical thinking 1.3. Problem Solving 1.4. Observation Skills
2. Establish targets to evaluate environmental practices	2.1. Relevant information are gathered necessary to determine environmental work targets 2.2. Environmental Indicators based on gathered information are set to measure environmental work targets 2.3. Indicators are verified with appropriate personnel	2.1. Environmental Indicators 2.2. Relevant Environment Personnel or expert 2.3. Relevant Environmental Trainings and Seminars	2.1. Investigative Skills 2.2. Critical thinking 2.3. Problem Solving 2.4. Observation Skills
3. Evaluate effectiveness of environmental practices	3.1. Work environmental practices are recorded based on workplace standards 3.2. Recorded work environmental practices are compared against planned indicators 3.3. Findings regarding effectiveness are assessed and gaps identified are implemented based on environment work standards and procedures 3.4. Results of environmental assessment are conveyed to appropriate personnel	1.1. Environmental Practices 1.2. Environmental Standards and Procedures	3.1 Documentation and Record Keeping Skills 3.2 Critical thinking 3.3 Problem Solving 3.4 Observation Skills

RANGE OF VARIABLES

VARIABLE	R A N G E
1. Environmental Practices Issues	May include: 1.1 Water Quality 1.2 National and Local Government Issues 1.3 Safety 1.4 Endangered Species 1.5 Noise 1.6 Air Quality 1.7 Historic 1.8 Waste 1.9 Cultural
2. Environmental Indicators	May include: 2.1 Noise level 2.2 Lighting (Lumens) 2.3 Air Quality - Toxicity 2.4 Thermal Comfort 2.5 Vibration 2.6 Radiation 2.7 Quantity of the Resources 2.8 Volume

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate:
	1.1. Identified environmental issues relevant to work requirements
	1.2. Identified gaps in work practices related to Environmental Standards and Procedures
	1.3. Gathered relevant information necessary to determine environmental work targets
	1.4. Set environmental indicators based on gathered information to measure environmental work targets
	1.5. Recorded work environmental practices are recorded based on workplace standards
	1.6. Conveyed results of environmental assessment to appropriate personnel
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.

	UNIT OF COMPETENCY :	FACILITATE ENTREPRENEURIAL SKILLS FOR MICRO-SMALL-MEDIUM ENTERPRISES (MSMEs)
	UNIT CODE :	400311327
	UNIT DESCRIPTOR :	This unit covers the outcomes required to build, operate and grow a micro/small-scale enterprise.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Develop and maintain micro-small-medium enterprise (MSMEs) skills in the organization	1.1 Appropriate **business strategies** are determined and set for the enterprise based on current and emerging business environment. 1.2 **Business operations** are monitored and controlled following established procedures. 1.3 Quality assurance measures are implemented consistently. 1.4 Good relations are maintained with staff/workers. 1.5 Policies and procedures on occupational safety and health and environmental concerns are constantly observed.	1.1 Business models and strategies 1.2 Types and categories of businesses 1.3 Business operation 1.4 Basic Bookkeeping 1.5 Business internal controls 1.6 Basic quality control and assurance concepts 1.7 Government and regulatory processes	1.1 Basic bookkeeping/ accounting skills 1.2 Communication skills 1.3 Building relations with customer and employees 1.4 Building competitive advantage of the enterprise
2. Establish and Maintain client-base/market	2.1 Good customer relations are maintained 2.2 New customers and markets are identified, explored and reached out to. 2.3 Promotions/Incentives are offered to loyal customers 2.4 Additional products and services are evaluated and tried where feasible. 2.5 **Promotional/advertising initiatives** are carried out where necessary and feasible.	2.1 Public relations concepts 2.2 Basic product promotion strategies 2.3 Basic market and feasibility studies 2.4 Basic business ethics	2.1 Building customer relations 2.2 Individual marketing skills 2.3 Using basic advertising (posters/ tarpaulins, flyers, social media, etc.)
3. Apply budgeting and financial management skills	3.1 Enterprise is built up and sustained through judicious control of cash flows. 3.2 Profitability of enterprise is ensured though appropriate *internal controls*. 3.3 Unnecessary or lower-priority expenses and purchases are avoided.	3.1 Cash flow management 3.1 Basic financial management 3.2 Basic financial accounting 3.3 Business internal controls	3.1 Setting business priorities and strategies 3.2 Interpreting basic financial statements 3.3 Preparing business plans

RANGE OF VARIABLES

VARIABLE	RANGE
1. Business strategies	May include: 1.1. Developing/Maintaining niche market 1.2. Use of organic/healthy ingredients 1.3. Environment-friendly and sustainable practices 1.4. Offering both affordable and high-quality products and services 1.5. Promotion and marketing strategies (e. g., on-line marketing)
2. Business operations	May include: 2.1 Purchasing 2.2 Accounting/Administrative work 2.3 Production/Operations/Sales
3. Internal controls	May include: 3.1 Accounting systems 3.2 Financial statements/reports 3.3 Cash management
4. Promotional/ Advertising initiatives	May include: 4.1 Use of tarpaulins, brochures, and/or flyers 4.2 Sales, discounts and easy payment terms 4.3 Use of social media/Internet 4.4 "Service with a smile" 4.5 Extra attention to regular customers

EVIDENCE GUIDE

1. Critical aspects of competency	**Assessment requires evidence that the candidate :** 1.1. Demonstrated basic entrepreneurial skills 1.2. Demonstrated ability to conceptualize and plan a micro/small enterprise 1.3. Demonstrated ability to manage/operate a micro/small-scale business
2. Resource Implications	The following resources should be provided: 2.1. Simulated or actual workplace 2.2. Tools, materials and supplies needed to demonstrate the required tasks 2.3. References and manuals
3. Methods of Assessment	**Competency in this unit may be assessed through :** 3.1. Written examination 3.2. Demonstration/observation with oral questioning 3.3. Portfolio assessment with interview 3.4. Case problems
4. Context of Assessment	4.1. Competency may be assessed in workplace or in a simulated workplace setting 4.2. Assessment shall be observed while tasks are being undertaken whether individually or in-group

COMMON COMPETENCIES

UNIT TITLE   **:**   **APPLY QUALITY STANDARDS**
UNIT CODE   **:**   **ICT315202**
UNIT DESCRIPTOR   **:**   This unit covers the knowledge, skills, 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 terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Assess quality of received materials	1.1. Work instruction is obtained and work is carried out in accordance with standard operating procedures. 1.2. Received *materials* are checked against workplace standards and specifications. 1.3. Faulty materials 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 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 *Errors* are identified and isolated. 2.4 Information on the quality and other indicators of production performance are recorded in accordance with workplace procedures. 2.5 In cases of deviations from specific *quality standards*, causes are documented and reported in accordance with the workplace's 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 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 relative to workplace assignment. 3.2 Work is carried out in accordance with process improvement procedures. 3.3 Performance of operation or quality of product of 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	1.1 Materials may include but not limited to: 1.1.1. Manuals 1.1.2. Job orders 1.1.3. Instructional videos
2 Faults	2.1 Faults may include but not limited to: 2.1.1. Materials not to specification 2.1.2. Materials contain incorrect/outdated information 2.1.3. Hardware defects 2.1.4. Materials that do not conform with any regulatory agencies
3 Documentation	3.1 Organization work procedures 3.2 Manufacturer's instruction manual 3.3 Customer requirements 3.4 Forms
4 Errors	4.1 Errors may be related but not limited to the following: 4.1.1. Deviation from the requirements of the Client 4.1.2. Deviation from the requirement of the organization
5 Quality standards	5.1 Quality standards may be related but not limited to the following: 5.1.1. Materials 5.1.2. Hardware 5.1.3. Final product 5.1.4. Production processes

	5.1.5. Customer service
6 Customer	6.1 Co-worker
	6.2 Supplier/Vendor
	6.3 Client
	6.4 Organization receiving the product or service

EVIDENCE GUIDE

1	Critical aspect of competency	Assessment requires evidence that 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	Method of assessment	The assessor may select two (2) of the following assessment methods to objectively assess the candidate: 2.1 Observation 2.2 Questioning 2.3 Practical demonstration
3	Resource implication	3.1 Materials, software and hardware to be used in a real or simulated situation
4	Context of Assessment	4.1 Assessment may be conducted in the workplace or in a simulated environment

UNIT TITLE : **PERFORM COMPUTER OPERATIONS**
UNIT CODE : ICT311203
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	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 Computer equipment/system basic maintenance procedures 5.2 Viruses 5.3 OH&S principles and responsibilities 5.4 Calculating computer capacity 5.5 System Software 5.6 Basic file maintenance procedures	5.1 Removing computer viruses from infected machines 5.2 Making backup files

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 security solution 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. Method of assessment	2.1. The assessor may select two of the following assessment methods to objectively assess the candidate:
	    2.1.1. Observation
	    2.1.2. Questioning
	    2.1.3. Practical demonstration

3. Resource implication	3.1. Computer hardware with peripherals 3.2. Appropriate software
4. Context of Assessment	4.1. Assessment may be conducted in the workplace or in a simulated work environment

CORE COMPETENCIES

UNIT OF COMPETENCY: APPLY BASIC STATISTICAL CONCEPTS AND ANALYSIS

UNIT CODE: **CS-ICT251205**

UNIT DESCRIPTOR: This unit covers the outcomes required in applying key basic statistical concepts and applying statistical analysis.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	Required Knowledge	Required Skills
1. Apply key basic statistical concepts	1.1 Main ***types of data analytics*** are identified based on the job requirements 1.2 Types of ***categorical data*** and ***numerical data*** are identified and determined 1.3 Benefits of data analytics are outlined and determined 1.4 Main ***phases of data analysis*** are identified and applied 1.5 ***Data protection methods*** are applied in analyzing data	1.1 Office productivity tools 1.2 Spreadsheet application 1.3 Basic arithmetic 1.4 Overview on statistics 1.5 Statistical terminologies 1.6 Types of data analytics 1.7 Phases of data analysis 1.8 Data protection methods 1.9 Types of data • categorical • numerical 1.10 Data Privacy Act	1.1 Computer operation skills 1.2 Analytical skills 1.3 Critical thinking skills 1.4 Effective communication skills 1.5 Problem solving skills 1.6 Attention to detail
2. Apply basic statistical analysis	2.1 ***Measures of central tendency*** of a data are identified and determined 2.2 Central tendency value of a data set is calculated using a spreadsheet function 2.3 ***Measures of variation*** of a data set quartile are identified and determined 2.4 Variation of data set are calculated	2.1 Office productivity tools 2.2 Spreadsheet application 2.3 Measures of central tendency 2.4 Measures of variation 2.5 Basic arithmetic 2.6 Statistical analysis	2.1 Computer operation skills 2.2 Analytical skills 2.3 Critical thinking skills 2.4 Effective communication skills 2.5 Problem solving skills 2.6 Attention to detail

			2.7 Data analysis and interpretation

RANGE OF VARIABLES

VARIABLE	RANGE
1. Data analytics	May include: 1.1 Descriptive analysis 1.2 Diagnostic analysis 1.3 Predictive analysis 1.4 Prescriptive analysis 1.5 Quantitative analysis 1.6 Qualitative analysis
2. Categorical data	May include: 2.1 Nominal 2.2 Ordinal
3. Numerical data	May include: 3.1 Discrete 3.2 Continuous
4. Phases of data analysis	May include: 4.1 Data Collection 4.2 Data Cleaning 4.3 Data Exploration 4.4 Data Transformation 4.5 Feature Engineering 4.6 Modeling 4.7 Analysis and Interpretation 4.8 Validation and Evaluation 4.9 Visualization and Reporting
5. Data protection	May include: 5.1 Anonymizing personal data 5.2 Complying with applicable data protection regulations 5.3 Encrypting data
6. Measures of central tendency	May include: 6.1 Mean 6.2 Median 6.3 Mode
7. Measures of variation	May include: 7.1 Range 7.2 Variance 7.3 Standard Deviation 7.4 Percentiles 7.5 Quartiles

EVIDENCE GUIDE

1. Critical aspects of competency	1.1 Apply key basic statistical concepts 1.2 Apply basic statistical analysis
2. Resource implications	The following resources should be provided: 2.1 Facilities, equipment, tools, materials and supplies relevant to the unit of competency
3. Methods of assessment	Competency in this unit must be assessed through any or combination of the following: 3.1 Demonstration with questioning 3.2 Written Test 3.3 Oral questioning/interview
4. Context for assessment	4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center

UNIT OF COMPETENCY: PREPARE DATA SETS

UNIT CODE: CS-ICT251206

UNIT DESCRIPTOR: This unit covers the outcomes required in importing data, cleaning data, filtering data

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	Required Knowledge	Required Skills
1. Import data	1.1 Data gathered and secured from the **data source** 1.2 Data is transformed to digital format, if necessary 1.3 Appropriate spreadsheet application is selected based on the job requirements 1.4 Data is imported to selected spreadsheet application 1.5 Appropriate **spreadsheet settings** are adjusted based on the imported data	1.1 Office productivity tools 1.2 Spreadsheet application 1.3 Spreadsheet application settings 1.4 Data source	1.1 Computer operation skills 1.2 Analytical skills 1.3 Attention to detail 1.4 Importing data
2. Clean data	2.1 Back up of data is secured before cleaning data 2.2 Data are inspected to understand its structure, variables and any potential issues 2.3 Missing values are identified and handled using proper **missing data values convention** 2.4 Duplicate data, rows, columns are identified removed 2.5 **Inconsistencies and errors in the data set** addressed properly 2.6 **Appropriate data formats** of the data set are standardized based on job requirements 2.7 **Data types** are converted properly 2.8 **Data integrity** is verified 2.9 Outlier is handled according to job requirements 2.10 **Basic summary statistics** or **data visualization** is	2.1 Office productivity tools 2.2 Spreadsheet application 2.3 **Spreadsheet application functions** 2.4 Basic arithmetic 2.5 Statistical analysis 2.6 Missing data values convention 2.7 Inconsistencies and errors in the data set 2.8 Types of data formats 2.9 Types of data types 2.10 Determine data integrity 2.11 determine outliers	2.1 Computer operation skills 2.2 Effective communication skills 2.3 Problem solving skills 2.4 Analytical skills 2.5 Attention to detail 2.6 Critical thinking 2.7 Data manipulation skills 2.8 Data transformation skill 2.9 Documentation skill 2.10 Data analysis and interpretation

		2.12 Basic summary statistics 2.13 Back up of data 2.14 Proper versioning 2.15 Data validation	2.11 Patience and Persistence 2.12 Handling missing data
	generated/created to check validity of cleaned data 2.11 Cleaned data is versioned and backup properly		
3. Filter data	3.1 Data to be filtered is identified 3.2 Data to be filtered is ensured without no errors, blanks or null values 3.3 Data set is formatted as a built-in table 3.4 Table slices are used and inserted	4.1 Office productivity tools 4.2 Spreadsheet application 4.3 *Spreadsheet application functions* 4.4 Basic arithmetic 4.5 Statistical analysis 4.6 Missing data values convention 4.7 Inconsistencies and errors in the data set 4.8 Types of data 4.9 Back up of data 4.10 Data validation	3.1 Computer operation skills 3.2 Effective communication skills 3.3 Problem solving skills 3.4 Analytical skills 3.5 Attention to detail 3.6 Critical thinking 3.7 Data manipulation skills 3.8 Data transformation skill 3.9 Documentation skill 3.10 Data analysis and interpretation 3.11 Patience and Persistence 3.12 Handling missing data

RANGE OF VARIABLES

VARIABLE	RANGE
1. Data source	May include: 1.1 CSV file 1.2 Database table 1.3 Website table 1.4 Printed copy of data
2. Spreadsheet application	May include: 2.1 Microsoft Excel 2.2 Google Sheets 2.3 Apple Numbers 2.4 Quip
3. missing data values convention	May include: 3.1 Remain as blank 3.2 Use NaN (Not-a-Number) value 3.3 Use NULL value 3.4 Use special characters (e.g. '-' , 'X',) 3.5 Use zero (0) as value
4. Inconsistencies and errors in the data set	May include: 4.1 Typographical errors 4.2 Misspelled terms 4.3 Inconsistent date formats
5. Appropriate data formats	May include: 5.1 Using standard date format such as "MM-DD-YYYY" 5.2 Using standard number values such as 10.00 5.3 Using proper casing in Values for names
6. Data Types	May include: 6.1 Date 6.2 Number 6.3 Currency 6.4 Time 6.5 Text 6.6 Boolean 6.7 Zip Codes
7. Data Integrity	May include: 7.1 Data relationship are logical and accurate 7.2 Data are correct and realistic
8. Basic summary statistics	May include: 8.1 Count 8.2 Mean 8.3 Median 8.4 Mode 8.5 Range 8.6 Standard Deviation 8.7 Total
9. Data visualization	May include: 9.1 Charts 9.2 Graphs 9.3 Tables

	9.4 Geo Map
10. Measures of central tendency	May include: 10.1 Mean 10.2 Median 10.3 Mode
11. Measures of variation	May include: 11.1 Range 11.2 Variance 11.3 Standard Deviation 11.4 Percentiles 11.5 Quartiles

EVIDENCE GUIDE

1. Critical aspects of competency	1.1 Apply key basic statistical concepts 1.2 Apply basic statistical analysis
2. Resource implications	The following resources should be provided: 2.1 Facilities, equipment, tools, materials and supplies relevant to the unit of competency
3. Methods of assessment	Competency in this unit must be assessed through any or combination of the following: 3.1 Demonstration with questioning 3.2 Written Test 3.3 Oral questioning/interview
4. Context for assessment	4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center

UNIT OF COMPETENCY: SUMMARIZE DATA SETS

UNIT CODE: CS-ICT251207

UNIT DESCRIPTOR: This unit covers the outcomes required in aggregating pivot table data, crating pivot frequency analysis and creating pivot charts

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	Required Knowledge	Required Skills
1. Aggregate pivot table data	1.1 **Data aggregation** is selected based on job requirements 1.2 Data source is selected 1.3 Multiple aggregation values are displayed based on job requirements 1.4 Percentage calculation, difference from specific values, running total and ranked are displayed based on job requirements	1.1 Office productivity tools 1.2 Spreadsheet application 1.3 Spreadsheet application functions 1.4 Basic arithmetic 1.5 Data aggregation 1.6 Pivot table	1.1 Computer operation skills 1.2 Effective communication skills 1.3 Problem solving skills 1.4 Analytical skills 1.5 Attention to detail 1.6 Critical thinking 1.7 Data manipulation skills 1.8 Data transformation skill 1.9 Data analysis and interpretation 1.10 Patience and Persistence
2. Create pivot table frequency analysis	2.1 Data source is prepared 2.2 Pivot table is prepared and created based on job requirements 2.3 Groups are named properly 2.4 Grouped data are ungroup, if necessary	2.1 Office productivity tools 2.2 Spreadsheet application 2.3 Spreadsheet application functions 2.4 Basic arithmetic 2.5 Data aggregation 2.6 Pivot table 2.7 Table slicers	2.1 Computer operation skills 2.2 Effective communication skills 2.3 Problem solving skills 2.4 Analytical skills 2.5 Attention to detail

		2.8 Steps in naming a grouped data	2.6 Critical thinking 2.7 Data manipulation skills 2.8 Data transformation skill 2.9 Data analysis and interpretation 2.10 Patience and Persistence
3. Create pivot charts	3.1 Pivot data is selected and prepared 3.2 Slicers to filter and multiple pivot tables are inserted and used 3.3 Pivot charts are selected based on job requirements 3.4 Pivot chart is used and created based on job requirements	3.1 Office productivity tools 3.2 Spreadsheet application 3.3 Spreadsheet application functions 3.4 Basic arithmetic 2.7 Pivot table 2.8 Pivot chart	3.1 Computer operation skills 3.2 Effective communication skills 3.3 Problem solving skills 3.4 Analytical skills 3.5 Attention to detail 3.6 Critical thinking 3.7 Data manipulation skills 3.8 Data transformation skill 3.9 Data analysis and interpretation 3.10 Patience and Persistence

RANGE OF VARIABLES

VARIABLE	RANGE
1. Data aggregation	May include: 1.1 sum 1.2 count 1.3 average 1.4 max 1.5 min

EVIDENCE GUIDE

1.	Critical aspects of competency	1.1 Aggregate pivot table data 1.2 Create pivot table frequency analysis 1.3 Create pivot charts
2.	Resource implications	The following resources should be provided: 2.1 Facilities, equipment, tools, materials and supplies relevant to the unit of competency
3.	Methods of assessment	Competency in this unit must be assessed through any or combination of the following: 3.1 Demonstration with questioning 3.2 Written Test 3.3 Oral questioning/interview
4.	Context for assessment	4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center

UNIT OF COMPETENCY: PREAPRE DATA VISUALIZATION

UNIT CODE: CS-ICT251208

UNIT DESCRIPTOR: This unit covers the outcomes required in applying data visualization concepts, creating data visualization and publishing and sharing report.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	Required Knowledge	Required Skills
1. Apply data visualization concepts	1.1 Concepts of data visualization is applied 1.2 Concepts of reports and dashboards are applied in the data visualization 1.3 ***Data visualization tool*** is selected based on the job requirement 1.4 ***Good design practice*** in reports and dashboard are applied in the data visualization	1.1 Data visualization concepts 1.2 Reports and dashboards • Types of reports • Types of dashboards 1.3 Data visualization tools and its types 1.4 Principles of design 1.5 Good design practice 1.6 Spreadsheet application 1.7 Data storytelling	1.1 Computer operation skills 1.2 Analytical skills 1.3 Critical thinking skills 1.4 Effective communicatio n skills 1.5 Problem solving skills 1.6 Attention to detail 1.7 Creativity skills
2. Create data visualization	2.1 Data set from spreadsheet is imported into a data visualization tool 2.2 Data is visualized and interpreted using tables based on job requirements 2.3 Data is visualized and interpreted using various ***charts*** based on job requirements 2.4 Data is visualized and interpreted using various ***graphs*** based on job requirements 2.5 Tables, charts and other ***data visualization assets*** are incorporated in the dashboard based on job requirements	2.1 Data visualization concepts 2.2 Reports and dashboards • Types of reports • Types of dashboards 2.3 Data visualization tools and its types 2.4 Principles of design 2.5 Good design practice	2.1 Computer operation skills 2.2 Analytical skills 2.3 Critical thinking skills 2.4 Effective communicatio n skills 2.5 Problem solving skills 2.6 Attention to detail 2.7 Creativity skills

		2.6 Spreadsheet application 2.7 Data storytelling 2.8 Charts 2.9 Graphs 2.10 Tables 2.11 Data visualization assets	
3. Publish and share report	3.1 Appropriate **publishing medium** is selected based on job requirements 3.2 Report is saved and published 3.3 Proper versioning is applied on the published report	3.1 Publishing medium 3.2 Reports • Saving • Publishing 3.3 Version control 3.4 Spreadsheet application 3.5 Data visualization tool	3.1 Computer operation skills 3.2 Analytical skills 3.3 Critical thinking skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. Data visualization tool	May include: 1.1 Spreadsheet application 1.2 Presentation application 1.3 Online data visualization tools (e.g., Google Looker Studio, Microsoft Power BI)
2. Good design principle	May include: 2.1 Clean and uncluttered layout 2.2 Descriptive titles 2.3 Consistent fonts and colors 2.4 Use of proper colors for emphasis and understanding
3. Charts	May include: 3.1 Bar chart 3.2 Pie chart 3.3 Histogram 3.4 Venn chart 3.5 Area chart
4. Graphs	May include: 4.1 Bar graph 4.2 Line graph
5. Data visualization assets	May include: 5.1 Text 5.2 Images 5.3 Videos 5.4 Links
6. Publishing medium	May include: 6.1 Presentation 6.2 Printed copy 6.3 Online report

EVIDENCE GUIDE

1. Critical aspects of competency	1.1 Apply data visualization concepts 1.2 Create data visualization 1.3 Publish and share report
2. Resource implications	The following resources should be provided: 2.1 Facilities, equipment, tools, materials and supplies relevant to the unit of competency
3. Methods of assessment	Competency in this unit must be assessed through any or combination of the following: 3.1 Demonstration with questioning 3.2 Written Test 3.3 Oral questioning/interview
4. Context for assessment	4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center

GLOSSARY OF TERMS

Central tendency	Central tendency refers to the statistical measure that represents the center or average value of a dataset. Common measures of central tendency include the mean (average), median (middle value), and mode (most frequent value).
Chart	A visual representation of data, often in the form of graphs or diagrams, used to convey information and patterns in a more understandable way.
Dashboard	A visual display of key metrics, data, and performance indicators that provide a comprehensive overview of a specific area, allowing users to monitor and analyze data at a glance.
Data	Refers to raw facts, figures, measurements, or observations collected or generated for analysis. It can be structured or unstructured and serves as the basis for making informed decisions.
Data aggregation	The process of combining and summarizing individual data points or values into a larger dataset to facilitate analysis and visualization.
Data analysis	Involves examining, cleaning, transforming, and interpreting data to uncover patterns, trends, insights, and relationships that inform decision-making.
Data analytics	The broader process of exploring, analyzing, and interpreting data to extract meaningful insights, support business decisions, and drive improvements.
Data set	A collection of related data points or observations gathered for analysis, often organized in rows and columns.
Data source	Is the origin or location from which data is collected, whether it's a database, spreadsheet, file, sensor, or any other means of data generation.
Data types	Refer to the categories that describe the nature of data, such as numerical, categorical, text, date, etc. Different data types are processed and analyzed in specific ways.
Data visualization	The representation of data in visual formats like charts, graphs, and maps, making complex information more understandable and revealing insights.
Graph	A visual representation of the relationship between different variables or data points, often showing patterns, trends, and correlations.
Outlier	Is a data point that significantly differs from the majority of other data points in a dataset. Outliers can impact the accuracy of analysis results.
Pivot chart	Is a graphical representation created from a pivot table, allowing you to visualize and analyze summarized data using various chart types.
Pivot table	Is a data processing tool used to summarize, aggregate, and organize data in a tabular format. It enables easy exploration and analysis of data.
Pivot table frequency analysis	Involves using a pivot table to summarize and analyze the frequency or count of occurrences of different values within a dataset.

Quartile	Divides a dataset into four equal parts, representing specific points in the data distribution. The first quartile (Q1) is the 25th percentile, the second quartile (Q2) is the median, and the third quartile (Q3) is the 75th percentile.
Report	Is a structured document that presents findings, insights, and conclusions based on data analysis. It provides a comprehensive view of the analyzed data.
Spreadsheet application	Is software, like Microsoft Excel or Google Sheets, used for creating, editing, and analyzing data in tabular form.
Spreadsheet function	Is a predefined formula or operation in spreadsheet software that performs calculations, transformations, and analyses on data.
Table	Is a structured representation of data in rows and columns, often used to organize and store data for analysis.
Table slices	Refer to subsets of data obtained by selecting specific rows and columns from a larger table, often to focus on relevant information.
Variation of data	Refers to the extent to which data points in a dataset deviate from the mean or central value, providing insights into the spread and distribution of the data.

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Competency Standards are available in electronic copies for more information, please contact:
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