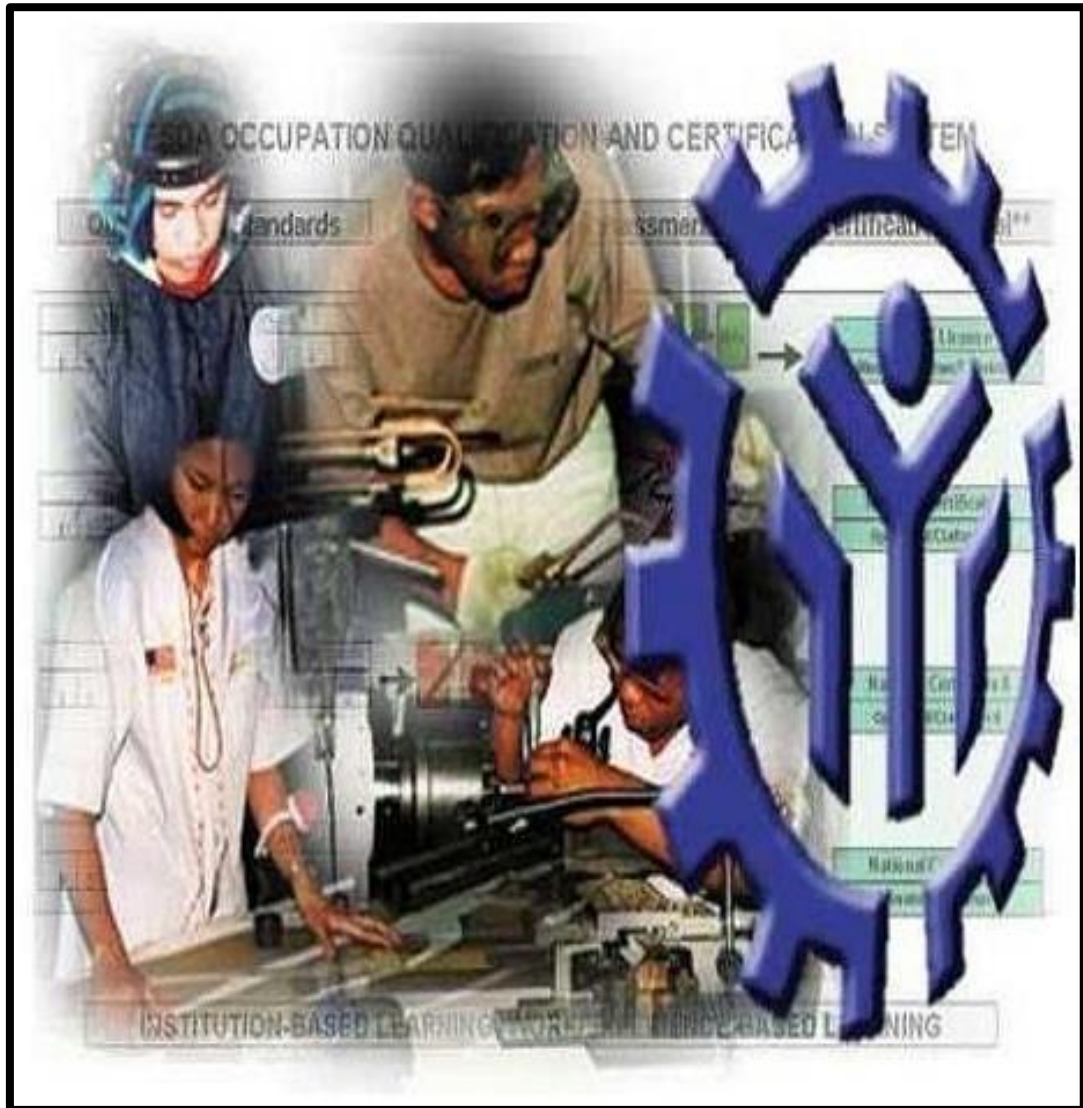


# COMPETENCY STANDARDS

## AUTOMOTIVE TECHNOLOGY APPLICATION SERVICES LEVEL III



### AUTOMOTIVE and LAND TRANSPORTATION SECTOR

#### TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY

TESDA Complex East Service Road, South Luzon Expressway (SLEX),  
Fort Bonifacio, Taguig City

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# COMPETENCY STANDARDS FOR

## AUTOMOTIVE TECHNOLOGY APPLICATION SERVICES LEVEL III

### SECTION 1 DESCRIPTION OF QUALIFICATION

The **AUTOMOTIVE TECHNOLOGY APPLICATION SERVICES LEVEL III** Qualification consists of competencies that a person must achieve to provide automotive technology application services. This focuses on repairing complex automotive faults, operating testing equipment and planning optimization of transport.

The units of competency comprising the qualification include the following:

<b>Unit Code</b>	<b>BASIC COMPETENCIES</b>
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)
<b>Unit Code</b>	<b>COMMON COMPETENCIES</b>
ALT311202	Perform Mensuration and Calculation
ALT311203	Read, Interpret and Apply Specifications and Manuals
ALT311205	Perform Shop Maintenance
ALT311206	Practice health, safety and environment procedures
ALT311205	Interpret/Draw Technical Drawing
<b>Unit Code</b>	<b>CORE COMPETENCIES</b>
CS-ALT723304	Repair Complex Automotive Faults
CS-ALT723305	Operate Testing Equipment
CS-ALT723306	Plan optimization of Transport

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

- Automotive Technician
- Automotive Technology Application Service Crew

## SECTION 2 COMPETENCY STANDARDS

These guidelines are set to provide the Technical Vocational Education and Training (TVET) providers with information and other important requirements to consider when designing training programs for Manage Chain Operation 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 <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Communicate information about workplace processes	1.1 Relevant <b>communication method</b> 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 2.3 Constructive contributions are made to <b>workplace discussions</b>	2.1 Organization requirements for written and electronic communication methods 2.2 Effective verbal communication methods	2.1 Organizing information 2.2 Conveying intended meaning 2.3 Participating in variety of workplace discussions

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

## 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 <b>MUST</b> 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.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Provide team leadership	1.1. <b>Work requirements</b> 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. <b>Team members' queries and concerns</b> 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 expectations for team members	3.1 Performance expectations are 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	3.1 One's roles and responsibilities in the team 3.2 Feedback giving and receiving 3.3 Performance expectation	3.1 Communication skills 3.2 Accurate empathy 3.3 Congruence 3.4 Unconditional positive regard 3.5 Handling of Feedback

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
4. Supervised team performance	<p>4.1 Performance is <b>monitored</b> based on defined performance criteria and/or assignment instructions</p> <p>4.2 Team members are provided with <b>feedback</b>, positive support and advice on strategies to overcome any deficiencies based on company practices</p> <p>4.3 <b>Performance issues</b> which cannot be rectified or addressed within the team are referenced to appropriate personnel according to employer policy</p> <p>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</p> <p>4.5 Team operations are monitored to ensure that employer/client needs and requirements are met</p> <p>4.6 Follow-up communication is provided on all issues affecting the team</p> <p>4.7 All relevant documentation is completed in accordance with company procedures</p>	<p>4.1 Performance Coaching</p> <p>4.2 Performance management</p> <p>4.3 Performance Issues</p>	<p>4.1 Communication skills required for leading teams</p> <p>4.2 Coaching skill</p>

## 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 <b>MUST</b> 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.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Examine specific workplace challenges	1.1. Variances are examined from normal operating <b>parameters</b> ; and product quality. 1.2. Extent, cause and nature of the specific problem are defined through observation, investigation and <b>analytical techniques</b> . 1.3. <b>Problems</b> 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. 2.2. Possible cause statements are developed based on findings. 2.3. Fundamental causes are identified per results of investigation conducted.	2.1 Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and 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	2.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
		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.	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. <b>Action plans</b> 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 3.6. Enterprise information systems and data collation 3.7. Industry codes and standards	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. 3.4. Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
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: <ul style="list-style-type: none"> <li>1.1 Processes</li> <li>1.2 Procedures</li> <li>1.3 Systems</li> </ul>
2. Analytical techniques	May include: <ul style="list-style-type: none"> <li>2.1. Brainstorming</li> <li>2.2. Intuitions/Logic</li> <li>2.3. Cause and effect diagrams</li> <li>2.4. Pareto analysis</li> <li>2.5. SWOT analysis</li> <li>2.6. Gant chart, Pert CPM and graphs</li> <li>2.7. Scattergrams</li> </ul>
3. Problem	May include: <ul style="list-style-type: none"> <li>3.1. Routine, non – routine and complex workplace and quality problems</li> <li>3.2. Equipment selection, availability and failure</li> <li>3.3. Teamwork and work allocation problem</li> <li>3.4. Safety and emergency situations and incidents</li> <li>3.5. Risk assessment and management</li> </ul>
4. Action plans	May include: <ul style="list-style-type: none"> <li>4.1. Priority requirements</li> <li>4.2. Measurable objectives</li> <li>4.3. Resource requirements</li> <li>4.4. Timelines</li> <li>4.5. Co-ordination and feedback requirements</li> <li>4.6. Safety requirements</li> <li>4.7. Risk assessment</li> <li>4.8. Environmental requirements</li> </ul>

## EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p><b>Assessment requires evidence that the candidate:</b></p> <ul style="list-style-type: none"> <li>1.1. Examined specific workplace challenges.</li> <li>1.2. Analyzed the causes of specific workplace challenges.</li> <li>1.3. Formulated resolutions to specific workplace challenges.</li> <li>1.4. Implemented action plans and communicated results on specific workplace challenges.</li> </ul>
<p>2. Resource Implications</p>	<p>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.</p>
<p>3. Methods of Assessment</p>	<p><b>Competency in this unit may be assessed through:</b></p> <ul style="list-style-type: none"> <li>3.1. Observation</li> <li>3.2. Case Formulation</li> <li>3.3. Life Narrative Inquiry</li> <li>3.4. Standardized test</li> </ul> <p>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.</p> <p>These assessment activities should include a range of problems, including new, unusual and improbable situations that may have happened.</p>
<p>4. Context for Assessment</p>	<p>4.1. In all workplace, it may be appropriate to assess this unit concurrently with relevant teamwork or operation units.</p>

**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 <i>Italicized</i> 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. <b>Diversity</b> 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 diversity is valued by the business.	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 2.4 Strategies for customer service excellence	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 2.4 Exhibiting customer service excellence

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Identify common issues in a multicultural and diverse environment	3.1 <b><i>Diversity-related conflicts</i></b> 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	<b>Assessment requires evidence that the candidate:</b> 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	<b>The following resources should be provided:</b> 2.1 Access to workplace and resources 2.2 Manuals and policies on Workplace Diversity
3. Methods of Assessment	<b>Competency in this unit may be assessed through:</b> 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.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Assess work procedures, processes and systems in terms of innovative practices	1.1. <b>Reasons</b> for innovation are incorporated to work procedures. 1.2. <b>Models of innovation</b> are researched. 1.3. <b>Gaps or barriers</b> 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 <b>workplace requirements</b> (feasible and innovative). 2.4 Practical action plans are proposed to facilitate simple changes in the work procedures, processes and systems. 2.5 <b>Critical inquiry</b> 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 <i>Italicized</i> 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	<p>3.1 Work structure is analyzed to identify the impact of the new work procedures</p> <p>3.2 Co-workers/key personnel is consulted to know who will be involved with or affected by the work procedure</p> <p>3.3 Work instruction operational plan of the new work procedure is developed and evaluated.</p> <p>3.4 Feedback and suggestion are recorded.</p> <p>3.5 Operational plan is updated.</p> <p>3.6 Results and impact on the developed work instructions are reviewed</p> <p>3.7 Results of the new work procedure are evaluated</p> <p>3.8 Adjustments are recommended based on results gathered</p>	<p>3.1 Five minds of the future concepts (Gardner, 2007).</p> <p>3.2 Adaptation concepts in neuroscience (Merzenich, 2013).</p> <p>3.3 Transtheoretical model of behavior change (Prochaska, DiClemente, &amp; Norcross, 1992).</p>	<p>3.1 Generating insights on how to improve organizational procedures, processes and systems through innovation.</p> <p>3.2 Facilitating action plans on how to apply innovative procedures in the organization.</p> <p>3.3 Communicating results of the evaluation of the proposed and implemented changes in the workplace procedures and systems.</p> <p>3.4 Developing action plans for continuous improvement on the basic systems, processes and procedures in the organization.</p>

## 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

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Established the reasons why innovative systems are required</li> <li>1.2 Established the goals of a new innovative system</li> <li>1.3 Analyzed current organizational systems to identify gaps and barriers to innovation.</li> <li>1.4 Assessed work procedures, processes and systems in terms of innovative practices.</li> <li>1.5 Generated practical action plans for improving work procedures, and processes.</li> <li>1.6 Reviewed the trial innovative work system and adjusted reflect evaluation feedback, knowledge management systems and future planning.</li> <li>1.7 Evaluated the effectiveness of the proposed action plans.</li> </ul>
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>2.1 Pens, papers and writing implements.</li> <li>2.2 Cartolina.</li> <li>2.3 Manila papers.</li> </ul>
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> <li>3.1 Psychological and behavioral Interviews.</li> <li>3.2 Performance Evaluation.</li> <li>3.3 Life Narrative Inquiry.</li> <li>3.4 Review of portfolios of evidence and third-party workplace reports of on-the-job performance.</li> <li>3.5 Sensitivity analysis.</li> <li>3.6 Organizational analysis.</li> <li>3.7 Standardized assessment of character strengths and virtues applied.</li> </ul>
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> <li>4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.</li> </ul>

**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.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Use technical information	1.1. <b>Information</b> 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. <b>Technical information</b> system is operated using agreed procedures 2.2. Appropriate and valid procedures are operated for inputting, maintaining and archiving information 2.3. <b>Software</b> required are utilized to execute the project activities 2.4. Information and data obtained are handled, edited, formatted and checked from a range of internal and external <b>sources</b> 2.5. Information are extracted, entered, and processed to produce the outputs required by <b>customers</b>	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 2.7. Methods of entering and processing information	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 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

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.6. Own skills and understanding are shared to help others 2.7. Specified <b>security measures</b> are implemented to protect the confidentiality and integrity of project data held in IT systems	2.8. WWW enabled applications	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 <u>MUST</u> be provided: 2.1. Computers 2.2. Software and IT system
3. Methods of Assessment	Competency in this unit <u>MUST</u> 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

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Interpret Occupational Safety and Health practices	1.1 <b>OSH work practices issues</b> 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 <b>OSH Indicators</b> 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 <b>OSH work instructions</b> 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 <b>OSH metrics</b> 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 accident and injuries 4.2 Morbidity (Type and Number of Sickness) 4.3 Mortality (Cause and Number of Deaths) 4.4 Accident Rate

## EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p><b>Assessment requires evidence that the candidate:</b></p> <ul style="list-style-type: none"> <li>1.1. Identify OSH work practices issues relevant to work requirements</li> <li>1.2. Identify gaps in work practices related to relevant OSH work standards</li> <li>1.3. Agree upon OSH Indicators based on gathered information to measure effectiveness of workplace OSH policies and procedures</li> <li>1.4. Receive OSH work instructions in accordance with workplace policies and procedures</li> <li>1.5. Compare Observed OSH practices with against approved OSH work instructions</li> <li>1.6. Assess findings regarding effectiveness based on OSH work standards</li> </ul>
<p>2. Resource Implications</p>	<p><b>The following resources should be provided:</b></p> <ul style="list-style-type: none"> <li>2.1 Facilities, materials, tools and equipment necessary for the activity</li> </ul>
<p>3. Methods of Assessment</p>	<p><b>Competency in this unit may be assessed through:</b></p> <ul style="list-style-type: none"> <li>3.1 Observation/Demonstration with oral questioning</li> <li>3.2 Third party report</li> <li>3.3 Written exam</li> </ul>
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> <li>4.1 Competency may be assessed in the work place or in a simulated work place setting</li> </ul>

**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

<b>ELEMENTS</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Interpret environmental practices, policies and procedures	1.1 <b>Environmental work practices</b> 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 Environmental 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. <b>Environmental Indicators</b> 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

<p>1. Critical aspects of Competency</p>	<p><b>Assessment requires evidence that the candidate:</b></p> <ul style="list-style-type: none"> <li>1.1. Identified environmental issues relevant to work requirements</li> <li>1.2. Identified gaps in work practices related to Environmental Standards and Procedures</li> <li>1.3. Gathered relevant information necessary to determine environmental work targets</li> <li>1.4. Set environmental indicators based on gathered information to measure environmental work targets</li> <li>1.5. Recorded work environmental practices are recorded based on workplace standards</li> <li>1.6. Conveyed results of environmental assessment to appropriate personnel</li> </ul>
<p>2. Resource Implications</p>	<p><b>The following resources should be provided:</b></p> <ul style="list-style-type: none"> <li>2.1 Workplace/Assessment location</li> <li>2.2 Legislation, policies, procedures, protocols and local ordinances relating to environmental protection</li> <li>2.3 Case studies/scenarios relating to environmental protection</li> </ul>
<p>3. Methods of Assessment</p>	<p><b>Competency in this unit may be assessed through:</b></p> <ul style="list-style-type: none"> <li>3.1 Written/ Oral Examination</li> <li>3.2 Interview/Third Party Reports</li> <li>3.3 <b>Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad)</b></li> <li>3.4 Simulations and role-plays</li> </ul>
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> <li>4.1 Competency may be assessed in actual workplace or at the designated TESDA center.</li> </ul>

**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.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Develop and maintain micro-small-medium enterprise (MSMEs) skills in the organization	1.1 Appropriate <b>business strategies</b> are determined and set for the enterprise based on current and emerging business environment. 1.2 <b>Business operations</b> 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 <b>Promotional/advertising initiatives</b> 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 through appropriate <b>internal controls</b> . 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	<b>Assessment requires evidence that the candidate :</b> 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	<b>Competency in this unit may be assessed through :</b> 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	1.1 Competency may be assessed in workplace or in a simulated workplace setting 1.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group

## COMMON COMPETENCIES

**UNIT OF COMPETENCY:**     **PERFORM MENSURATION AND CALCULATION**

**UNIT CODE**                     **: ALT311202**

**UNIT DESCRIPTOR**   : This unit involves the knowledge, skills and attitudes in identifying, caring, handling and using measuring instruments.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range of Variables</i>
1. Select measuring instruments	1.1 Object or component to be measured is identified 1.2 Correct specifications are obtained from relevant source 1.3 Appropriate measuring instrument is selected according to job requirements
2. Carry out measurements and calculation	2.1 Measuring tools are selected in line with job requirements 2.2 Accurate measurements are obtained in accordance with job requirements 2.3 Calculation needed to complete work tasks are performed using the four fundamental operations of addition (+), subtraction (-), multiplication (x) and division (/). 2.4 Calculations involving fractions, percentages and mixed numbers are used to complete workplace tasks. 2.5 Numerical computation is self-checked and corrected for accuracy 2.5 Instruments are read to the limit of accuracy of the tool.
3. Maintain measuring instruments	4.1 Measuring instruments are kept free from corrosion 4.2 Measuring instruments are not dropped to avoid damage 4.3 Measuring instruments are cleaned before and after using.
ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range of Variables</i>
4. Select measuring instruments	1.4 Object or component to be measured is identified 1.5 Correct specifications are obtained from relevant source 1.6 Appropriate <b><i>measuring instrument</i></b> is selected according to job requirements
5. Carry out measurements and calculation	2.6 Measuring tools are selected in line with job requirements 2.7 Accurate measurements are obtained in accordance with job requirements 2.8 <b><i>Calculation</i></b> needed to complete work tasks are performed using the four fundamental operations of addition (+), subtraction (-), multiplication (x) and division (/). 2.9 Calculations involving fractions, percentages and mixed numbers are used to complete workplace tasks. 2.10 Numerical computation is self-checked and corrected for accuracy 2.5 Instruments are read to the limit of accuracy of the tool.
6. Maintain measuring instruments	4.4 Measuring instruments are kept free from corrosion 4.5 Measuring instruments are not dropped to avoid damage 4.6 Measuring instruments are cleaned before and after using.

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Measuring instruments	May include: 1.1 Multitester 1.2 Micrometer (In-out, depth) 1.3 Vernier caliper (Out, inside) 1.4 Dial Gauge with Mag. Std. 1.5 Plastigauge 1.6 Straight Edge 1.7 Thickness gauge 1.8 Torque Gauge 1.9 Small Hole gauge 1.10 Telescopic Gauge 1.11 Try square 1.12 Protractor 1.13 Combination gauge 1.14 Steel rule
2. Calculation	May include: 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 2.11 Oil clearance 2.12 End play/thrust clearance

## EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Selected measuring instruments</li> <li>1.2 Carried out measurements and calculations.</li> <li>1.3 Maintained measuring instruments</li> </ul>
<p>2. Required knowledge</p>	<ul style="list-style-type: none"> <li>2.1 Types of Measuring instruments and their uses</li> <li>2.2 Safe handling procedures in using measuring instruments</li> <li>2.3 Four fundamental operation of mathematics</li> <li>2.4 Formula for Volume, Area, Perimeter and other geometric figures</li> </ul>
<p>3. Required skills</p>	<ul style="list-style-type: none"> <li>3.1 Caring and Handling measuring instruments</li> <li>3.2 Calibrating and using measuring instruments</li> <li>3.1 Performing calculation by Addition, Subtraction, Multiplication and Division</li> <li>3.2 Visualizing objects and shapes</li> <li>3.3 Interpreting formula for volume, area, perimeter and other geometric figures</li> </ul>
<p>4. Resource implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>4.1 Workplace location</li> <li>4.2 Measuring instrument appropriate to servicing processes</li> <li>4.3 Instructional materials relevant to the propose activity</li> </ul>
<p>5. Method of assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Observation with questioning</li> <li>5.2 Written or oral examination</li> <li>5.3 Interview</li> <li>5.4 Demonstration with questioning</li> </ul>
<p>6. Context of assessment</p>	<ul style="list-style-type: none"> <li>6.1 Competency elements must be assessed in a safe working environment</li> <li>6.2 Assessment may be conducted in a workplace or simulated environment</li> </ul>

**UNIT OF COMPETENCY: READ, INTERPRET AND APPLY SPECIFICATION AND MANUALS**

**UNIT CODE : ALT23203**

**UNIT DESCRIPTOR :** This unit deals with identifying, interpreting and applying service specification manuals, maintenance procedure manuals and periodic maintenance manual.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables
1. Identify and access manual/ specification	1.1 Appropriate <b>manuals</b> are identified and accessed as per job requirements. 1.2 Version and date of manual are checked to ensure that correct specification and procedure are identified.
2. Interpret manuals	2.1 Relevant sections, chapters of manuals/specifications are located in relation to the work to be conducted 2.2 Information and procedure in the manual are interpreted in accordance with industry practices
3. Apply information in manual	3.1 Manual is interpreted according to job requirements 3.2 Work steps are correctly identified in accordance with manufacturer specification 3.3 Manual data are applied according to the given task 3.4 All correct sequencing and adjustments are interpreted in accordance with information contained on the manual or specifications
4. Store manuals	4.1 Manual or specification are stored appropriately to ensure prevention of damage, ready access and updating of information when required in accordance with company requirements

**RANGE OF VARIABLES**

<b>VARIABLE</b>	<b>RANGE</b>
1. Manuals	May include: 1.1 Manufacturer's specification manual 1.2 Repair manual 1.3 Maintenance Procedure Manual 1.4 Periodic Maintenance Manual

## EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Identified and accessed manual/specification 1.2 Interpreted manuals 1.3 Applied information in manuals 1.4 Stored manuals
2. Required knowledge	2.1 Types of manuals used in automotive industry 2.2 Identification of symbols used in the manuals 2.3 Identification of units of measurements 2.4 Unit conversion
3. Required skills	3.1 Reading and comprehension skills required to identify and interpret automotive manuals and specifications 3.2 Accessing information and data
4. Resource implication	The following resources should be provided: 4.1 All manuals/catalogues relative to Automotive 4.2 Job order, requisitions 4.3 Actual vehicle or simulator
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Observation with questioning 5.2 Interview
6. Context of assessment	6.1 Assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines 6.2 Assessment may be conducted in the workplace or in a simulated environment.

**UNIT OF COMPETENCY:     PERFORM SHOP MAINTENANCE**

**UNIT CODE                         :   ALT723307**

**UNIT DESCRIPTOR   :** This unit deals with inspecting and cleaning of work area including tools, equipment and facilities. Storage of tools/ equipment and disposal of used supplies/materials are also incorporated in this competency.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables
1. Inspect/clean tools and work area	1.1 Cleaning solvent used as per workshop/tools <b><i>cleaning requirement</i></b> 1.2 <b><i>Work area</i></b> is checked and cleaned 1.3 Wet surface/spot in work area is wiped and dried
2. Store/arrange tools and shop equipment	2.1 Tools/equipment are checked and stored in their respective shelves/location 2.2 Corresponding labels are posted and visible 2.3 Tools are safely secured and logged in the records
3. Dispose wastes/used lubricants	3.1 Containers for used lubricants are visibly labeled 3.2 Wastes/used lubricants are disposed as per workshop SOP
4. Report damaged tools/equipment	4.1 Complete inventory of tools/equipment is maintained 4.2 Damaged tools/equipment/facilities are identified and repair recommendation is given 4.3 Reports prepared have no error/discrepancy

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Work Area	May include: 1.1 Workshop areas for servicing/repairing light and/or heavy vehicle and/or plant transmissions and/or outdoor power equipment 1.2 Open workshop/garage and enclosed, ventilated office area 1.3 Other variables may include workshop with: <ul style="list-style-type: none"> <li>● Mess hall</li> <li>● Wash room</li> <li>● Comfort room</li> </ul>
2. Cleaning requirement	May include: 2.1 Cleaning solvent 2.2 Inventory of supplies, tools, equipment, facilities
	2.3 List of mechanics/technicians 2.4 Rags 2.5 Broom 2.6 Map 2.7 Pail 2.8 Used oil container 2.9 Oiler 2.10 Dust/waste bin
3. Manuals	May include: 3.1 Vehicle/plant manufacturer specifications 3.2 Company operating procedures 3.3 Industry/Workplace Codes of Practice 3.4 Product manufacturer specifications 3.5 Customer requirements 3.6 Industry Occupational Health & Safety
4. Company standard operating procedure	May include: 4.1 Gloves 4.2 Apron 4.3 Goggles 4.4 Safety shoes

## EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Cleaned workshop tools/facilities 1.2 Maintained equipment, tools and facilities 1.3 Disposed wastes and used lubricants/fluid as per required procedure
2. Required knowledge	2.1 5S or Total Quality Management (TQM) 2.2 Service procedures 2.3 Relevant technical information 2.4 Safe handling of Equipment and tools 2.5 Vehicle safety requirements 2.6 Workshop policies 2.7 Personal safety procedures 2.8 Fire Extinguishers and prevention 2.9 Storage/Disposal of Hazardous/flammable materials 2.10 Positive Work Values (Perseverance, Honesty, Patience, Attention to Details)
3. Required skills	3.1 Handling/Storing of tools/equipment/supplies and material 3.2 Cleaning grease/lubricants 3.3 Disposing of supplies/materials 3.4 Preparing inventory of s/m and tools and equipment 3.5 Monitoring of s/m and tools/equipment
4. Resource implications	The following resources should be provided:F 4.1 Workplace: Real or simulated work area 4.2 Appropriate Tools & equipment 4.3 Materials relevant to the activity
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Written/Oral Questioning 5.2 Demonstration
6. Context of assessment	6.1 Competency must be assessed on the job or in a simulated environment. 6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience.

**UNIT OF COMPETENCY: PRACTICE HEALTH, SAFETY AND ENVIRONMENT**

**PROCEDURES**

**UNIT CODE : ALT72306**

**UNIT DESCRIPTOR :** This unit of competency incorporates the work safe regional guidelines and encompasses competencies necessary to apply basic safety and emergency procedures to maintain a safe workplace for staff, customers and others.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables
1. Apply basic safety procedures	1.1. <b><i>Policies and procedures</i></b> to achieve a safe working environment are followed and maintained in line with <b><i>occupational health and safety (OHS) procedures</i></b> and according to worksite policy 1.2. All unsafe situations are recognized and reported according to worksite policy 1.3. All breakdowns in relation to machinery and equipment are reported to supervisor or nominated persons 1.4. Fire and safety <b><i>hazards</i></b> are identified and precautions are taken or reported according to worksite policy and procedures 1.5. Dangerous goods and substances are identified, handled and stored according to worksite policy and procedures and OHS requirements 1.6. Worksite policy regarding manual handling practice is followed 1.7. Participation in consultative arrangements established by company for OHS is exercised
2. Apply emergency procedures	2.1. Worksite policies and emergency procedures regarding illness or accidents are identified and applied 2.2. Safety alarms are identified 2.3. Qualified persons are contacted in the event of accident or sickness of customers or staff and accident details are documented according to worksite accident/ injury procedures 2.4. Worksite evacuation procedures are identified and applied

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Policies and procedures	May include: 1.1 Hazard policies and procedures 1.2 Emergency, fire and accident procedures 1.3 Personal safety procedures 1.4 Procedures for the use of personal protective clothing and equipment 1.5 Use of motor vehicles 1.6 Resolution procedures 1.7 Job procedures 1.8 Work instructions
2. OHS procedures	May include: 2.1 Safe manual handling and lifting customers, Staff, Equipment/tooling, Premises and stock
3. Hazards	May include: 3.1 Sharp cutting tooling and instruments 3.2 Electricity and water 3.3 Toxic substances 3.4 Damaged packing material or containers 3.5 Broken or damaged equipment 3.6 Flammable materials and fire hazards 3.7 Lifting practices 3.8 Spillages, waste and debris especially on floors, ladders, trolleys and glue guns/burns
4. Emergency procedures	May include: Sickness Accident Fire or store evacuation involving staff or customers

## EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate has:</p> <ul style="list-style-type: none"> <li>1.1 Communicated effectively with others involved in or affected by the work</li> <li>1.2 Identified and assessed hazardous situations and rectified, or reported to the relevant persons</li> <li>1.3 Operated fire-fighting equipment</li> <li>1.4 Handled safely and stored dangerous and/or hazardous goods and substances</li> <li>1.5 Applied safe manual handling practices</li> <li>1.6 Operated safely and effectively equipment and utilized materials over the full range of functions</li> <li>1.7 Followed worksite evacuation procedures.</li> </ul>
<p>2. Required knowledge</p>	<p>General knowledge of:</p> <ul style="list-style-type: none"> <li>2.1 The implications of OHS on efficiency, morale and customer relations</li> <li>2.2 Common automotive terminology</li> <li>2.3 OHS regulations/requirements, equipment, material and personal safety requirements</li> <li>2.4 Safe manual handling theories and practices</li> <li>2.5 The selection and application of fire-fighting equipment</li> <li>2.6 Dangerous goods and hazardous chemicals handling processes</li> <li>2.7 Worksite reporting procedures</li> </ul>
<p>3. Required Skills</p>	<ul style="list-style-type: none"> <li>3.1. Collect, organize and understand information related to recognizing and reporting situations</li> <li>3.2. Communicate ideas and information to reporting procedures (verbal and written)</li> <li>3.3. Plan and organize activities which implement and follow standard procedures</li> <li>3.4. Work with others and in a team by assisting and cooperating with team members</li> <li>3.5. Use mathematical ideas and techniques to document and report numbers for emergency procedures</li> <li>3.6. Establish diagnostic processes which recommend improvements for OHS issues</li> <li>3.7. Use workplace technology related to the use of technology to assist with safe work practices</li> </ul>
<p>4. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>4.1. A workplace or simulated workplace</li> <li>4.2. Situations requiring safe working practices</li> <li>4.3. Worksite or equivalent instructions on safe working practice</li> <li>4.4. Hazardous chemicals and/or dangerous goods information</li> <li>4.5. Materials, tooling and equipment</li> <li>4.6. Firefighting appliances and fire test facilities</li> </ul>
<p>5. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Portfolio Assessment</li> <li>5.2 Interview</li> <li>5.3 Case Study/Situation</li> </ul>
<p>6. Context for Assessment</p>	<ul style="list-style-type: none"> <li>6.1 Competency may be assessed in the work place or in a simulated work place setting</li> </ul>

**UNIT OF COMPETENCY: INTERPRET/DRAW TECHNICAL DRAWING**

**UNIT CODE : ALT311205**

**UNIT DESCRIPTOR :** This unit identifies the competencies required to draw/interpret basic trade drawing.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables
1. Interpret technical drawing	1.1 Components, assemblies or objects are recognized as required 1.2 Dimensions are identified as appropriate to the field of employment 1.3 Instructions are identified and followed as required 1.4 Material and other <b>consumable</b> requirements are identified as required 1.5 Symbols are recognized as appropriate in <b>drawing</b>
2. Select correct technical drawing	2.1 Drawing is checked and validated against job requirements or equipment 2.2 Drawing version is checked and validated according to the <b>Manual</b>
3. Apply freehand sketching	3.1 Correct freehand sketching is produced using the necessary <b>tools and materials</b>

**RANGE OF VARIABLES**

VARIABLE	RANGE
1. Drawing	May include: 1.1 Drawing symbols 1.2 Alphabet of lines 1.3 Orthographic views 1.3.1 Front view 1.3.2 Right side view/left side view 1.3.3 Top view 1.3.4 Pictorial 1.4 Schematic diagram
2. Manual	May include: 2.1 technical drawing manual 2.2 manufacturers schematic diagram
3. Consumables	May include: 3.1 drawing plate 3.2 pencil and eraser 3.3 scotch tape
4. Tools and materials	May include: 4.1 compass 4.2 divider 4.3 rulers 4.4 triangles 4.5 drawing tables computer

## EVIDENCE GUIDE

1. Critical aspects of competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Interpreted technical drawing</li> <li>1.2 Selected correct technical drawing</li> <li>1.3 Applied freehand sketching</li> </ul>
2. Required knowledge	<ul style="list-style-type: none"> <li>2.1 Drawing standard symbols</li> <li>2.2 Safe handling of tools and consumables</li> <li>2.3 Identification of types of drawing</li> <li>2.4 Patience, Perseverance, Attention to Details</li> </ul>
3. Required skills	<ul style="list-style-type: none"> <li>3.1 Draw/interpret orthographic drawing</li> <li>3.2 Handling of drawing instruments</li> </ul>
4. Resource implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>4.1 Drawing room</li> <li>4.2 Appropriate tools</li> <li>4.3 Materials relevant to activity</li> </ul>
5. Method of assessment	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Observation with questioning</li> <li>5.2 Written/Oral examination</li> <li>5.3 Presentation of Finished drawing</li> </ul>
6. Context of assessment	<ul style="list-style-type: none"> <li>6.1 Must be assessed in a drawing room or in any simulated places</li> <li>6.2 Assessment must be given according to industry standard</li> </ul>

## CORE COMPETENCIES

**UNIT OF COMPETENCY: REPAIR COMPLEX AUTOMOTIVE FAULTS**

**UNIT CODE** : CS-ALT723304

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills and attitudes required to repair complex automotive faults. This includes diagnosing automotive faults, operating advanced testing equipment, planning transport logistics, and implementing safety and quality monitoring.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range of Variables</i>	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Diagnose complex automotive faults	<p>1.1 <b><i>Complex automotive faults</i></b> are diagnosed following industry practices.</p> <p>1.2 Repair and replacement of automobile system components are conducted meeting industry quality standards.</p> <p>1.3 Repair methods for <b><i>new automotive technologies</i></b> are practiced meeting industry quality standards.</p> <p>1.4 <b><i>Detailed repair process flows</i></b> are developed based on automotive repair manuals.</p>	<p><b>SCIENCE</b></p> <p>1.1 Detailed repair process flows</p> <p>1.2 Working principles and fault diagnosis logic of automotive systems.</p> <p>1.3 Quality standards and maintenance regulations.</p> <p><b>TECHNOLOGY</b></p> <p>1.4 Manufacturing processes and repair techniques for automotive components.</p> <p>1.5 Technical principles and maintenance for new energy vehicles.</p>	<p>1.1 Diagnosis skills</p> <p>1.2 Precision repair and replacement skills</p> <p>1.3 Operational skills</p> <p>1.4 Reading and interpreting automotive manuals</p> <p>1.5 Keen to details Analytical skills</p>
2. Operate advanced testing equipment	<p>2.1 <b><i>Advanced automotive testing equipment</i></b> is used following industry practices.</p>	<p><b>SCIENCE</b></p> <p>2.1 Principles, methods, and technical parameters of automotive</p>	<p>2.1 Operation skills</p> <p>2.2 Mathematical Skills</p>

	<p>2.2 Testing equipment calibration and maintenance are implemented meeting industry quality standards.</p> <p>2.3 Test data are analyzed following industry practices.</p>	<p>testing equipment.</p> <p><b>TECHNOLOGY</b></p> <p>2.2 Calibration standards and maintenance procedures for testing equipment.</p> <p>2.3 Data analysis methods correlating performance indicators with testing results.</p>	<p>2.3 Calibration and maintenance skills</p> <p>2.4 Data analysis and interpretation skills.</p> <p>1.6 2.5 Keen to details</p>
<p>3. Plan transport logistics</p>	<p>3.1 <b>Rational road transport plans</b> are formulated based on cargo type, distance, and traffic conditions.</p> <p>3.2 Transportation management software is utilized following industry practices.</p> <p>3.3 Real-time monitoring and adaptive adjustments are made during transportation following industry practices.</p>	<p><b>SCIENCE</b></p> <p>3.1 Transportation management principles and vehicle suitability.</p> <p><b>TECHNOLOGY</b></p> <p>3.2 Transportation management software operations.</p> <p>3.3 Traffic regulations and road information channels.</p> <p><b>MATHEMATICS</b></p> <p>3.4 Probability modeling in risk events</p> <p><b>COMMUNICATION</b></p> <p>3.5 Crisis communication methods</p> <p><b>ENVIRONMENT ISSUES AND RELEVANT LASWS:</b></p> <p>3.6 Crisis planning for environmental risks</p>	<p>3.1 Planning skills</p> <p>3.2 Utilizing transportation management software.</p> <p>3.3 utilizing GPS and communication tools.</p> <p>3.4 Communication skills</p> <p>3.5 analytical skills</p> <p>3.6 Keen to details</p>

<p>4. Implement safety and quality monitoring</p>	<p>4.1 A comprehensive safety and quality monitoring system is established with clear operating procedures and inspection standards following industry practices.</p> <p>4.2 <b>Quality monitoring</b> is conducted throughout automobile maintenance meeting industry quality standards.</p> <p>4.3 Transportation processes are monitored for vehicle operational safety and cargo integrity following industry practices.</p>	<p><b>SCIENCE:</b></p> <p>4.1 Principles of automotive safety systems and prevention measures.</p> <p><b>TECHNOLOGY:</b></p> <p>4.2 Quality control systems and methodologies.</p> <p><b>ENVIRONMENTAL ISSUES:</b></p> <p>4.3 Automotive maintenance and transportation safety regulations.</p> <p>4.4 Safety assurance technologies for cargo transport.</p>	<p>4.1 Safety monitoring skills</p> <p>4.2 Maintenance quality inspection skills.</p> <p>4.3 Transportation safety monitoring skills.</p> <p>4.4 Incident investigation, analysis, and preventive measure development skills.</p> <p>4.5 Keen to details</p>
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### RANGE OF VARIABLES

VARIABLE	RANGE
<p>1. Complex automotive faults</p>	<p>Complex automotive faults may include but not limited to:</p> <p>1.1 intermittent engine misfire</p> <p>1.2 automatic transmission shifting shocks</p> <p>1.3 intermittent sensor malfunctions</p> <p>1.4 phantom Diagnostic Trouble Codes (DTCs)</p>
<p>2. New automotive technologies</p>	<p>New automotive technologies may include but not limited to:</p> <p>2.1 hybrid</p> <p>2.2 electric vehicles</p> <p>2.3 Hydrogen Fuel Cell Vehicles</p> <p>2.4 Range-Extender Engines</p>
<p>3. Advanced automotive testing equipment</p>	<p>Advanced automotive testing equipment may include but not limited to:</p> <p>2.1 wheel alignment machines</p> <p>2.2 diagnostic tools</p> <p>2.3 OEM-Level Scan Tools</p> <p>2.4 Oscilloscopes (Automotive Lab Scopes)</p> <p>2.5 Injector and Fuel System Testers</p>

4. Rational road transport plans	Rational road transport plans may include but not limited to: 4.1 Assess current transport conditions 4.2 Forecast future demand 4.3 Design road networks and traffic systems 4.4 Implement infrastructure and policy interventions 4.5 Ensure equitable, environmentally friendly, and cost-effective transport
5. Quality monitoring	Quality monitoring may include but not limited to: 5.1 rigorous road tests 5.2 performance checks. 5.3 Incoming Quality Control 5.4 In-Process Quality Control 5.5 Final Quality Inspection 5.6 Post-Delivery Monitoring

## EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Diagnosed complex automotive faults. 1.1.1 Diagnosed complex automotive faults 1.1.2 Conducted repair and replacement of automobile system components 1.1.3 Practiced repair methods for new automotive technologies 1.1.4 Developed detailed repair process flows 1.2. Operated advanced testing equipment 1.2.1 Used advanced automotive testing equipment 1.2.2 Implemented testing equipment calibration and maintenance 1.2.3 Analyzed Test data 1.3. Planned transport logistics 1.3.1 Formulated rational road transport plans 1.3.2 Utilized transportation management software 1.3.3 Made real-time monitoring and adaptive adjustments 1.4. Implemented safety and quality monitoring 1.4.1 Established safety and quality monitoring system 1.4.2 Conducted quality monitoring 1.4.3 Monitored transportation processes
2. Resource implication	The following resources should be provided: 2.1 Technological and software resources 2.2 Hardware and physical resources 2.3 Reference materials and documentation. 2.4 Internet access and network connectivity

3. Method of assessment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>3.1 Simulation/ scenario-based assessment</li> <li>3.2 Oral questions</li> <li>3.3 Practical demonstrations</li> <li>3.4 Review of completed reports</li> <li>3.5 Portfolio</li> <li>3.6 Written assessment or knowledge test</li> </ul>
4. Context of Assessment	<p>Competency may be assessed individually in the actual workplace or simulated environment within an Accredited Assessment Center or Designated Assessment Venue (DAV)</p>

**UNIT OF COMPETENCY : OPERATE TESTING EQUIPMENT**

**UNIT CODE : CS-ALT723305**

**UNIT DESCRIPTOR :** This unit covers the knowledge, skills and attitudes required to operate testing equipment. This includes selecting testing equipment, performing routine calibration and maintenance, analyzing test data, and troubleshooting testing equipment.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms are elaborated in the Range of Variables</i>	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Select testing equipment	1.1 Testing equipment is identified based on the type of system or component to be tested, and according to manufacturer specifications. 1.2 <b>Advanced automotive testing equipment</b> is selected in accordance with task specifications 1.3 Testing equipment is checked for serviceability and calibration status in accordance with standard operating procedures and workplace quality systems.	<b>SCIENCE</b> 1.1 Principles of automotive systems and how testing equipment correlates with system functionality. 1.2 Safety standards related to the operation of automotive testing equipment. 1.3 Types of testing equipment suited to specific vehicle systems or faults.  <b>TECHNOLOGY / ENGINEERING</b> 1.4 Technical specifications and requirements for different types of automotive testing tools. 1.5 Testing equipment performance metrics and their application for different fault types.  <b>MATHEMATICS</b> 1.6 Understanding of diagnostic tests and parameters relevant	1.1 Operation skills 1.2 Selecting testing equipment 1.3 using testing equipment for diagnosis. 1.4 using automotive diagnostic tools. 1.5 Keen to details

		<p>to different vehicle systems.</p> <p>1.7 Criteria for selecting the right diagnostic tool based on fault and vehicle type.</p> <p><b>COMMUNICATION</b></p> <p>1.8 Correct procedures for calibrating and using equipment to ensure safety and accuracy.</p> <p><b>ENVIRONMENT ISSUES</b></p> <p>1.9 Operational processes and safety protocols for maintaining equipment accuracy and safety.</p>	
<p>2. Perform routine calibration and maintenance</p> <p>2.</p>	<p>2.1 Testing equipment is calibrated following industry practices.</p> <p>2.2 Testing equipment is operated according to manufacturer's specifications and safety standards.</p> <p>2.3 The right testing equipment is chosen based on vehicle specifications and fault types.</p>	<p><b>SCIENCE</b></p> <p>2.1 Methods for calibrating automotive tools and the impact of miscalibration on results.</p> <p>2.2 Documentation requirements for recording calibration data and ensuring traceability.</p> <p>2.3 Preventive maintenance practices and schedules for automotive testing equipment.</p> <p><b>TECHNOLOGY / ENGINEERING</b></p> <p>2.4 Calibration procedures and standards for automotive testing tools.</p>	<p>2.1 Cross-cultural communication skills</p> <p>2.2 Using translator applications</p> <p>2.3 Recognizing potential threats from spam.</p> <p>2.4 Mail merging Skills</p> <p>2.5 Following manufacturer specifications during calibration.</p> <p>2.6 selecting and using calibration tools.</p> <p>2.7 keeping accurate calibration records.</p> <p>2.8 Maintenance skills</p>

		<p>2.5 Understanding the effects of calibration errors on the diagnostic process.</p> <p><b>MATHEMATICS</b> 2.6 Measurement standards and tolerance limits for testing equipment calibration.</p> <p>2.7 Tools and equipment required for routine maintenance and their application.</p> <p><b>COMMUNICATION</b> 2.8 Tools and instruments used in the calibration of automotive testing equipment.</p> <p><b>ENVIRONMENTAL ISSUES</b> 2.9 Typical wear and tear issues in testing equipment, including corrective measures.</p>	<p>2.9 Troubleshooting and corrective maintenance skills. 1.6</p>
<p>3. Analyze test data</p>	<p>3.1 Test data is compared following industry practices 3.2 Data from various sources is compiled following industry practices 3.4 Trends are identified following industry practices. 3.3 Anomalies and inconsistencies in test results are flagged for further investigation.</p>	<p><b>SCIENCE</b> 3.1 Automotive diagnostic indicators and how they relate to performance and fault identification. 3.2 Data visualization tools used for better interpretation of test results.</p> <p><b>TECHNOLOGY / ENGINEERING</b> 3.3 Calibration procedures and standards for</p>	<p>3.1 Data aggregation and analysis skills. 3.2 presenting and explaining data visually. 3.3 Critical thinking skills 3.4 analyzing anomalies and preparing investigation reports. 3.5 correcting or re-testing erroneous data. 2.10</p>

		<p>automotive testing tools.</p> <p>3.4 Techniques for aggregating data from multiple test sources</p> <p><b>MATHEMATICS</b></p> <p>3.5 Data analysis techniques for automotive testing, including statistical tools and formulas.</p> <p>3.6 Techniques for recognizing outliers and inconsistencies in automotive test data.</p> <p><b>COMMUNICATION</b></p> <p>3.7 Methods for identifying trends and patterns from collected test data.</p> <p>3.8 Statistical analysis methods to validate or invalidate results.</p> <p><b>ENVIRONMENTAL ISSUES</b></p> <p>3.9 The impact of test data on determining the health of automotive systems.</p> <p>3.10 Implications of incorrect or faulty data on further diagnostics and repairs.</p>	
4. Troubleshoot Testing Equipment	<p>4.1 <b>Errors in testing equipment</b> are identified in accordance with industry practices</p> <p>4.2 Routine inspections are conducted following the identification of potential issues</p>	<p><b>SCIENCE</b></p> <p>4.1 Inspection techniques for ensuring testing equipment's functionality and safety.</p> <p>4.2 Calibration standards and troubleshooting</p>	<p>4.1 Troubleshooting skills</p> <p>4.2 Identifying and rectifying equipment faults</p> <p>4.3 communication skills</p> <p>4.4 Inspection skills</p>

	<p>4.3 Errors in testing equipment that affect test accuracy are corrected in accordance with industry practices</p>	<p>techniques to address equipment errors.</p> <p><b>TECHNOLOGY</b></p> <p>4.3 Troubleshooting methods for identifying faults in diagnostic tools and machinery.</p> <p>4.4 Identifying wear and tear in testing equipment that may cause inaccuracies.</p> <p><b>MATHEMATICS</b></p> <p>4.5 Common failure modes in testing equipment and their impact on testing accuracy.</p> <p>4.6 Error detection methods to identify discrepancies in testing results.</p> <p><b>COMMUNICATION</b></p> <p>4.7 Procedure for reporting equipment malfunctions to the appropriate technician or supervisor.</p> <p>4.8 Procedures for troubleshooting and maintaining documentation of faulty equipment</p>	<p>4.5 Proactive issue identification skills.</p> <p>4.6 Error identification and correction skills.</p> <p>4.7 Fixing issues based on diagnostic reading</p> <p>4.8 Corrective action planning skills.</p>
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## RANGE OF VARIABLES

VARIABLE	RANGE
<p>1. Advanced automotive testing equipment</p>	<p>Advanced automotive testing equipment may include but not limited to:</p> <ul style="list-style-type: none"> <li>1.1 Wheel alignment machines</li> <li>1.2 Mechanical and Engine Testers</li> <li>1.3 Electronic Diagnostic Tools</li> <li>1.4 Ignition and Sensor Testing Tools</li> </ul>

2. Test data	Test data may include but not limited to: <ul style="list-style-type: none"> <li>2.1 Sensor/Actuator Data (Live Values)</li> <li>2.2 Electrical/Continuity Data</li> <li>2.3 Mechanical Test Data</li> <li>2.4 Diagnostic Trouble Codes (DTCs)</li> <li>2.5 Software and Calibration Data</li> </ul>
3. Anomalies and inconsistencies in test results	Anomalies and inconsistencies in test results may include but not limited to: <ul style="list-style-type: none"> <li>3.1 Faulty Components</li> <li>3.2 Wiring and Connector Issues</li> <li>3.3 Operator Error</li> <li>3.4 Tool Calibration or Damage</li> <li>3.5 Environmental Conditions</li> </ul>
4. Errors in testing equipment	Errors in testing equipment may include but not limited to: <ul style="list-style-type: none"> <li>4.1 Instrumental error</li> <li>4.2 Calibration Error</li> <li>4.3 Parallax Error</li> <li>4.4 Operator Error</li> <li>4.5 Environmental Error</li> <li>4.6 Software Error</li> </ul>

## EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: <ul style="list-style-type: none"> <li>1.1 Selected testing equipment             <ul style="list-style-type: none"> <li>1.1.1 Identified advanced automotive testing equipment</li> <li>1.1.2 Selected testing equipment</li> <li>1.1.3 Checked testing equipment</li> </ul> </li> <li>1.2 Performed routine calibration and maintenance             <ul style="list-style-type: none"> <li>1.2.1 Calibrated testing equipment</li> <li>1.2.2 Operated testing equipment</li> <li>1.2.3 chosen right testing equipment is based on vehicle specifications and fault types.</li> </ul> </li> </ul>
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	<p>1.3 Analyzed test data</p> <ul style="list-style-type: none"> <li>1.3.1 Compared test data</li> <li>1.3.2 Compiled data from various sources</li> <li>1.3.3. Identified trends</li> <li>1.3.4 Flagged anomalies and inconsistencies in test results</li> </ul> <p>1.4 Troubleshoot testing equipment</p> <ul style="list-style-type: none"> <li>1.4.1 Identified errors in testing equipment</li> <li>1.4.2 Conducted routine inspections</li> <li>1.4.3 Corrected errors in testing equipment that affect test accuracy</li> </ul>
2. Resource implication	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>2.1 Technological and software resources</li> <li>2.2 Hardware and physical resources</li> <li>2.3 Reference materials and documentation.</li> <li>2.4 Internet access and network connectivity</li> </ul>
3. Method of assessment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>3.1 Simulation/ scenario-based assessment</li> <li>3.2 Written or oral questions</li> <li>3.3 Practical demonstrations</li> <li>3.4 Review of completed reports</li> <li>3.5 Portfolio of documents</li> <li>3.6 Written assessment or knowledge test</li> </ul>
4. Context of Assessment	<p>Competency may be assessed individually in the actual workplace or simulated environment within an Accredited Assessment Center or Designated Assessment Venue (DAV)</p>

**UNIT OF COMPETENCY: PLAN OPTIMIZATION OF TRANSPORT**

**UNIT CODE** : CS-ALT723306

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills and attitudes to plan and implement optimization strategies for road transport operations. This includes accessing basic HR system applications, utilizing transportation management software, and monitoring transport plans.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms are elaborated in the Range of Variables</i>	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Access basic HR system applications	1.1 <b><i>Rational transport plans</i></b> are developed based on cargo type, distance, traffic conditions, and vehicle specifications. 1.2 Transport schedules are aligned with optimal routing following operational goals. 1.3 Coordination is done with stakeholders following operational goals.	<b>SCIENCE</b> 1.1 Stakeholder management and coordination in transportation planning.  <b>TECHNOLOGY / ENGINEERING</b> 1.2 Principles of transport planning, including vehicle selection, route planning, and scheduling.  <b>MATHEMATICS</b> 1.4 Mathematical models and algorithms for route optimization.	1.1 Analytical skills 1.3 Adjusting schedules for efficiency and cost-effectiveness. 1.4 Communication Skills 1.5 Keen to details 1.6 Team coordination skills
2. Utilize transportation management software	2.1 Transportation management software is used in accordance with industry practices 2.2 Software is leveraged based on <b><i>changing conditions</i></b> . 2.3 <b><i>Regular updates</i></b> are applied to transportation	<b>SCIENCE</b> 2.1 Integration of real-time traffic data and route optimization algorithms within software systems.  <b>TECHNOLOGY / ENGINEERING</b> 2.2 Features and functions of	2.1 using transport management software to simulate and optimize routes.  2.2 Data analysis and interpretation skills

	management systems in accordance with industry practices	transportation management software and its role in optimization.  <b>MATHEMATICS</b> 2.3 Data input standards and protocols for transportation management systems.	2.3 Checking system updates for accuracy
3. Monitor transport plans	<p>3.1 Transport plans are checked for compliance with established objectives and timelines in accordance with industry practices</p> <p>3.2 <b>Immediate adjustments</b> are made to plans based on real-time data from GPS and tracking systems.</p> <p>3.3 <b>Performance of transport systems</b> is regularly reviewed in accordance with industry practices</p> <p>3.4 Optimization strategies are updated as necessary.</p>	<p><b>SCIENCE</b> 3.1 Performance evaluation techniques in transportation and their application for improvements.</p> <p><b>TECHNOLOGY</b> 3.2 Real-time transport data management and GPS-based decision-making processes.</p> <p><b>COMMUNICATION</b> 3.3 Methods for monitoring and evaluating transport operations against set benchmarks.</p>	<p>3.1 Monitoring skills</p> <p>3.2 using GPS and communication tools for transport adjustments.</p> <p>3.3 Critical thinking</p> <p>3.4 Problem-solving skills</p>

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Rational transport plans	Rational transport plans may include but not limited to: 1.1 Safe 1.2 Efficient 1.3 Environmentally sustainable 1.4 Accessible 1.5 Economically viable
2. Changing conditions.	Changing conditions may include but not limited to: 2.1 Environmental Conditions 2.2 Operational Conditions 2.3 System Conditions (Vehicle/Equipment) 2.4 Policy or Regulatory Changes
3. Regular updates	Regular updates may include but not limited to: 3.1 Software and System Updates 3.2 Curriculum and Training Updates 3.3 Data and Information Updates
4. Immediate adjustments	Immediate adjustments may include but not limited to: 4.1 Incorrect live sensor reading 4.2 Brake pull during test drive 4.3 Unstable idle after part installation
5. Performance of transport systems	Performance of transport systems may include but not limited to: 5.1 Efficiency 5.2 Reliability 5.3 Capacity & Load 5.4 Safety 5.5 Cost-Effectiveness 5.6 Sustainability 5.7 Accessibility

## EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Accessed basic HR system application               <ul style="list-style-type: none"> <li>1.1.1 Developed rational transport plans</li> <li>1.1.2 Aligned transport schedules</li> <li>1.1.3 Done coordination with stakeholders</li> </ul> </li> <li>1.2 Utilized transportation management software               <ul style="list-style-type: none"> <li>1.2.1 Used transportation management software</li> <li>1.2.2 Leveraged software</li> <li>1.2.3 Applied regular updates</li> </ul> </li> <li>1.3 Monitored transport plans               <ul style="list-style-type: none"> <li>1.3.1 Checked transport plans</li> <li>1.3.2 Made immediate adjustments</li> <li>1.3.3 Reviewed performance of transport systems</li> <li>1.3.4 Updated optimization strategies</li> </ul> </li> </ul>
<p>2. Resource implication</p>	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>2.1 Technological and software resources</li> <li>2.2 Hardware and physical resources</li> <li>2.3 Reference materials and documentation.</li> <li>2.4 Internet access and network connectivity</li> </ul>
<p>3. Method of assessment</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>3.1 Simulation/ scenario-based assessment</li> <li>3.2 Written or oral</li> <li>3.3 Practical demonstrations</li> <li>3.4 Review of completed reports</li> <li>3.5 Portfolio</li> <li>3.6 Written assessment or knowledge test</li> </ul>
<p>4. Context of Assessment</p>	<p>Competency may be assessed individually in the actual workplace or simulated environment within an Accredited Assessment Center or Designated Assessment Venue (DAV)</p>

## GLOSSARY OF TERMS

<b>Algorithm:</b>	A step-by-step procedure or formula for solving a problem or completing a task, often used in software systems for route optimization in transport.
<b>Cargo</b>	Goods or materials being transported by vehicle, often categorized by type (e.g., perishable, hazardous) and requiring specific planning considerations.
<b>Communication Tools</b>	Technologies or methods used for coordinating and sharing information between stakeholders, including GPS, telecommunication systems, and transportation management software.
<b>Data Analysis</b>	The process of examining, cleaning, and interpreting transport-related data (e.g., vehicle performance, fuel consumption, traffic patterns) to improve operational efficiency.
<b>Fleet Management</b>	The management of a group of vehicles, including their use, maintenance, scheduling, and coordination in transport operations.
<b>GPS (Global Positioning System)</b>	A satellite-based navigation system used for tracking vehicle locations and facilitating real-time adjustments to transport routes.
<b>Optimization</b>	The process of making a transport plan as efficient as possible by minimizing costs (e.g., fuel, time) while meeting the required objectives.
<b>Real-time Data</b>	Information that is delivered immediately after collection, enabling instant monitoring and decision-making during transport operations, such as traffic updates or vehicle status.
<b>Route Planning</b>	The process of determining the best path or route for transporting goods, considering factors like distance, road conditions, and traffic.
<b>Scheduling</b>	The process of arranging transport activities or vehicle usage in a time-based order to ensure timely delivery and minimize downtime.
<b>Stakeholders</b>	Individuals, groups, or organizations that have an interest in the transport operation, such as drivers, logistics coordinators, customers, and management.
<b>Transportation Management Software (TMS)</b>	Software systems used to plan, execute, and optimize the physical movement of goods, providing tools for scheduling, route optimization, and tracking.
<b>Vehicle Specifications</b>	Detailed information about the characteristics of a vehicle, such as load capacity, fuel efficiency, and performance, which influences the selection of vehicles for transport tasks.

<b>Vehicle Tracking</b>	The process of monitoring the location and movement of a vehicle in real-time, often using GPS or other tracking technologies.
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