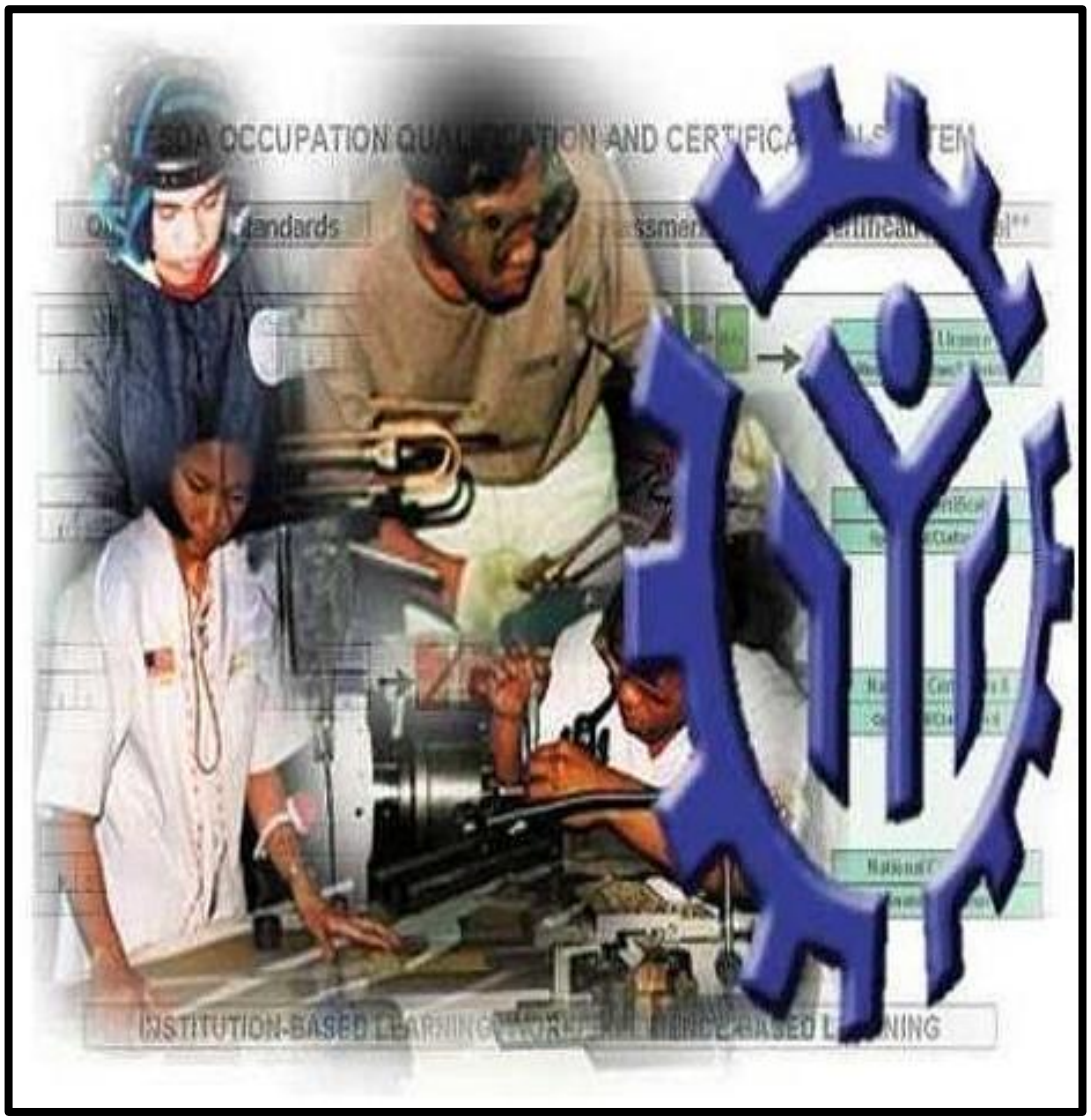
COMPETENCY STANDARDS

AUTOMOTIVE PRODUCTION LINE OPERATION 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

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

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

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AUTOMOTIVE PRODUCTION LINE OPERATION LEVEL III

COMPETENCY STANDARDS FOR

AUTOMOTIVE PRODUCTION LINE OPERATION LEVEL III

SECTION 1 DESCRIPTION OF QUALIFICATION

The **AUTOMOTIVE PRODUCTION LINE OPERATION LEVEL III** Qualification is for individuals responsible for operating automotive coating production line, operating automotive welding production line, operating automotive metal forming production line, operating automotive machining and finishing production line and operating automotive metal casting production.

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The units of competency comprising the qualification include the following:

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

Unit Code	COMMON COMPETENCIES
ALT311202	Perform Mensuration and Calculation
ALT723203	Read, Interpret and Apply Specifications and Manuals
ALT723205	Perform Shop Maintenance
ALT723206	Practice health, safety and environment procedures
ALT311205	Interpret/Draw Technical Drawing
ALT311202	Perform Mensuration and Calculation
ALT311207	Inspect technical quality of work
ALT311208	Maintain quality systems
ALT723210	Identify and select original automotive parts and products

Unit Code	CORE COMPETENCIES
CS-ALT713301	Operate Automotive Coating Production Line
CS-ALT713302	Operate Automotive Welding Production Line
CS-ALT713303	Operate Automotive Metal Forming Production Line
CS-ALT713304	Operate Automotive Metal Machining and Finishing Production Line
CS-ALT713305	Operate Automotive Metal Casting Production Line
CS-ALT713306	Operate Automotive Coating Production Line

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

- Automotive Coating Production Line Operator
- Automotive Welding Production Line Operator
- Automotive Stamping Production Line Operator
- Automotive Machining Production Line Operator
- Automotive Heat Treatment Production Line Operator
- Automotive Forging Production Line Operator
- Automotive Casting Production Line Operator

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 **AUTOMOTIVE PRODUCTION LINE 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 *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Communicate information about workplace processes	1.1 Relevant ***communication method*** is selected based on workplace procedures 1.2 Multiple operations involving several topics/areas are communicated following enterprise requirements 1.3 Questioning is applied to gain extra information 1.4 Relevant sources of information are identified in accordance with workplace/ client requirements 1.5 Information is selected and organized following enterprise procedures 1.6 Verbal and written reporting is undertaken when required	1.1. 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)

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	1.7 Communication and negotiation skills are applied and maintained in all relevant situations		
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 ***workplace discussions*** on such issues as production, quality and safety 2.4 Goals/objectives and action plans undertaken in the workplace are communicated promptly	2.1 Organization requirements for written and electronic communication methods 2.2 Effective verbal communication methods 2.3 Workplace etiquette	2.1 Organizing information 2.2 Conveying intended meaning 2.3 Participating in variety of workplace discussions 2.4 Complying with organization requirements for the use of written and electronic communication methods 2.5 Effective clarifying and probing skills
3. Identify and communicate issues arising in the workplace	3.1 Issues and problems are identified as they arise 3.2 Information regarding problems and issues are organized coherently to ensure clear and effective communication 3.3 Dialogue is initiated with appropriate personnel 3.4 Communication problems and issues are raised as they arise 3.5 Identify barriers in communication to	3.1 Organization requirements for written and electronic communication methods 3.2 Effective verbal communication methods 3.3 Workplace etiquette 3.4 Communication problems and issues 3.5 Barriers in communication	3.1 Organizing information 3.2 Conveying intended meaning 3.3 Participating in a variety of workplace discussions 3.4 Complying with organization requirements for the use of written and electronic communication methods 3.5 Effective clarifying and probing skills

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	be addressed appropriately		3.6 Identifying issues 3.7 Negotiation and communication skills

RANGE OF VARIABLES

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

EVIDENCE GUIDE

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

UNIT OF COMPETENCY : LEAD SMALL TEAMS

UNIT CODE : 400311320

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes to lead small teams including setting, maintaining and monitoring team and individual performance standards.

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Provide team leadership	1.1. ***Work requirements*** are identified and presented to team members based on company policies and procedures 1.2. Reasons for instructions and requirements are communicated to team members based on company policies and procedures 1.3. ***Team members' queries and concerns*** are recognized, discussed and dealt with based on company practices	1.1 Facilitation of Team work 1.2 Company policies and procedures relating to work performance 1.3 Performance standards and expectations 1.4 Monitoring individual's and team's performance vis a vis client's and group's expectations	1.1 Communication skills required for leading teams 1.2 Group facilitation skills 1.3 Negotiating skills 1.4 Setting performance expectation

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
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
4. Supervised team performance	4.1 Performance is ***monitored***	4.1 Performance Coaching	4.1 Communication skills

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	based on defined performance criteria and/or assignment instructions 4.2 Team members are provided with ***feedback***, positive support and advice on strategies to overcome any deficiencies based on company practices 4.3 ***Performance issues*** which cannot be rectified or addressed within the team are referenced to appropriate personnel according to employer policy 4.4 Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on client/customer needs and satisfaction 4.5 Team operations are	4.2 Performance management 4.3 Performance Issues	required for leading teams 4.2 Coaching skill

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

RANGE OF VARIABLES

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

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Maintained or improved individuals and/or team performance given a variety of possible scenario 1.2. Assessed and monitored team and individual performance against set criteria 1.3. Represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf 1.4. Allocated duties and responsibilities, having regard to individual's knowledge, skills and aptitude and the needs of the tasks to be performed 1.5. Set and communicated performance expectations for a range of tasks and duties within the team and provided feedback to team members
2. Resource Implications	The following resources **MUST** be provided: 2.1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2. Materials relevant to the proposed activity or task
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1. Written Examination 3.2. Oral Questioning 3.3. Portfolio

4. Context for Assessment	4.1. Competency may be assessed in actual workplace or at the designated TESDA Accredited Assessment Center

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

UNIT CODE : 400311321

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

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

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
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 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.	2.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 2.2 Identifying extent and causes of specific challenges in the workplace. 2.3 Providing clear-cut findings on the nature of each identified workplace challenges.
3. Formulate resolutions to specific workplace challenges	3.1. All possible options are considered for resolution of the problem. 3.2. Strengths and weaknesses of possible options are considered. 3.3. Corrective actions are determined to resolve the problem and possible future causes. 3.4. **Action *plans*** are developed identifying measurable objectives, resource needs and timelines in accordance with safety and operating procedures	3.1. Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations 3.2. Relevant equipment and operational processes 3.3. Enterprise goals, targets and measures 3.4. Enterprise quality OSH and	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.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
		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	3.3. 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.
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	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.

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
		systems and data collation 4.7 Industry codes and standards	4.4 Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.

RANGE OF VARIABLES

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

	4.5. Co-ordination and feedback requirements 4.6. Safety requirements 4.7. Risk assessment 4.8. Environmental requirements

EVIDENCE GUIDE

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

UNIT OF COMPETENCY : WORK IN A DIVERSE ENVIRONMENT

UNIT CODE : 400311322

UNIT DESCRIPTOR : This unit covers the outcomes required to work effectively in a workplace characterized by diversity in terms of religions, beliefs, races, ethnicities and other differences.

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

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.3 Relations with customers and clients are maintained to show that diversity is valued by the business.	organizational goals and objectives 2.4 Strategies for customer service excellence	2.3 Demonstrating collaboration skills 2.4 Exhibiting customer service excellence
3. Identify common issues in a multicultural and diverse environment	3.1 ***Diversity-related conflicts*** within the workplace are effectively addressed and resolved. 3.2 Discriminatory behaviors towards customers/stakeholders are minimized and addressed accordingly. 3.3 Change management policies are in place within the organization.	3.1 Value, and leverage of cultural diversity 3.2 Inclusivity and conflict resolution 3.3 Workplace harassment 3.4 Change management and ways to overcome resistance to change 3.5 Advanced strategies for customer service excellence	3.1 Addressing diversity-related conflicts in the workplace 3.2 Eliminating discriminatory behavior towards customers and co-workers 3.3 Utilizing change management policies in the workplace

RANGE OF VARIABLES

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

EVIDENCE GUIDE

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

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

UNIT CODE : 400311323

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

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Assess work procedures, processes and systems in terms of innovative practices	1.1. R***easons*** for innovation are incorporated to work procedures. 1.2. ***Models of innovation*** are researched. 1.3. G***aps or barriers*** to innovation in one's work area are analyzed. 1.4. Staff who can support and foster innovation in the work procedure are identified.	1.1 Seven habits of highly effective people. 1.2 Character strengths that foster innovation and learning (Christopher Peterson and Martin Seligman, 2004) 1.3 Five minds of the future concepts (Gardner, 2007). 1.4 Adaptation concepts in neuroscience (Merzenich, 2013). 1.5 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).	1.1 Demonstrating collaboration and networking skills. 1.2 Applying basic research and evaluation skills 1.3 Generating insights on how to improve organizational procedures, processes and systems through innovation.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Generate practical action plans for improving work procedures, processes	2.1 Ideas for innovative work procedure to foster innovation using individual and group techniques are conceptualized 2.2 Range of ideas with other team members and colleagues are evaluated and discussed 2.3 Work procedures and processes subject to change are selected based on ***workplace requirements*** (feasible and innovative). 2.4 Practical action plans are proposed to facilitate simple changes in the work procedures, processes and systems. 2.5 ***Critical inquiry*** is applied and used to facilitate discourse on adjustments in the simple work procedures, processes and systems.	2.1 Seven habits of highly effective people. 2.2 Character strengths that foster innovation and learning (Christopher Peterson and Martin Seligman, 2004) 2.3 Five minds of the future concepts (Gardner, 2007). 2.4 Adaptation concepts in neuroscience (Merzenich, 2013). 2.5 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).	2.1 Assessing readiness for change on simple work procedures, processes and systems. 2.2 Generating insights on how to improve organizational procedures, processes and systems through innovation. 2.3 Facilitating action plans on how to apply innovative procedures in the organization.

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

RANGE OF VARIABLES

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

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Established the reasons why innovative systems are required 1.2 Established the goals of a new innovative system 1.3 Analyzed current organizational systems to identify gaps and barriers to innovation. 1.4 Assessed work procedures, processes and systems in terms of innovative practices. 1.5 Generated practical action plans for improving work procedures, and processes. 1.6 Reviewed the trial innovative work system and adjusted reflect evaluation feedback, knowledge management systems and future planning. 1.7 Evaluated the effectiveness of the proposed action plans.
2. Resource Implications	The following resources should be provided: 2.1 Pens, papers and writing implements. 2.2 Cartolina. 2.3 Manila papers.
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Psychological and behavioral Interviews. 3.2 Performance Evaluation. 3.3 Life Narrative Inquiry. 3.4 Review of portfolios of evidence and third-party workplace reports of on-the-job performance. 3.5 Sensitivity analysis. 3.6 Organizational analysis. 3.7 Standardized assessment of character strengths and virtues applied.
4. Context for Assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY **USE INFORMATION SYSTEMATICALLY**

UNIT CODE **400311324**

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

ELEMENT	PERFORMANCE CRITERIA *Italicized* terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Use technical information	1.1. ***Information*** are *c*ollated and organized into a suitable form for reference and use 1.2. Stored information are classified so that it can be quickly identified and retrieved when needed 1.3. Guidance are advised and offered to people who need to find and use information	1.1. Application in collating information 1.2. Procedures for inputting, maintaining and archiving information 1.3. Guidance to people who need to find and use information 1.4. Organize information 1.5. classify stored information for identification and retrieval 1.6. Operate the technical information system by using agreed procedures	1.1. Collating information 1.2. Operating appropriate and valid procedures for inputting, maintaining and archiving information 1.3. Advising and offering guidance to people who need to find and use information 1.4. Organizing information into a suitable form for reference and use 1.5. Classifying stored information for identification and retrieval 1.6. Operating the technical information system by using agreed procedures
2. Apply information technology (IT)	2.1. ***Technical information*** system is operated using agreed procedures 2.2. Appropriate and valid procedures are operated for inputting,	2.1. Attributes and limitations of available software tools 2.2. Procedures and work instructions for the use of IT	2.1. Identifying attributes and limitations of available software tools 2.2. Using procedures and work

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	maintaining and archiving information 2.3. ***Software*** required are utilized to execute the project activities 2.4. Information and data obtained are handled, edited, formatted and checked from a range of internal and external ***sources*** 2.5. Information are extracted, entered, and processed to produce the outputs required by ***customers*** 2.6. Own skills and understanding are shared to help others 2.7. Specified ***security measures*** are implemented to protect the confidentiality and integrity of project data held in IT systems	2.3. 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 2.8. WWW enabled applications	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 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 MUST be provided: 2.1. Computers 2.2. Software and IT system
3. Methods of Assessment	Competency in this unit MUST be assessed through: 3.1. Direct Observation 3.2. Oral interview and written test
4. Context for Assessment	4.1. Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : EVALUATE OCCUPATIONAL SAFETY AND HEALTH WORK PRACTICES

UNIT CODE : 400311325

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

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

RANGE OF VARIABLES

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

EVIDENCE GUIDE

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

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

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Interpret environmental practices, policies and procedures	1.1 ***Environmental work practices*** issues are identified relevant to work requirements 1.2 Environmental Standards and Procedures nature of work are determined based on Applicability to nature of work 1.3 Gaps in work practices related to Environmental Standards and Procedures are identified	1.1 Environmental Issues 1.2 Environmental Work Procedures 1.3 Environmental Laws 1.4 Environmental Hazardous and Non-Hazardous Materials 1.5 Environmental required license, registration or certification	1.1. Analyzing 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. ***Environmental Indicators*** based on gathered information are set to measure environmental work targets 2.3. Indicators are verified with appropriate personnel	2.1. Environmental Indicators 2.2. Relevant Environment Personnel or expert 2.3. Relevant Environmental Trainings and Seminars	2.1. Investigative Skills 2.2. Critical thinking 2.3. Problem Solving 2.4. Observation Skills
3. Evaluate effectiveness of environmental practices	3.1. Work environmental practices are recorded based on workplace standards 3.2. Recorded work environmental practices are	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

	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		3.4 Observation Skills

RANGE OF VARIABLES

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

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:** 1.1. Identified environmental issues relevant to work requirements 1.2. Identified gaps in work practices related to Environmental Standards and Procedures 1.3. Gathered relevant information necessary to determine environmental work targets 1.4. Set environmental indicators based on gathered information to measure environmental work targets 1.5. Recorded work environmental practices are recorded based on workplace standards 1.6. Conveyed results of environmental assessment to appropriate personnel
2. Resource Implications	**The following resources should be provided:** 2.1 Workplace/Assessment location 2.2 Legislation, policies, procedures, protocols and local ordinances relating to environmental protection 2.3 Case studies/scenarios relating to environmental protection
3. Methods of Assessment	**Competency in this unit may be assessed through:** 3.1 Written/ Oral Examination 3.2 Interview/Third Party Reports 3.3 **Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad)** 3.4 Simulations and role-plays
4. Context for Assessment	4.1 Competency may be assessed in actual workplace or at the designated TESDA center.

UNIT OF COMPETENCY : **FACILITATE ENTREPRENEURIAL SKILLS FOR MICRO-SMALL-MEDIUM ENTERPRISES (MSMEs)**

UNIT CODE : **400311327**

UNIT DESCRIPTOR : This unit covers the outcomes required to build, operate and grow a micro/small-scale enterprise.

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

RANGE OF VARIABLES

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

EVIDENCE GUIDE

1. Critical aspects of competency	**Assessment requires evidence that the candidate :** 1.1 Demonstrated basic entrepreneurial skills 1.2 Demonstrated ability to conceptualize and plan a micro/small enterprise 1.3 Demonstrated ability to manage/operate a micro/small-scale business
2. Resource Implications	The following resources should be provided: 2.1 Simulated or actual workplace 2.2 Tools, materials and supplies needed to demonstrate the required tasks 2.3 References and manuals
3. Methods of Assessment	**Competency in this unit may be assessed through :** 3.1 Written examination 3.2 Demonstration/observation with oral questioning 3.3 Portfolio assessment with interview 3.4 Case problems
4. Context of Assessment	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 Italicized terms are elaborated in the Range of Variables
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 Calculations 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** ***Italicized terms*** are elaborated in the Range of Variables
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 ***measuring instrument*** 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 ***Calculation*** 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. 2.10Numerical 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

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Selected measuring instruments 1.2 Carried out measurements and calculations. 1.3 Maintained measuring instruments
2. Required knowledge	2.1 Types of Measuring instruments and their uses 2.2 Safe handling procedures in using measuring instruments 2.3 Four fundamental operation of mathematics 2.4 Formula for Volume, Area, Perimeter and other geometric figures
3. Required skills	3.1 Caring and Handling measuring instruments 3.2 Calibrating and using measuring instruments 3.1 Performing calculation by Addition, Subtraction, Multiplication and Division 3.2 Visualizing objects and shapes 3.3 Interpreting formula for volume, area, perimeter and other geometric figures
4. Resource implications	The following resources should be provided: 4.1 Workplace location 4.2 Measuring instrument appropriate to servicing processes 4.3 Instructional materials relevant to the propose activity
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Observation with questioning 5.2 Written or oral examination 5.3 Interview 5.4 Demonstration with questioning
6. Context of assessment	6.1 Competency elements must be assessed in a safe working environment 6.2 Assessment may be conducted in a workplace or simulated environment

: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

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Identify and access manual/ specification	1.1 Appropriate ***manuals*** are identified and accessed as per job requirements. 1.2 Version and date of manual are checked to ensure that correct specification and 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

VARIABLE	RANGE
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.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Inspect/clean tools and work area	1.1 Cleaning solvent used as per workshop/tools ***cleaning requirement*** 1.2 ***Work area*** 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: ● Mess hall ● Wash room ● Comfort room
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: 1.1Cleaned workshop tools/facilities 1.2Maintained equipment, tools and facilities 1.3Disposed 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: 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

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Apply basic safety procedures	1.1. ***Policies and procedures*** to achieve a safe working environment are followed and maintained in line with ***occupational health and safety (OHS) procedures*** 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 ***hazards*** 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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate has: 1.1 Communicated effectively with others involved in or affected by the work 1.2 Identified and assessed hazardous situations and rectified, or reported to the relevant persons 1.3 Operated fire-fighting equipment 1.4 Handled safely and stored dangerous and/or hazardous goods and substances 1.5 Applied safe manual handling practices 1.6 Operated safely and effectively equipment and utilized materials over the full range of functions 1.7 Followed worksite evacuation procedures.
2. Required knowledge	General knowledge of: 2.1 The implications of OHS on efficiency, morale and customer relations 2.2 Common automotive terminology 2.3 OHS regulations/requirements, equipment, material and personal safety requirements 2.4 Safe manual handling theories and practices 2.5 The selection and application of fire-fighting equipment 2.6 Dangerous goods and hazardous chemicals handling processes 2.7 Worksite reporting procedures
3. Required Skills	3.1. Collect, organize and understand information related to recognizing and reporting situations 3.2. Communicate ideas and information to reporting procedures (verbal and written) 3.3. Plan and organize activities which implement and follow standard procedures 3.4. Work with others and in a team by assisting and cooperating with team members 3.5. Use mathematical ideas and techniques to document and report numbers for emergency procedures 3.6. Establish diagnostic processes which recommend improvements for OHS issues 3.7. Use workplace technology related to the use of technology to assist with safe work practices
4. Resource Implications	The following resources should be provided: 4.1. A workplace or simulated workplace 4.2. Situations requiring safe working practices 4.3. Worksite or equivalent instructions on safe working practice 4.4. Hazardous chemicals and/or dangerous goods information 4.5. Materials, tooling and equipment 4.6. Firefighting appliances and fire test facilities

5. Methods of Assessment	Competency in this unit may be assessed through: 5.1 Portfolio Assessment 5.2 Interview 5.3 Case Study/Situation
6. Context for Assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT OF COMPETENCY: INTERPRET/DRAW TECHNICALN

DRAWING

UNIT CODE : ALT311205

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

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** t***erms*** 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 ***consumable*** requirements are identified as required 1.5 Symbols are recognized as appropriate in ***drawing***
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 ***Manual***
3. Apply freehand sketching	3.1 Correct freehand sketching is produced using the necessary ***tools and materials***

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	Assessment requires evidence that the candidate: 1.1 Interpreted technical drawing 1.2 Selected correct technical drawing 1.3 Applied freehand sketching
2. Required knowledge	2.1 Drawing standard symbols 2.2 Safe handling of tools and consumables 2.3 Identification of types of drawing 2.4 Patience, Perseverance, Attention to Details
3. Required skills	3.1 Draw/interpret orthographic drawing 3.2 Handling of drawing instruments
4. Resource implications	The following resources should be provided: 4.1 Drawing room 4.2 Appropriate tools 4.3 Materials relevant to activity
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Observation with questioning 5.2 Written/Oral examination 5.3 Presentation of Finished drawing
6. Context of assessment	6.1 Must be assessed in a drawing room or in any simulated places 6.2 Assessment must be given according to industry standard

UNIT OF COMPETENCY : **INSPECT TECHNICAL QUALITY OF WORK**

UNIT CODE : **ALT311207**

UNIT DESCRIPTOR : This unit covers the competence to inspect work done by other staff, apply quality standards to work, and protect customer property and interests

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Gather information to carry out inspection	1.1 ***OH&S requirements***, including company regulatory requirements and personal protection needs are observed throughout the work 1.2 Pertinent ***information*** are sourced 1.3 Different methods are analyzed and those most appropriate to the circumstances are selected and prepared 1.4 Technical and/or calibration requirements for inspection are sourced and needed equipment is identified and prepared
2. Inspect and apply quality standards to work	2.1 Work is identified and confirmed for inspection in accordance with company ***quality procedures*** 2.2 ***Quality Inspections*** are conducted throughout the course of the work to ensure quality standards are maintained 2.3 Quality standards are applied during work completion to ensure the treatment of customer property meets industry and / or company standards 2.4 Activities are coordinated throughout the workplace in accordance with company procedures 2.5 Documents of work quality are maintained according to company requirements
3. Achieve quality work outcomes	3.1 Damage to customer property is avoided through ensuring staff adherence to quality procedures and use of protective materials at all stages of the repair or service 3.2 ***Communication*** pertaining to quality improvements and recommendations are to be done in accordance with company requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. OH&S Requirements	May include: 1.1 Safety equipment 1.2 Personal protective equipment and clothing 1.3 First aid equipment 1.4 Hazard and risk control 1.5 Elimination of hazardous materials and substances manual handling, including shifting, lifting and carrying 1.6 Emergency procedures 1.4 Road rules and safe driving policy
2. Information	May include: 2.1 Manufacturer / component supplier specifications 2.2 Company operating procedures 2.3 Supplier directories 2.4 Parts catalogues 2.5 Customer orders 2.6 Service manual 2.7 Material safety data sheets
3. Quality Procedures	May include: 3.1 Worksite quality system documentation 3.2 Work instructions 3.3 Safe work procedures 3.4 Product specifications 3.5 Equipment maintenance schedules 3.6 Technical procedures 3.7 Adopted or specifically prepared standards
4. Quality Inspections	May include: 4.1 Periodic inspection during the job or observation at completion of the job to ensure all ordered parts have been fitted, components used meet manufacturer / component supplier specifications, invoicing complies with service / repair / parts order and contains sufficient details of labor and / or components used 4.2 Reported and diagnosed problems have been confirmed as rectified thru test procedures and presentation of the vehicle or equipment after service / repair meets manufacturer and Company standards
5. Communication	May include: 5.1 Verbal 5.2 Written 5.3 Telephone or Electronic means

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Observed safety procedures and requirements 1.2 Communicated effectively with others involved in or affected by the work 1.3 Applied OH&S policies and procedures 1.4 Identified quality procedures 1.5 Inspected work undertaken by others 1.5 Applied quality standards to work
2. Required knowledge	A working knowledge of: 2.1 Quality systems in a workplace 2.2 Common automotive terminology 2.3 Vehicle safety requirements 2.4 Work planning processes 2.5 OH&S regulations/requirements, equipment, material and personal safety requirements 2.6 Company quality systems and procedures 2.7 Worksite environmental control measures 2.8 Worksite reporting procedures
3. Required skills	3.1 Communicating ideas and information 3.2 Collecting, analyzing and organizing information 3.3 Planning and organizing activities 3.4 Working with others and in a team 3.5 Using mathematical ideas and techniques 3.6 Solving problems 3.7 Using technology
4. Resource implications	The following resources should be provided: 4.1 A workplace or simulated workplace 4.2 Situations requiring inspections of technical quality 4.3 Computer hardware and software, access to electronic communication
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Direct Observation 5.2 Oral interview 5.3 Written Evaluation 5.4 Third Party Report
6. Context of assessment	6.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions

UNIT OF COMPETENCY **MAINTAIN QUALITY SYSTEMS**

UNIT CODE **ALT311208**

UNIT DESCRIPTOR This unit of competency covers the competence to conduct the final quality check on completed work or orders, report on the quality of processes and work outcomes, and implement improvements to work processes

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Conduct final quality check on completed work / orders	1.1. Completed work / orders are checked for compliance with supplier, company or customer specifications 1.2. Level of inspection conducted is appropriate to the size and importance of the job 1.3. Documentation is authorized in accordance with company requirements 1.4. Feedback is provided to staff on the quality of their work with equal emphasis on strengths and weaknesses and opportunities for development
2. Report on the quality of processes and work outcomes	2.1. ***Documents*** are kept according to company ***quality procedures*** on outcomes of quality checks 2.2. ***Quality problems*** are identified according to company ***performance indicators*** 2.3. ***Information*** relating to the quality of processes and work outcomes is provided to appropriate persons on a regular basis
3. Implement improvements to work processes	3.1. Staff input is encouraged to generate possible solutions to quality problems 3.2. Options for solving quality problems are generated and the costs and benefits of each option are evaluated 3.3. Recommended solutions to quality problems are discussed with management 3.4. Improvements to work processes are implemented according to company policies and procedures

RANGE OF VARIABLES

VARIABLE	RANGE
1. Quality procedures	May include: 1.1 Company quality system documentation 1.2 Work instructions 1.3 Safe work procedures 1.4 Product specifications 1.5 Equipment maintenance schedules 1.6 Technical procedures and adopted or specifically prepared standards
2. Performance indicators	May include: • account for issues of time, quantity, quality and cost factors and may include establishing time targets for own work, identifying reasonable criteria for evaluating own work outcomes, identifying measures to avoid wastage, identifying reasonable criteria to judge internal and/or external customer satisfaction
3. Quality problems	May include: 3.1 Misdiagnosed faults 3.2 Jobs requiring rework 3.3 Jobs which do not meet customer requirements 3.4 Repairs which do not fix the problem within the allocated timeframe
4. Communication	May include: 4.1 Verbal 4.2 Written 4.3 Telephone or other means
5. Information/documents	May include: 5.1 Vehicle manufacturer practices 5.2 Company operating procedures 5.3 Supplier directories 5.4 Parts catalogues 5.5 Customer orders and industry/workplace codes of practice 5.6 Material safety data sheets (MSDS)

EVIDENCE GUIDE

Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Communicated effectively with others involved in or affected by the work 1.2 Identified quality system procedures and needs 1.3 Identified performance indicators 1.4 Conducted final quality checks on completed work orders 1.5 Reported on the quality of processes and work outcomes 1.6 Monitored and adjusted performance indicators to meet changing circumstances 1.7 Processed and implemented recommendations for change
2. Required knowledge	Competency includes sufficient knowledge to: Knowledge of: • quality systems and application techniques in a work environment • typical loss and damage control systems • work planning and organization processes • occupational health and safety (OHS) regulations/requirements, equipment, material and personal safety requirements at the worksite • enterprise quality systems and procedures • worksite information management systems
3. Required skills	Required skills include the ability to: 3.1 Research and interpretive skills to locate, interpret and apply quality audit policies and procedures 3.2 Investigative and analytical skills required for identification and analysis of quality breaches, incidents or risks, and identification of quality related training needs 3.3 English literacy and communication skills in relation to dealing with customers and team members on worksite quality audit issues 3.4 Questioning and active listening skills 3.5 Written communication skills sufficient to prepare reports, document investigations and maintain worksite quality documents 3.6 Plan and organize activities for leadership skills required in organizing, implementing and promoting worksite quality systems and measures 3.7 Work with others and in a team by seeking advice and

	assistance from team members
	3.8 Use mathematical ideas and techniques to document quantities and company sampling procedures 3.9 Establish diagnostic processes which analyze problems and recommend solutions 3.10 Use the workplace technology related to document and analyze quality problems
4.Resource implications	The following resources should be provided: 4.1 A workplace or simulated workplace 4.2 Situations requiring worksite quality systems maintenance 4.3 Worksite quality policies and procedures 4.4 Worksite quality documents system 4.5 Materials, tooling and equipment
5.Method of assessment	Competency in this unit may be assessed through: 5.1 Direct Observation 5.2 Oral interview 5.3 Written Evaluation 5.4 Third Party Report
6.Context of assessment	Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions

UNIT OF COMPETENCY **IDENTIFY AND SELECT ORIGINAL AUTOMOTIVE PARTS AND PRODUCTS**

UNIT CODE **ALT723210**

UNIT DESCRIPTOR This unit of competency covers the competence required to identify original automotive parts and products based on evidence from customers and/or other sources which may include catalogue numbers or samples of parts/products or their purpose

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Identify the part/product and its end use	1.1 Available ***part/product information*** is gathered, documented and confirmed with customer 1.2 ***Information gathering techniques*** is established for proper identification of part/product 1.3 End user or host for the part/product, i.e. vehicle/unit assembly or vehicle/unit assembly options, is established from an analysis of available information
2. Identify details of the part/product	2.1 The ***parts/product cataloguing system*** is identified and accessed 2.2 Part/product is matched accurately with cataloguing information by accessing and using the catalogue system 2.3 Details of identity of the part/product are documented and processed
3. Part/product is supplied or ordered for customer	3.1 Customer accepts process used 3.2 Part/product is supplied or ordered if not available 3.3 Customer records are updated

RANGE OF VARIABLES

VARIABLE	RANGE
1. Part/product information	May include: 1.1 Manufacturer/component supplier specifications and technical documentation 1.2 Company procedures and documentation 1.3 Company or industry specifications, diagrams, sketches 1.4 Verbal descriptions and physical and visual evidence
2. Information gathering techniques	May include: 2.1 Common vehicle/unit model 2.2 Date of manufacture 2.3 Purpose and appearance of product and other tracking information
3. Parts/products cataloguing systems	May include: 3.1 Hard-copy (book-fast, loose-leaf) 3.2 Stand-alone computer or networked/online computer-supported services

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Elicited sufficient information from the customer and/or other sources to enable a confirmed identification of vehicle or unit the part/product intended 1.2 Accessed the parts/products catalogue systems associated with required vehicle/unit 1.3 Used both manual and computer-based parts/products catalogues and equivalent documentation to trace and identify common specific brand parts/products 1.4 Communicated effectively with others involved in or affected by the work.
2. Required knowledge	Competency includes sufficient knowledge to: 2.1 Structural of computer workstations 2.2 Common automotive terminology 2.3 Main automotive systems and assemblies and their functions 2.4 Parts/product catalogue systems, both brand-specific and general options 2.5 Legal issues associated with the supply and use of non-conforming parts/components/accessories 2.6 Company quality system 2.7 Work organization and planning processes
3. Required skills	Required skills include the ability to: 3.1 Apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures 3.2 Apply analytical skills required for identification and analysis of technical information 3.3 Apply plain English literacy and communication skills in relation to dealing with customer and team members 3.4 Apply questioning and active listening skills 3.5 Apply oral communication skills sufficient to convey information and concepts to customers 3.6 Apply planning and organizing skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance 3.7 Use mathematical ideas and techniques to correctly calculate material requirements, estimate and calculate costs and establish quality checks 3.8 Use workplace technology related to customer services, including use of measuring equipment, computerized technology, use of communication devices and reporting/ documenting of results

CORE COMPETENCIES

UNIT OF COMPETENCY : OPERATE AUTOMOTIVE COATING PRODUCTION LINE

UNIT CODE : CS-ALT713301

UNIT DESCRIPTOR : This unit covers the knowledge, skills, and attitudes required to operating automotive coating production line. It includes preparing coating workstation and materials, operating automotive coating equipment, controlling coating process, inspecting coated surfaces for quality compliance and maintaining coating equipment and workstation.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Prepare coating workstation and materials	1.1 ***Tools, equipment, and PPE*** are prepared in accordance with work instructions and safety requirements. 1.2 ***Coating materials*** are identified and prepared according to manufacturer's specifications 1.3 ***Work area*** are cleaned and arranged in accordance with workplace safety and efficiency standards.	**SCIENCE** 1.1 Properties of different automotive coating materials (primer, basecoat, clear coat) 1.2 Chemical reactions during mixing and curing **TECHNOLOGY** 1.3 Functions of coating preparation equipment such as mixers and agitators 1.4 Proper selection and use of PPE for coating preparation. **ENVIRONMENT** 1.5 Workplace ventilation requirements for coating preparation areas 1.6 Procedures for minimizing emissions during mixing **MATHEMATICS** 1.7 Calculating coating material quantities	1.1 Selecting appropriate PPE for coating activities 1.2 Interpreting coating material labels and technical data 1.3 Handling coating materials safely during preparation

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
		based on production requirements 1.8 Determining correct mixing ratios for multiple-component coatings **COMMUNICATION** 1.9 Interpreting coating material labels and technical data sheets 1.10 Understanding preparation checklists and work instructions	
2. Operate automotive coating equipment	2.1 Coating machinery are started and set in compliance with production requirements. 2.2 Components are positioned according to jigs, fixtures, or conveyor systems. 2.3 Coating applications are carried out following standard operating procedures (SOP) and safety guidelines.	**SCIENCE** 2.1 Principles of paint adhesion and curing in automotive applications 2.2 Effects of temperature, humidity, and airflow on coating quality **TECHNOLOGY** 2.3 Functions and operation of spray guns, robotic sprayers, and conveyor systems 2.4 Adjustment of spray patterns, fluid pressure, and atomization **ENVIRONMENT** 2.5 Environmental controls to reduce overspray and	2.1 Adjusting spray gun settings to achieve desired coating quality 2.2 Aligning components accurately on fixtures or conveyors 2.3 Controlling application speed to ensure uniform coverage

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
		airborne particulates 2.6 Compliance with workplace environmental regulations during operation **MATHEMATICS** 2.7 Calculating spray time and coverage area for various components 2.8 Interpreting machine parameter charts and setting adjustments **COMMUNICATION** 2.9 Interpreting SOPs and technical manuals for coating equipment 2.10 Coordinating with line supervisors to adjust production speed or sequence	
3. Control coating process	3.1 Coating thickness and finish are controlled using approved devices in accordance with quality specifications 3.2 Abnormalities in equipment performance and coating quality are reported in compliance with workplace reporting procedures. 3.3 Process adjustments are made within job role limits in accordance with	**SCIENCE** 3.1 Effect of temperature and humidity on coating performance. **TECHNOLOGY** 3.2 Use of coating thickness gauges and finish inspection tools. **ENVIRONMENT** 3.3 Maintaining environmental conditions to meet quality standards. **MATHEMATICS** 3.4 Interpreting measurement readings for coating thickness. **COMMUNICATION**	3.1 Using coating thickness gauges and gloss meters 3.2 Recognizing signs of coating defects during production 3.3 Making minor process adjustments to correct deviations

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	established quality standards.	3.5 Reporting coating process deviations to supervisors.	
4. Inspect coated surfaces for quality compliance	4.1 Coated surfaces are visually inspected for defects such as runs, sags, uneven coverage in accordance with inspection 4.2 Quality inspection is conducted in accordance with company standards and specifications. Defective coated components are tagged for rework and disposal in accordance with workplace procedures.	**SCIENCE** 4.1 Causes of common coating defects in automotive painting. **TECHNOLOGY** 4.2 Operation of gloss meters and defect detection tools **ENVIRONMENT** 4.3 Cleanliness requirements for inspection areas. **MATHEMATICS** 4.4 Comparing coating thickness readings against tolerances. **COMMUNICATION** 4.5 Documenting and communicating inspection results.	4.1 Comparing inspection results against quality standards 4.2 Detecting surface defects through visual and tactile inspection Documenting quality findings for reporting purposes
5. Maintain coating equipment and workstation	5.1 Equipment is cleaned according to manufacturer's guidelines after production runs. 5.2 Routine maintenance tasks are performed in accordance with established maintenance schedules 5.3 Waste materials and chemicals are disposed of according to environmental and workplace safety procedures.	**SCIENCE** 5.1 Effect of residue build-up on coating performance. **TECHNOLOGY** 5.2 Cleaning procedures for coating equipment. **ENVIRONMENT** 5.3 Proper disposal of hazardous coating waste **MATHEMATICS** 5.4 Scheduling maintenance intervals. **COMMUNICATION** 5.6 Recording maintenance activities and reports.	5.1 Applying safe cleaning methods for coating tools and machinery 5.2 Identifying wear and tear on equipment components 5.3 Organizing maintenance records and schedules

RANGE OF VARIABLES

VARIABLE	Range
1. Tools, equipment, and PPI	Tools, equipment, and PPE may include: 1.1 Tools 1.1.1 Spray guns (conventional, HVLP) 1.1.2 Mixing devices 1.1.3 Agitators 1.2 Equipment 1.2.1 Conveyor systems 1.2.2 Coating booths 1.2.3 Curing ovens 1.3 Personal Protective Equipment (PPE) 1.3.1 Respirators or masks 1.3.2 Protective gloves 1.3.3 Goggles/face shields 1.3.4 Protective clothing
2. Coating materials	Coating materials may include: 2.1 Primers 2.2 Basecoats 2.3 Clear coats 2.4 Thinners, hardeners, solvents, additives
3. Work area	Work area may include: 3.1 Cleanliness requirements 3.2 Arrangement for workflow efficiency 3.3 Safety compliance standards
4. Coating machinery	Coating machinery may include: 4.1 Start-up and shut-down controls 4.2 Parameter setting systems 4.3 Operator interfaces
5. Jigs, fixtures, or conveyor systems	Jigs, fixtures, or conveyor systems may include: 5.1 Component holding fixtures 5.2 Positioning jigs 5.3 Conveyor belt or track systems
6.Approved measuring devices	Approved measuring devices may include: 6.1 Wet film thickness gauge 6.2 Dry film thickness gauge 6.3 Gloss meter

EVIDENCE GUIDE

1.Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Prepared coating workstation and materials 1.1.1 Prepared tools, equipment and PPE 1.1.2 Identified and prepared coating materials 1.1.3 Cleaned and arranged work area 1.2 Operated automotive coating equipment 1.2.1 Started and set coating machinery 1.2.2 Positioned components 1.2.3 Carried out coating application 1.3 Controlled coating process 1.3.1 Controlled coating thickness and finish using approved devices 1.3.2 Reported abnormalities in equipment performance and coating quality 1.3.3 Made process adjustment within job role limits 1.4 Inspected coated surfaces for quality compliance 1.4.1 Inspected coated surfaces visually such as runs, sags, and uneven coverage 1.4.2 Conducted quality inspection 1.4.3 Tagged defective coated components for rework and disposal 1.5 Maintained coating equipment and workstation 1.5.1 Cleaned equipment 1.5.2 Performed routine maintenance task 1.5.3 Disposed waste materials and chemicals
2.Resource Implications	The following resources should be provided: 2.1. Tools, equipment, and PPE 2.2. Coating materials in accordance with work instructions. 2.3. Coating machinery with operational parameter settings. 2.4. Approved measuring devices for coating thickness and finish. 2.5. Workplace documents including SOPs, company standards, inspection procedures, and maintenance schedules.
3. Methods of Assessment	Competency in this unit may be assessed through 3.1 Direct observation of actual work activities as described in the Performance Criteria. 3.2 Questioning to assess knowledge related to the Science, Technology, Environment, Mathematics, and Communication aspects of the task. 3.3 Review of completed inspection reports, maintenance records, and waste disposal documentation.

4. Context for Assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY : OPERATE AUTOMOTIVE WELDING PRODUCTION LINE

UNIT CODE : CS-ALT713302

UNIT DESCRIPTOR : This unit covers the knowledge, skills, and attitudes required to operating automotive welding production line. It includes preparing welding workstation, operating welding equipment, monitoring welding process, inspecting welded components and maintaining welding equipment.

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Prepare welding workstation	1.1 ***Tools, equipment, and PPE*** are prepared in accordance with work instructions and safety requirements. 1.2 ***Welding materials*** are identified in accordance with job requirements. 1.3 Work area is cleaned and arranged in accordance with workplace safety and efficiency standards.	**SCIENCE** 1.1 Basic principles of heat transfer in welding. **TECHNOLOGY** 1.2 Functions of welding machines and accessories. **ENVIRONMENT** 1.3 Ventilation requirements for welding operations. **MATHEMATICS** 1.4 Determining quantities of welding consumables. **COMMUNICATION** 1.5 Interpreting welding preparation instructions.	1.1 Selecting appropriate PPE for welding activities 1.2 Arranging tools and equipment for efficient workflow 1.3 Handling welding consumables safely 1.4 Preparing the welding workstation to meet safety standards
2. Operate welding equipment	2.1 ***Welding machinery*** is started and set in accordance with specified	**SCIENCE** 2.1 Principle of metal fusion in welding **TECHNOLOGY**	2.1 Adjusting welding parameters for different materials

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	operating parameters. 2.2 Components are secured according to jigs, fixtures, or conveyor systems. 2.3 Welding is carried out following standard operating procedures (SOP) and safety guidelines.	2.2 Operation of MIG, TIG, or resistance welding machines **ENVIRONMENT** 2.3 Controlling sparks and fumes to reduce hazards **MATHEMATICS** 2.4 Adjusting current and voltage based on weld requirements **COMMUNICATION** 2.5 Interpreting welding machine operating manuals	2.2 Positioning components accurately on jigs or conveyors 2.3 Operating welding equipment according to SOPs 2.4 Controlling welding speed for consistent quality
3. Monitor welding process	3.1 Weld quality is monitored using ***approved inspection methods*** in accordance with quality specification 3.2 Abnormalities in equipment performance are identified in compliance with workplace reporting procedures. 3.3 Abnormalities in weld quality are identified in compliance with workplace reporting procedures. 3.4 Abnormalities in equipment performance are reported in compliance with	**SCIENCE** 3.1 Effects of heat input on metal properties **TECHNOLOGY** 3.2 Use of welding inspection gauges and NDT tools **ENVIRONMENT** 3.3 Maintaining safe working conditions during welding **MATHEMATICS** 3.4 Measuring weld dimensions against specifications **COMMUNICATION** 3.5 Reporting process deviations to supervisors	3.1 Using weld gauges to verify quality 3.2 Recognizing welding defects during operation 3.3 Adjusting welding parameters to correct deviations 3.4 Recording process observations accurately

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	workplace reporting procedures. 3.5 Abnormalities in weld quality are reported in compliance with workplace reporting procedures.		
4.Inspect welded components	4.1 Welded joints are visually inspected for defects such as porosity, cracks, undercut, or lack of fusion in accordance with inspection procedures. 4.2 Quality inspection is conducted in compliance with company standards and specifications. 4.3 Defective welded components are segregated for disposal in accordance with workplace procedures.	**SCIENCE** 4.1 Causes of common welding defects. **TECHNOLOGY** 4.2 Use of visual inspection tools and gauges **ENVIRONMENT** 4.3 Ensuring inspection area cleanliness and safety **MATHEMATICS** 4.4 Comparing weld measurements against tolerances **COMMUNICATION** 4.5 Documenting inspection results clearly	4.1 Comparing weld quality against reference standards 4.2 Identifying welding defects using visual and tactile methods 4.3 Recording inspection results for quality control 4.4 Tagging defective components for rework or disposal
5. Maintain welding equipment	5.1 Welding equipment is cleaned in accordance with manufacturer's guidelines after production runs. 5.2 Routine maintenance tasks are performed in accordance with established	**SCIENCE** 5.1 Effect of residue buildup on welding performance **TECHNOLOGY** 5.2 Cleaning procedures for welding equipment **ENVIRONMENT**	5.1 Identifying wear and tear on welding equipment 5.2 Selecting appropriate cleaning agents for welding machines 5.3 Applying safe cleaning techniques for

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	maintenance schedules. 5.3 Routine maintenance tasks are reported in accordance with established maintenance schedules 5.4 Waste materials are disposed of in accordance with environmental and workplace safety procedures 5.5 Consumables are disposed of in accordance with environmental and workplace safety procedures.	5.3 Regulations for disposing welding waste and consumables **MATHEMATICS** 5.4 Scheduling maintenance activities **COMMUNICATION** **5.5** Recording maintenance reports and logs	welding tools and accessories 5.4 Organizing maintenance schedules and task lists 5.5 Preparing reports for completed maintenance activities 5.6 Segregating and handling welding waste in compliance with procedures

RANGE OF VARIABLES

VARIABLE	Range
1. Tools, equipment, and PPE	Tools, equipment and PPE may include: 1.1. Tools 1.1.1. Welding machines (MIG, TIG, resistance) 1.2. Equipment 1.2.1. Welding shields and helmets 1.3. PPE 1.3.1. Protective gloves and clothing
2. Welding materials	Welding materials may include: 2.1 Welding electrodes 2.2 Shielding gases 2.3 Filler rods
3. Welding machinery	Welding machinery may include: 3.1 Start-up controls 3.2 Parameter adjustment systems 3.3 Monitoring panels
4. Approved inspection methods	4. Approved inspection methods may include: 4.1 Weld gauges 4.2 Visual inspection tools 4.3 NDT equipment

EVIDENCE GUIDE

1.Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Prepared welding workstation 1.1.1 Prepared tools, equipment and PPE 1.1.2 Identified welding materials 1.1.3 Cleaned and arranged work area 1.2 Operated welding equipment 1.2.1 Started and set welding machinery 1.2.2 Secured components 1.2.3 Carried out welding 1.3 Monitored welding process 1.3.1 Monitored weld quality 1.3.2 Identified abnormalities in equipment performance 1.3.3 Identified abnormalities in weld quality 1.3.4 Reported abnormalities in equipment performance 1.3.5 Reported abnormalities in weld quality 1.4 Inspected welded components 1.4.1 Inspected welded joints 1.4.2 Conducted quality inspection 1.4.3 Segregated detective welded components for disposal 1.5 Maintained welding equipment 1.5.1 Cleaned welding equipment 1.5.2 Performed routine maintenance task 1.5.3 Reported routine maintenance task 1.5.4 Disposed waste materials 1.5.5 Disposed consumables
2.Resource Implications	The following resources should be provided: 2.1 Welding machines and accessories 2.2 PPE appropriate to the welding process 2.3 Welding materials and consumables 2.4 Inspection tools and NDT equipment 2.5 Workplace documents (SOPs, inspection checklists, quality standards)
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Direct observation of practical welding tasks in a workplace or simulated environment 3.2 Oral questioning to confirm knowledge of STEMC topics 3.3 Review of completed inspection reports and defect documentation
4.Context for Assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY : **OPERATE AUTOMOTIVE WELDING PRODUCTION LINE**

UNIT CODE : **CS-ALT713303**

UNIT DESCRIPTOR : This unit covers the knowledge, skills, and attitudes required to operating automotive welding production line. It includes preparing welding workstation, operating welding equipment, monitoring welding process, inspecting welded components and maintaining welding equipment

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Prepare welding workstation	1.1 ***Tools, equipment, and PPE*** are prepared in accordance with work instructions and safety requirements. 1.2 ***Welding materials*** are identified in accordance with job requirements. 1.3 Work area is cleaned and arranged in accordance with workplace safety and efficiency standards.	**SCIENCE** 1.1 Basic principles of heat transfer in welding. **TECHNOLOGY** 1.2 Functions of welding machines and accessories. **ENVIRONMENT** 1.3 Ventilation requirements for welding operations. **MATHEMATICS** 1.4 Determining quantities of welding consumables. **COMMUNICATION** 1.5 Interpreting welding preparation instructions.	1.1 Selecting appropriate PPE for welding activities 1.2 Arranging tools and equipment for efficient workflow 1.3 Handling welding consumables safely 1.4 Preparing the welding workstation to meet safety standards
2. Operate welding equipment	2.1 ***Welding machinery*** is started and set in accordance with specified operating parameters. 2.2 Components are secured according to jigs, fixtures, or conveyor systems. 2.3 Welding is carried out following standard operating procedures	**SCIENCE** 2.1 Principle of metal fusion in welding **TECHNOLOGY** 2.2 Operation of MIG, TIG, or resistance welding machines **ENVIRONMENT** 2.3 Controlling sparks and fumes to reduce hazards **MATHEMATICS**	2.1 Adjusting welding parameters for different materials 2.2 Positioning components accurately on jigs or conveyors 2.3 Operating welding

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	(SOP) and safety guidelines.	2.4 Adjusting current and voltage based on weld requirements **COMMUNICATION** 2.5 Interpreting welding machine operating manuals	equipment according to SOPs 2.4 Controlling welding speed for consistent quality
3. Monitor welding process	3.1 Weld quality is monitored using ***approved inspection methods*** in accordance with quality specification 3.2 Abnormalities in equipment performance are identified in compliance with workplace reporting procedures. 3.3 Abnormalities in weld quality are identified in compliance with workplace reporting procedures. 3.4 Abnormalities in equipment performance are reported in compliance with workplace reporting procedures. 3.5 Abnormalities in weld quality are reported in compliance with workplace reporting procedures.	**SCIENCE** 3.1 Effects of heat input on metal properties **TECHNOLOGY** 3.2 Use of welding inspection gauges and NDT tools **ENVIRONMENT** 3.3 Maintaining safe working conditions during welding **MATHEMATICS** 3.4 Measuring weld dimensions against specifications **COMMUNICATION** 3.5 Reporting process deviations to supervisors	3.1 Using weld gauges to verify quality 3.2 Recognizing welding defects during operation 3.3 Adjusting welding parameters to correct deviations 3.4 Recording process observations accurately
4.Inspect welded components	4.1 Welded joints are visually inspected for defects such as porosity, cracks, undercut, or lack of fusion in accordance with inspection procedures. 4.2 Quality inspection is conducted in compliance	**SCIENCE** 4.1 Causes of common welding defects. **TECHNOLOGY** 4.2 Use of visual inspection tools and gauges **ENVIRONMENT**	4.1 Comparing weld quality against reference standards 4.2 Identifying welding defects using visual and

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	with company standards and specifications. 4.3 Defective welded components are segregated for disposal in accordance with workplace procedures.	4.3 Ensuring inspection area cleanliness and safety **MATHEMATICS** 4.4 Comparing weld measurements against tolerances **COMMUNICATION** 4.5 Documenting inspection results clearly	tactile methods 4.3 Recording inspection results for quality control 4.4 Tagging defective components for rework or disposal
5. Maintain welding equipment	5.6 Welding equipment is cleaned in accordance with manufacturer's guidelines after production runs. 5.7 Routine maintenance tasks are performed in accordance with established maintenance schedules. 5.8 Routine maintenance tasks are reported in accordance with established maintenance schedules 5.9 Waste materials are disposed of in accordance with environmental and workplace safety procedures 5.10 Consumables are disposed of in accordance with environmental and workplace safety procedures.	**SCIENCE** 5.6 Effect of residue buildup on welding performance **TECHNOLOGY** 5.7 Cleaning procedures for welding equipment **ENVIRONMENT** 5.8 Regulations for disposing welding waste and consumables **MATHEMATICS** 5.9 Scheduling maintenance activities **COMMUNICATION** **5.10** Recording maintenance reports and logs	5.7 Identifying wear and tear on welding equipment 5.8 Selecting appropriate cleaning agents for welding machines 5.9 Applying safe cleaning techniques for welding tools and accessories 5.10 Organizing maintenance schedules and task lists 5.11 Preparing reports for completed maintenance activities 5.12 Segregating and handling welding waste in compliance

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
			with procedures

RANGE OF VARIABLES

VARIABLE	Range
1. Tools, equipment, and PP	Tools, equipment and PPE may include: 1.4. Tools 1.4.1. Welding machines (MIG, TIG, resistance) 1.5. Equipment 1.5.1. Welding shields and helmets 1.6. PPE 1.6.1. Protective gloves and clothing
2. Welding materials	Welding materials may include: 2.4 Welding electrodes 2.5 Shielding gases 2.6 Filler rods
3. Welding machinery	Welding machinery may include: 3.4 Start-up controls 3.5 Parameter adjustment systems 3.6 Monitoring panels
4. Approved inspection methods	4. Approved inspection methods may include: 4.4 Weld gauges 4.5 Visual inspection tools 4.6 NDT equipment

EVIDENCE GUIDE

1.Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Prepared welding workstation 1.1.4 Prepared tools, equipment and PPE 1.1.5 Identified welding materials 1.1.6 Cleaned and arranged work area 1.2 Operated welding equipment 1.2.4 Started and set welding machinery 1.2.5 Secured components 1.2.6 Carried out welding 1.3 Monitored welding process 1.3.6 Monitored weld quality 1.3.7 Identified abnormalities in equipment performance 1.3.8 Identified abnormalities in weld quality 1.3.9 Reported abnormalities in equipment performance 1.3.10 Reported abnormalities in weld quality 1.4 Inspected welded components 1.4.4 Inspected welded joints 1.4.5 Conducted quality inspection 1.4.6 Segregated detective welded components for disposal 1.5 Maintained welding equipment 1.5.6 Cleaned welding equipment 1.5.7 Performed routine maintenance task 1.5.8 Reported routine maintenance task 1.5.9 Disposed waste materials 1.5.10 Disposed consumables
2.Resource Implications	The following resources should be provided: 2.6 Welding machines and accessories 2.7 PPE appropriate to the welding process 2.8 Welding materials and consumables 2.9 Inspection tools and NDT equipment 2.10 Workplace documents (SOPs, inspection checklists, quality standards)
3. Methods of Assessment	Competency in this unit may be assessed through:

	3.4 Direct observation of practical welding tasks in a workplace or simulated environment 3.5 Oral questioning to confirm knowledge of STEMC topics 3.6 Review of completed inspection reports and defect documentation
4.Context for Assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY : **OPERATE AUTOMOTIVE METAL FORMING PRODUCTION**

UNIT CODE : **CS-ALT713304**

UNIT DESCRIPTOR : This unit covers the knowledge, skills, and attitudes required to operating automotive metal forming production. It includes preparing metal forming workstation, operating metal forming equipment and monitoring metal forming process.

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Prepare metal flotation	1.1 Tools, equipment, and ***PPE*** are prepared in accordance with work instructions and safety requirements. 1.2 ***Forming materials*** are positioned in accordance with job requirements. 1.3 Work area is cleaned and arranged in accordance with workplace safety and efficiency standards.	**SCIENCE** 1.1 Principles of metal deformation under pressure. **TECHNOLOGY** 1.2 Functions of stamping presses and forging hammers. **ENVIRONMENT** 1.3 Ventilation and noise control requirements for forming areas. **MATHEMATICS** 1.4 Calculating material quantities for production runs. **COMMUNICATION** 1.5 Interpreting work instructions and process flow diagrams.	1.1 Selecting appropriate PPE for metal forming operations 1.2 Arranging workstation tools for efficient workflow 1.3 Handling metal sheets and billets safely 1.4 Positioning forming dies and tooling correctly .
2. Operate metal forming equipment	2.1 ***Forming machinery*** is started in accordance with specified operating parameters.	**SCIENCE** 2.1 Metal properties affecting formability. **TECHNOLOGY**	2.1 Setting forming parameters on machine controls 2.2 Aligning components

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.2 Components are positioned on forming dies according to work instructions 2.3 Forming operations are carried out following standard operating procedures (SOP) and safety guidelines.	2.2 Operation of hydraulic and mechanical presses **ENVIRONMENT** 2.3 Safe handling practices for hot and sharp-edged components **MATHEMATICS** 2.4 Adjusting machine stroke and pressure settings **COMMUNICATION** 2.5 Reading and interpreting equipment manuals	accurately on dies 2.3 Operating forming equipment according to SOPs 2.4 Controlling forming cycle speed for consistent output
3. Monitor metal forming process	3.1 Formed components are monitored using approved in accordance with quality specifications. 3.2 Abnormalities in equipment performance are reported in compliance with workplace reporting procedures. 3.3 Abnormalities in formed component quality are reported in compliance with workplace	**SCIENCE** 3.1 Causes of defects in formed components **TECHNOLOGY** 3.2 Use of gauges and measuring devices for formed part. **ENVIRONMENT** 3.3 Maintaining safe and hazard-free conditions during operation **MATHEMATICS**	3.1 Using inspection gauges to verify formed component quality 3.2 Detecting abnormalities in formed components during production 3.3 Detecting abnormalities in equipment performance during operation 3.4 Adjusting forming parameters to correct deviations

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	reporting procedures 3.4 Process adjustments are made within job role limits in accordance with established quality standards.	3.4 Quantitative and qualitative evaluation of audience response. **COMMUNICATION** 3.5 Documenting and reporting process deviations	3.5 Recording and reporting process monitoring results

RANGE OF VARIABLES

VARIABLE	Range
1. Forming machinery	Forming machinery may include: 1.1 Hydraulic presses 1.2 Mechanical presses 1.3 Forging machines
2. PPE	PPE may include: 2.1 Helmets 2.2 Gloves 2.3 Safety glasses 2.4 Protective clothing 2.5 Ear protection
3. Forming materials	Forming materials may include: 3.1 Metal sheets 3.2 Metal billets

EVIDENCE GUIDE

1.Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Prepared metal forming workstation 1.1.1 Prepared tools, equipment and PPE 1.1.2 Positioned forming materials 1.1.3 Cleaned and arranged work area 1.2 Operated metal forming equipment 1.2.1 Started forming machinery 1.2.2 Positioned components on forming dies 1.2.3 Carried out forming operations 1.3 Monitored metal forming process 1.3.1 Monitored formed components using approved inspection methods 1.3.2 Reported abnormalities in equipment performance 1.3.3 Reported abnormalities in formed component quality 1.3.4 Made process adjustment
2.Resource Implications	The following resources should be provided: 2.1 Forming machinery with operational parameter settings. 2.2 Tools, equipment, and PPE 2.3 Forming materials in accordance with work instructions 2.4 Approved inspection tools for checking component quality. 2.5 Workplace documents including SOPs, standards, and maintenance schedules
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Direct observation of actual work activities as described in the Performance Criteria 3.2 Questioning to assess knowledge related to the Science, Technology, Environment, Mathematics, and Communication aspects of the task. 3.3 Review of completed inspection reports, maintenance records, and waste disposal documentation. .
4. Context for Assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY : OPERATE AUTOMOTIVE METAL MACHINING AND FINISHING PRODUCTION LINE

UNIT CODE : CS-ALT713305

UNIT DESCRIPTOR : This unit covers the knowledge, skills, and attitudes required to operating automotive metal machining and finishing production line. It Includes preparing machining and finishing workstation, operating machining and finishing equipment, monitoring machining and finishing process, inspecting machined and finished components and maintaining machining and finishing equipment.

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Prepare machining and finishing workstation	1.1 Tools, equipment, and ***PPE*** are prepared in accordance with work instructions. 1.2 ***Machining and finishing materials*** are checked in accordance with job requirements. 1.3 Work area is arranged in accordance with safety and efficiency requirements.	**SCIENCE** 1.1 Basic principles of machining and finishing processes **TECHNOLOGY** 1.2 Safe arrangement of work areas for efficiency **ENVIRONMENT** 1.3 Safe arrangement of work areas for efficiency **MATHEMATICS** 1.4 Reading and interpreting measurements on material specifications **COMMNUNICATION** 1.5 Understanding and following work instructions.	1.1. Preparing tools, equipment, and PPE 1.2. Checking machining and finishing materials 1.3. Arranging work areas for safety and efficiency
2. Operate machining and finishing equipment	2.1 ***Machining and finishing equipment*** is started in accordance with	**SCIENCE** 2.1 Effects of cutting speeds, feeds,	2.1 Starting machining and finishing equipment

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	specified parameters. 2.2 Components are positioned in accordance with job specifications. 2.3 Machining and finishing operations are performed in accordance with standard operating procedures 2.4 Safety procedures are followed during machining and finishing operations .	and finishes on materials **TECHNOLOGY** 2.2 Operation of machining and finishing equipment. **ENVIRONMENT** 2.3 Safe handling of materials during operations. **MATHEMATICS** 2.4 Calculating operational parameters. **COMMUNICATION** 2.5 Interpreting standard operating procedures	2.2 Positioning components in equipment 2.3 Performing machining and finishing operations 2.4 Following safety procedures
3. Monitor machining and finishing process	3.1 Components are monitored using ***approved measuring and inspection methods*** in accordance with quality specifications. 3.2 Abnormalities in equipment performance are reported in accordance with workplace procedures. 3.3 Abnormalities in product quality are reported in accordance with workplace procedures. 3.4 Process adjustments are made within job role limits in	**SCIENCE** 3.1 Causes of machining and finishing defects **TECHNOLOGY** 3.2 Use of measuring and inspection tools **ENVIRONMENT** 3.3 Maintaining safe conditions during operations. **MATHEMATICS** 3.4 Measuring dimensions and comparing tolerances **COMMUNICATION** 3.5 Reporting abnormalities	3.1 Monitoring components using inspection methods 3.2 Reporting abnormalities in equipment performance 3.3 Reporting abnormalities in product quality 3.4 Adjusting process parameters within job limits

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	accordance with quality standards.		
4. Inspect machined and finished components	4.1 Machined and finished components are visually inspected for defects in accordance with quality standards 4.2 Quality inspection is conducted in accordance with company specifications. 4.3 ***Defective components*** are segregated and in accordance with workplace procedures.	**SCIENCE** 4.1 Types of defects in machined and finished components **TECHNOLOGY** 4.2 Quality inspection methods for machined and finished parts **ENVIRONMENT** 4.3 Safe handling of inspected components **MATHEMATICS** 4.4 Comparing measured results to specifications **COMMUNICATION** 4.5 Documenting inspection results	4.1 Inspecting machined and finished components 4.2 Conducting quality inspections 4.3 Segregating and tagging defective components
5. Maintain machining and finishing equipment	5.1 Equipment is cleaned in accordance with manufacturer's guidelines after production runs 5.2 Routine maintenance tasks are performed in accordance with maintenance schedules 5.3 Waste materials and consumables are disposed of in accordance with environmental	**SCIENCE** 5.1 Effects of maintenance on machine performance **TECHNOLOGY** 5.2 Manufacturer's cleaning and maintenance guidelines **ENVIRONMENT** 5.3 Disposal of waste materials and consumables. **MATHEMATICS** 5.4 Recording maintenance intervals **COMMUNICATION**	5.1 Cleaning machining and finishing equipment 5.2 Performing routine maintenance 5.3 Disposing waste materials and consumables

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	and workplace safety procedures.	5.5 Reporting maintenance activities	

RANGE OF VARIABLES

VARIABLE	Range
1. Machining and finishing equipment	Machining and finishing equipment may include: 1.1 Lathes 1.2 Milling machines 1.3 Grinders 1.4 Polishing machines
2. PPE	PPE may include: 2.1 Helmets 2.2 Gloves 2.3 Safety glasses, 2.4 Protective clothing, 2.5 Ear protection
3. Machining and finishing materials	Machining and finishing materials may include: 3.1 Metal bars 3.2 Sheets 3.3 Castings 3.4 Forgings
4. Approved measuring and inspection methods	Approved measuring and inspection methods may include: 4.1 Calipers, 4.2 Micrometers 4.3 Dial gauges 4.4 Surface finish testers 4.5 Templates
5. Defective components	Defective components may include: 5.1 Scratches 5.2 Burrs 5.3 Dimensional inaccuracies 5.4 Surface roughness 5.5 Misalignment

EVIDENCE GUIDE

1.Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1. Prepared machining and finishing workstation 1.1.1. Prepared tools, equipment and PPE 1.1.2. Checked machining and finishing materials 1.1.3. Arranged work area 1.2. Operated machining and finishing equipment 1.2.1. Started machining and finishing equipment 1.2.2. Positioned components 1.2.3. Performed machining and finishing operations 1.2.4. Followed safety procedures 1.3. Monitored machining and finishing process 1.3.1. Monitored components 1.3.2. Reported abnormalities in equipment performance 1.3.3. Reported abnormalities in product quality 1.3.4. Made process adjustment 1.4. Inspected machined and finished components 1.4.1. Visually inspected machined and finished components for defects 1.4.2. Conducted quality inspection 1.4.3. Segregated defective components 1.5. Maintained machining and finishing equipment 1.5.1. Cleaned equipment 1.5.2. Performed routine maintenance task 1.5.3. Disposed waste materials and consumables
2.Resource Implications	The following resources should be provided: Operational machining and finishing equipment set to required parameters. Sufficient machining and finishing materials for the assessment task. Complete set of PPE for the candidate. Approved measuring and inspection tools for verifying product quality. Workplace documentation including SOPs, quality standards, and maintenance records.
3. Methods of Assessment	Competency in this unit may be assessed through:

	3.1 Direct observation of actual work activities as described in the Performance Criteria. 3.2 Questioning to assess knowledge related to the Science, Technology, Environment, Mathematics, and Communication aspects of the task. 3.3 Review of completed inspection reports, maintenance records, and waste disposal documentation.
4. Context for Assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY : **OPERATE AUTOMOTIVE METAL CASTING PRODUCTION LINE**

UNIT CODE : **CS-ALT713306**

UNIT DESCRIPTOR : This unit covers the knowledge, skills, and attitudes required to operate an automotive metal casting production line. It includes preparing casting workstation, operating casting equipment, monitoring casting process, inspecting cast components and maintaining casting equipment.

ELEMENTS	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Prepare casting workstation	1.1. Tools, equipment, and ***PPE*** are prepared in accordance with work instructions. 1.2. Moulds and casting materials are checked in accordance with job requirements 1.3. Work area is arranged in accordance with safety and efficiency requirements.	**SCIENCE** **1.1.** Basic principles of metal casting processes **TECHNOLOGY** **1.2.** Types and functions of casting equipment and moulds **ENVIRONMENT** 1.3. Safe arrangement of casting work areas **MATHEMATICS** 1.4. Reading and interpreting material specifications **COMMUNICATION** 1.5. Understanding and following work instructions	1.1. Preparing tools, equipment, and PPE 1.2. Checking moulds and casting materials 1.3. Arranging work areas for safety and efficiency
2. Operate casting equipment	2.1 ***Casting equipment*** is started in accordance with specified parameters. 2.2 ***Moulds*** are positioned in accordance with job specifications	**SCIENCE** 2.1 Effects of temperature and pouring rate on metal casting **TECHNOLOGY** 2.2 Operation of casting machines	2.1 Starting casting equipment 2.2 Positioning moulds in equipment 2.3 Performing casting operations

ELEMENTS	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.3 Casting operations are performed in accordance with standard operating procedures..	and handling molten metal **ENVIRONMENT** 2.3 Safe handling of molten materials during operations **MATHEMATICS** 2.4 Calculating operational parameters **COMMUNICATION** 2.5 Interpreting standard operating procedures	2.4 Following safety procedures
3.Monitor casting process	3.1 Casting process is monitored using ***approved measuring and inspection methods*** in accordance with quality specifications 3.2 Abnormalities in equipment performance are reported in accordance with workplace procedures. 3.3 Abnormalities in casting quality are reported in accordance with workplace procedures. 3.4 Process adjustments are made within job role limits in accordance with quality standards	**SCIENCE** 3.1 Causes of casting defects and process variability **TECHNOLOGY** 3.2 Use of temperature gauges, timers, and inspection tools **ENVIRONMENT** 3.3 Maintaining safe working conditions during casting **MATHEMATICS** 3.4 Measuring dimensions and comparing tolerances **COMMUNICATION** 3.5 Reporting abnormalities	3.1 Monitoring casting process using inspection methods 3.2 Reporting abnormalities in equipment performance 3.3 Reporting abnormalities in product quality 3.4 Adjusting process parameters within job limits

RANGE OF VARIABLES

VARIABLE	Range
1. Casting equipment	Casting equipment may include: 1.1. Gravity die casting machines 1.2. Sand casting equipment 1.3. Permanent mould casting machines
2. PPE	PPE may include: 2.1 Helmets 2.2 Gloves 2.3 Safety glasses 2.4 Protective clothing 2.5 Face shields 2.6 Heat-resistant gear
3. Moulds	Moulds and casting materials may include: 3.1 Sand moulds 3.2 Metal moulds 3.3 Alloys, 3.4 Ferrous and non-ferrous metals
4. Approved measuring and inspection methods	Approved measuring and inspection methods may include: 4.1 Calipers 4.2 Micrometers 4.3 Gauges, 4.4 Visual inspection tools

EVIDENCE GUIDE

1.Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Prepared casting workstation 1.1.1 Prepared tools, equipment and PPE 1.1.2 Checked muolds and casting materials 1.1.3 Arranged work area 1.2 Operated casting equipment 1.2.1 Started casting equipment 1.2.2 Positioned moulds 1.2.3 Performed casting operations 1.3 Monitored casting process 1.3.1 Monitored casting process 1.3.2 Reported abnormalities in equipment performance 1.3.3 Reported abnormalities in casting quality 1.3.4 Made process adjustment within job role limits 1.4 Inspected cast components 1.4.1 Inspected cast components for defects 1.4.2 Conducted quality inspection 1.4.3 Segregated defective cast components 1.5 Maintained casting equipment 1.5.1 Cleaned casting equipment 1.5.2 Performed routine maintenance task 1.5.3 Disposed waste materials and consumables
2.Resource Implications	The following resources should be provided: 2.1 Operational casting equipment set to required parameters. 2.2 Sufficient moulds and casting materials for the assessment task. 2.3 Complete set of PPE for the candidate. 2.4 Approved measuring and inspection tools for verifying product quality. 2.5 Workplace documentation including SOPs, quality standards, and maintenance records.
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 . Direct observation of actual work activities as described in the Performance Criteria. 3.2 Questioning to assess knowledge related to the Science, Technology, Environment, Mathematics, and Communication aspects of the task. 3.3 Review of completed inspection reports, maintenance records, and waste disposal documentation.

4. Context for Assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions

GLOSSARY OF TERMS

Abnormalities	Deviations from normal equipment performance or product quality
Approved measuring and inspection methods	Authorized tools and techniques for checking product quality (e.g., calipers, gauges).
Casting equipment	Machines used to melt, pour, and solidify metals into moulds.
Casting operations	Process of producing metal components by pouring molten metal into moulds.
Defective components	Products that fail to meet quality standards.
Moulds	Hollow forms into which molten metal is poured to create shapes.
Personal protective equipment (PPE)	Gear worn to protect against workplace hazards
Process adjustments	Modifications to operational parameters to maintain product quality.
Quality inspection	Examination of products to ensure compliance with standards.
Workplace procedures	Established rules and methods for performing work activities.

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