TRAINING REGULATIONS

AUTOMOTIVE SERVICING NC IV

AUTOMOTIVE SECTOR

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

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AUTOMOTIVE/LAND TRANSPORT SECTOR

AUTOMOTIVE SERVICING NC IV

TRAINING REGULATIONS FOR

AUTOMOTIVE SERVICING NC IV

SECTION 1 AUTOMOTIVE SERVICING NC IV QUALIFICATION

The AUTOMOTIVE SERVICING NC IV Qualification consists of competencies that a person must achieve to lead a section or group of workers to service and repair various types of motor vehicles. He is a master technician who can service and repair electronically controlled components or devices and emission control system of a motor vehicle. He can is also service both diesel and gasoline engines.

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

The Units of Competency comprising this Qualification include the following

CODE NO.	BASIC COMPETENCIES
500311115	Utilize specialized communication skills
500311116	Develop teams and individuals
500311117	Apply problem solving techniques in the workplace
500311118	Collect, analyze and organize information
500311119	Plan and organize work
500311120	Promote environmental protection

CODE NO.	COMMON COMPETENCIES
ALT723201	Apply Appropriate Sealant/Adhesive
ALT723202	Move and Position Vehicle
ALT311202	Perform Mensuration and Calculation
ALT723203	Read, Interpret and Apply Specifications and Manuals
ALT723204	Use and Apply Lubricants/Coolants
ALT723205	Perform Shop Maintenance
ALT311204	Perform Job Estimate
ALT311205	Interpret/Draw Technical Drawing
ALT723206	Practice health, safety and environment procedures
ALT311207	Inspect technical quality of work
ALT311208	Maintain quality systems
ALT311209	Provide work skill instructions
ALT723210	Identify and select original automotive parts and products

CODE NO.	CORE COMPETENCIES
ALT 723323	Service Diesel Engine Management System
ALT 723324	Service Electronic Body Management System
ALT 723325	Service Diesel Fuel Injection System Components
ALT 723326	Service Electronic Drive Management System
ALT 723327	Service Emission Control System
ALT 723362	Service and repair electronically controlled anti-lock braking system
ALT 723363	Service and repair electronically operated traction control System
ALT 723364	Service and repair electronically operated stability control System
ALT311365	Plan assessment activities and processes
ALT311366	Manage facility and inventory requirements
ALT311367	Estimate complex jobs
ALT311368	Ensure a safe workplace
ALT311369	Implement continuous improvement
ALT311370	Manage people performance
ALT311371	Plan and manage compliance with environmental regulations in a workplace or business

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

- Supervisor, Automotive Service Shop
- Master Automotive Technician
- Service Analyst

SECTION 2 COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common and core units of competency required in AUTOMOTIVE SERVICING NC IV.

BASIC COMPETENCIES

UNIT OF COMPETENCY : UTILIZE SPECIALIZED COMMUNICATION SKILLS

UNIT CODE : 500311115

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

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Meet common and specific communication needs of clients and colleagues	1.1 Specific communication needs of clients and colleagues are identified and met 1.2 Different approaches are used to meet communication needs of clients and colleagues 1.3 Conflict is addressed promptly and in a timely way and in a manner which does not compromise the standing of the organization
2. Contribute to the development of communication strategies	2.1 ***Strategies*** for internal and external dissemination of information are developed, promoted, implemented and reviewed as required 2.2 Channels of communication are established and reviewed regularly 2.3 Coaching in effective communication is provided 2.4 Work related network and relationship are maintained as necessary 2.5 Negotiation and conflict resolution strategies are used where required 2.6 Communication with clients and colleagues is appropriate to individual needs and organizational objectives
3. Represent the organization	3.1 When participating in internal or external forums, presentation is relevant, appropriately researched and presented in a manner to promote the organization 3.2 Presentation is clear and sequential and delivered within a predetermined time 3.3 Utilize appropriate media to enhance presentation 3.4 Differences in views are respected 3.5 Written communication is consistent with organizational standards 3.6 Inquiries are responded in a manner consistent with organizational standard

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
4. Facilitate group discussion	4.1 Mechanisms which enhance ***effective group interaction*** is defined and implemented 4.2 Strategies which encourage all group members to participate are used routinely 4.3 Objectives and agenda for meetings and discussions are routinely set and followed 4.4 Relevant information is provided to group to facilitate outcomes 4.5 Evaluation of group communication strategies is undertaken to promote participation of all parties 4.6 Specific communication needs of individuals are identified and addressed
5. Conduct interview	5.1 A range of appropriate communication strategies are employed in ***interview situations*** 5.2 Records of interviews are made and maintained in accordance with organizational procedures 5.3 Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated

RANGE OF VARIABLES

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

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Demonstrated effective communication skills with clients accessing service and work colleagues 1.2 Adopted relevant communication techniques and strategies to meet client particular needs and difficulties
2. Underpinning knowledge and attitude	2.1 Communication process 2.2 Dynamics of groups and different styles of group leadership 2.3 Communication skills relevant to client groups
3. Underpinning skills	3.1 Full range of communication techniques including: 3.1.1 Full range of communication 3.1.2 Active listening 3.1.3 Feedback 3.1.4 Interpretation 3.1.5 Role boundaries setting 3.1.6 Negotiation 3.1.7 Establishing empathy 3.2 Communication skills required to fulfill job roles as specified by the organization
4. Resource implications	4.1 Access to appropriate workplace where assessment can take place
5. Method of assessment	Competency **MUST** be assessed through 5.1 Direct observation 5.2 Oral Interview
6. Context of assessment	6.1 This unit should be assessed on the job through simulation

UNIT OF COMPETENCY : DEVELOP TEAMS AND INDIVIDUALS

UNIT CODE : 500311116

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

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Provide team leadership	1.1. ***Learning and development needs*** are systematically identified and implemented in line with ***organizational requirements*** 1.2. Learning plan to meet individual and group training and developmental needs is collaboratively developed and implemented 1.3. Individuals are encouraged to self evaluate performance and identify areas for improvement 1.4. ***Feedback on performance*** of team members is collected from relevant sources and compared with established team learning process
2. Foster individual and organizational growth	2.1. Learning and development program goals and objectives are identified to match the specific knowledge and skills requirements of competency standards 2.2. ***Learning delivery methods*** are appropriate to the learning goals, the learning style of participants and availability of equipment and resources 2.3. Workplace learning opportunities and coaching/ mentoring assistance are provided to facilitate individual and team achievement of competencies 2.4. Resources and timelines required for learning activities are identified and approved in accordance with organizational requirements
3. Monitor and evaluate workplace learning	3.1. Feedback from individuals or teams is used to identify and implement improvements in future learning arrangements 3.2. Outcomes and performance of individuals/teams are assessed and recorded to determine the effectiveness of development programs and the extent of additional support 3.3. Modifications to learning plans are negotiated to improve the efficiency and effectiveness of learning 3.4. Records and reports of competency are maintained within organizational requirement
4. Develop team commitment and cooperation	4.1. Open communication processes to obtain and share information is used by team 4.2. Decisions are reached by the team in accordance with its agreed roles and responsibilities 4.3. Mutual concern and camaraderie are developed in the team
5. Facilitate accomplishment of organizational goals	5.1. Team members actively participated in team activities and communication processes 5.2. Teams members developed individual and joint responsibility for their actions 5.3. Collaborative efforts are sustained to attain organizational goals

RANGE OF VARIABLES

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

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Identified and implemented learning opportunities for others 1.2. Gave and received feedback constructively 1.3. Facilitated participation of individuals in the work of the team 1.4. Negotiated learning plans to improve the effectiveness of learning 1.5. Prepared learning plans to match skill needs 1.6. Accessed and designated learning opportunities
2. Underpinning knowledge and attitude	2.1. Coaching and mentoring principles 2.2. Understanding how to work effectively with team members who have diverse work styles, aspirations, cultures and perspective 2.3. Understanding how to facilitate team development and improvement 2.4. Understanding methods and techniques for eliciting and interpreting feedback 2.5. Understanding methods for identifying and prioritizing personal development opportunities and options 2.6. Knowledge of career paths and competency standards in the industry
3. Underpinning skills	3.1. Ability to read and understand a variety of texts, prepare general information and documents according to target audience; spell with accuracy; use grammar and punctuation effective relationships and conflict management 3.2. Communication skills including receiving feedback and reporting, maintaining effective relationships and conflict management 3.3. Planning skills to organize required resources and equipment to meet learning needs 3.4. Coaching and mentoring skills to provide support to colleagues 3.5. Reporting skills to organize information; assess information for relevance and accuracy; identify and elaborate on learning outcomes 3.6. Facilitation skills to conduct small group training sessions 3.7. Ability to relate to people from a range of social, cultural, physical and mental backgrounds
4. Resource implications	The following resources **MUST** be provided: 4.1. Access to relevant workplace or appropriately simulated environment where assessment can take place 4.2. Materials relevant to the proposed activity or tasks
5. Method of assessment	Competency may be assessed through: 5.1. Observation of work activities of the individual member in relation to the work activities of the group 5.2. Observation of simulation and or role play involving the participation of individual member to the attainment of organizational goal 5.3. Case studies and scenarios as a basis for discussion of issues and strategies in teamwork
6. Context of assessment	6.1. Competency may be assessed in workplace or in a simulated workplace setting 6.2. Assessment shall be observed while task are being undertaken whether individually or in-group

UNIT OF COMPETENCY : APPLY PROBLEM SOLVING TECHNIQUES IN THE WORKPLACE

UNIT CODE : 500311117

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

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Analyze the problem	1.1. Issues/concerns are evaluated based on data gathered 1.2. Possible causes of problem are identified within the ***area of responsibility*** as based on experience and the use of problem solving tools/analytical techniques 1.3 Possible cause statements are developed based on findings
2. Identify possible solutions	2.1 All possible options are considered for resolution of the problem in accordance with ***safety*** and operating procedures 2.2 Strengths and weaknesses of possible options are considered 2.3 Corrective action is determined to resolve the problem and its possible future causes
3. Recommend solution to higher management	3.1 Report/***communication*** or ***documentation*** are prepared 3.2 Recommendations are presented to appropriate personnel 3.3 Recommendations are followed-up, if required
4. Implement solution	4.1 Measurable objectives are identified 4.2 Resource needs are identified 4.3 Timelines are identified in accordance with plan
5. Evaluate/Monitor results and outcome	5.1. Processes and improvements are identified based on evaluative assessment of problem 5.2. Recommendations are prepared and submitted to superiors.

RANGE OF VARIABLES

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

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Analyzed the problem 1.2. Identified possible solutions 1.3. Implemented solutions 1.4. Recommended solutions to higher management 1.5. Outcome evaluated/monitored Evidence of satisfactory performance in this unit can be obtained by observation of performance and questioning to indicate knowledge and understanding of the elements of the competency and performance criteria.
2. Underpinning knowledge and attitude	2.1. Broad understanding of systems, organizational systems and functions 2.2. Broad knowledge of help desk and maintenance practices 2.3. Current industry accepted hardware and software products with broad and detailed knowledge of its general features and capabilities 2.4. Broad knowledge of the operating system 2.5. Broad knowledge of the client business domain 2.6. Broad knowledge based incorporating current industry practices related to escalation procedures 2.7. Broad knowledge based of diagnostic tools 2.8. General principles of OHS 2.8. Divisional/unit responsibilities
3. Underpinning skills	3.1. Decision making within a limited range of options. 3.2. Communication is clear, precise and varies according to the type of audience 3.3. Teamwork in reference to personal responsibility 3.4. Time management as applied to self-management. 3.5. Analytical skills in relation to routine malfunctions. 3.6. General customer service skills displayed. 3.7. Questioning and active listening is employed to clarify general information

4. Resource implications	4.1. Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what ifs will be required as well as bank of questions which will be used to probe the reasoning behind the observable actions.
5. Method of assessment	Competency **MUST** be assessed through: 5.1. Through direct observation of application to tasks and questions related to underpinning knowledge Under general guidance, checking various stages of operation and at the completion of the activity against performance criteria and specifications
6. Context of assessment	6.1. Competency may be assessed in the work place or in a simulated work place setting 6.2. Assessment shall be carried out through TESDA's Accredited Assessment Centers/Venues while tasks are undertaken either individually or as part of a team under limited supervision

UNIT OF COMPETENCY : COLLECT, ANALYZE AND ORGANIZE INFORMATION

UNIT CODE : 500311118

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

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ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Study information requirements	1.1 Needs are identified using established ***research procedures*** 1.2 Relevant ***forms*** and recording systems are used to gather the information. 1.3 Respondents are selected to implement survey / research based on established procedures.
2. Process data	2.1 ***Data*** are collected and collated based on the prescribed method. 2.2 Relevant data are used as references in accordance with the objectives of the program. 2.3 ***Information*** is compiled according to the required form.
3. Analyze, interpret and organize information gathered	3.1 Data are analyzed using relevant ***methodologies*** 3.2 Where applicable, ***statistical analysis/methods*** are employed according to the objectives of the program 3.3 Graphs and other visual presentations are prepared to facilitate analysis / interpretation of information
4. Present findings/ recommendations	4.1 Findings/recommendations summarized and presented/packaged in user-friendly manner 4.2 Relevant inputs gathered to finalize report 4.3 Draft report prepared based on standard format. 4.4 Technical reports are submitted and disseminated to concerned offices.

RANGE OF VARIABLES

VARIABLE	R A N G E
1. Research procedures	May include but are not limited to: 1.1 TNA 1.2 Front-end analysis 1.3 Surveys 1.4 Interviews 1.5 Functional analysis 1.6 DACUM research
2. Forms	May include but are not limited to: 2.1 Survey forms/Questionnaires 2.2 Personal information/Profile 2.3 Accident report form 2.4 Requisition slip 2.5 Job orders 2.6 Purchase request form 2.7 Incident report form
3. Methodologies	3.1 Qualitative methods 3.2 Quantitative methods
4. Statistical analysis/methods	4.1. Averages (Mean, Median, Mode) 4.2. Percentage 4.3. Ranks 4.4. Frequency Distribution 4.5 Statistical test
5. Data	5.1. Raw Data
6. Information	6.1. Processed and packaged data

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate 1.1 Determined information requirements based on organizational goals and objectives. 1.2 Used relevant forms and recording systems to gather data 1.3 Processed data based on the objectives of the program 1.4 Utilized relevant research methods based on the objective of the program 1.5 Analyzed and organized information gathered 1.6 Submitted/Disseminated technical reports to concerned offices
2. Underpinning knowledge and attitude	2.1 Data processing, Information analysis and interpretation 2.2 Research methods 2.2.1 Qualitative 2.2.2 Quantitative 2.2.3 Statistical 2.3 Report writing 2.4 Use of relevant software 2.4.1 Spreadsheets 2.4.2 Presentation graphics 2.4.3 Work processor 2.4.4 Statistical package
3. Underpinning skills	3.1 Communicating effectively 3.2 Performing research and analysis 3.3 Reading / interpreting data and information 3.4 Problem solving
4. Resource implications	The following resources **MUST** be provided: 4.1 Workplace or assessment location 4.2 Access to office equipment and facilities relevant to the unit 4.3 Case studies/scenarios
5. Method of assessment	Competency may be assessed through: 5.1 Written/ Oral Examination 5.2 Interviews 5.3 Portfolio
6. Context of assessment	6.1 Competency may be assessed in actual workplace or TESDA Accredited Assessment Center

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

UNIT CODE : **500311119**

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

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Set objectives	1.1 ***Objectives*** are consistent with and linked to work activities in accordance with organizational aims 1.2 Objectives are stated as measurable targets with clear time frames 1.3 Support and commitment of team members are reflected in the objectives 1.4 Realistic and attainable objectives are identified
2. Plan and schedule work activities	2.1 Tasks/work activities to be completed are identified and prioritized as directed 2.2 Tasks/work activities are broken down into steps in accordance with set time frames achievable components in accordance with set time frames 2.3 ***Resources*** are allocated as per requirements of the activity 2.4 ***Schedule of work activities*** is coordinated with personnel concerned
3. Implement work plans	3.1 ***Work methods and practices*** are identified in consultation with personnel concerned 3.2 ***Work plans*** are implemented in accordance with set time frames, resources and ***standards***
4. Monitor work activities	4.1 Work activities are monitored and compared with set objectives 4.2 Work performance is monitored 4.3 Deviations from work activities are reported and recommendations are coordinated with appropriate personnel and in accordance with set standards 4.4 Reporting requirements are complied with in accordance with recommended format 4.5 Observe timeliness of report 4.6 Files are established and maintained in accordance with standard operating procedures
5. Review and evaluate work plans and activities	5.1 Work plans, strategies and implementation are reviewed based on accurate, relevant and current information 5.2 Review is based on comprehensive consultation with appropriate personnel on outcomes of work plans and reliable feedback 5.3 Results of review are provided to concerned parties and formed as the basis for adjustments/simplifications to be made to policies, processes and activities 5.4 Performance appraisal is conducted in accordance with organization rules and regulations 5.5 Performance appraisal report is prepared and documented regularly as per organization requirements. 5.6 Recommendations are prepared and presented to ***appropriate personnel/authorities*** 5.7 ***Feedback mechanisms*** are implemented in line with organization policies

RANGE OF VARIABLES

VARIABLE	RANGE
1. Objectives	1.1. Specific 1.2. General
2. Resources	2.1. Personnel 2.2. Equipment and technology 2.3. Services 2.4. Supplies and materials 2.5. Sources for accessing specialist advice 2.6. Budget
3. Schedule of work activities	3.1. Daily 3.2. Work-based 3.3. Contractual 3.4. Regular 3.5. Confidential 3.6. Disclosure 3.7. Non-disclosure
4. Work methods and practices	4.1. Work methods and practices may include but not limited to: 4.2. Legislated regulations and codes of practice 4.3. Industry regulations and codes of practice 4.4. Occupational health and safety practices
5. Work plans	5.1. Daily work plans 5.2. Project plans 5.3. Program plans 5.4. Organization strategic and restructuring plans 5.5. Resource plans 5.6. Skills development plans 5.7. Management strategies and objectives
6. Standards	6.1. Performance targets 6.2. Performance management and appraisal systems 6.3. National competency standards 6.4. Employment contracts 6.5. Client contracts 6.6. Discipline procedures 6.7. Workplace assessment guidelines 6.8. Internal quality assurance 6.9. Internal and external accountability and auditing requirements 6.10. Training Regulation Standards 6.11. Safety Standards
7. Appropriate personnel/authorities	7.1. Appropriate personnel include: 7.2. Management 7.3. Line Staff
8. Feedback mechanisms	8.1. Feedback mechanisms include: 8.2. Verbal feedback 8.3. Informal feedback 8.4. Formal feedback 8.5. Questionnaire 8.6. Survey 8.7. Group discussion

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Set objectives 1.2. Planned and scheduled work activities 1.3. Implemented work plans 1.4. Monitored work activities 1.5. Reviewed and evaluated work plans and activities
2. Underpinning knowledge and attitude	2.1. Organization's strategic plan, policies rules and regulations, laws and objectives for work unit activities and priorities 2.2. Organizations policies, strategic plans, guidelines related to the role of the work unit 2.3. Team work and consultation strategies
3. Underpinning skills	3.1. Planning 3.2. Leading 3.3. Organizing 3.4. Coordinating 3.5. Communication Skills 3.6. Inter-and intra-person/motivation skills 3.7. Presentation skills
4. Resource implications	The following resources **MUST** be provided 4.1. Tools, equipment and facilities appropriate to the proposed activities 4.2. Materials relevant to the proposed activities 4.3. Work plan schedules 4.4. Drawings, sketches or blueprint
5. Method of assessment	Competency may be assessed through: 5.1. Direct observation/questioning 5.2. Practical exercises on Planning and Scheduling Work Activities 5.3. Third Party Report (collection of competency evidence)
6. Context of assessment	6.1. Competency may be assessed in the workplace or in simulated work

UNIT OF COMPETENCY : PROMOTE ENVIRONMENTAL PROTECTION

UNIT CODE : 500311120

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

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Study guidelines for environmental concerns.	1.1 Environmental **legislations/conventions** and local ordinances are identified according to the different ***environmental aspects/impact***. 1.2 ***Industrial standard/environmental practices*** are described according to the different environmental concerns.
2. Implement specific environmental programs.	2.1 ***Programs/Activities*** are identified according to organizations policies and guidelines. 2.2 Individual roles/responsibilities are determined and performed based on the activities identified. 2.4 Problems/ constraints encountered are resolved in accordance with organizations' policies and guidelines 2.5 Stakeholders are consulted based on company guidelines.
3. Monitor activities on environmental protection /programs	3.1 Activities are ***periodically*** monitored and evaluated according to the objectives of the environmental program 3.2 Feedback from stakeholders are gathered and considered in proposing enhancements to the program based on consultations 3.3 Data gathered are analyzed based on evaluation requirements 3.4 Recommendations are submitted based on the findings. 3.5 Management support systems are set/established to sustain and enhance the program 3.6 Environmental incidents are monitored and reported to concerned/proper authorities.

RANGE OF VARIABLES

VARIABLE	R A N G E
1. Legislations/Conventions	May include but are not limited to: 1.1 Clean Air act 1.2 Clean Water Act 1.3 Solid Waste Management 1.4 Montreal Protocol 1.5 Kyoto Protocol
2. Environmental aspects/impacts	2.1 Air pollution 2.2 Water pollution 2.3 Noise pollution 2.4 Solid waste 2.5 Flood control 2.6 Deforestation/Denudation 2.7 Radiation/Nuclear /Radio Frequency/ Microwaves 2.8 Situation 2.9 Soil erosion (e.g. Quarrying, Mining, etc.) 2.10 Coral reef/marine life protection
3. Industrial standards/ Environmental practices	3.1 ECC standards 3.2 ISO standards 3.3 company environmental management systems (EMS)
4. Periodic	4.1 hourly 4.2 daily 4.3 weekly 4.4 monthly 4.5 quarterly 4.6 yearly
5. Programs/Activities	5.1 Waste disposal (on-site and off-site) 5.2 Repair and maintenance of equipment 5.3 Treatment and disposal operations 5.4 Clean-up activities 5.5 Laboratory and analytical test 5.6 Monitoring and evaluation 5.7 Environmental advocacy programs

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Demonstrated knowledge of environmental legislations and local ordinances according to the different environmental issues/concerns. 1.2 Described industrial standard environmental practices according to the different environmental issues/concerns. 1.3 Resolved problems/ constraints encountered based on management standard procedures 1.4 Implemented and monitored environmental practices on a periodic basis as per company guidelines 1.5 Recommended solutions for the improvement of the program 1.6 Monitored and reported to proper authorities any environmental incidents
2. Underpinning knowledge and attitude	2.1 Features of an environmental management strategy 2.2 Environmental issues/concerns 2.3 International Environmental Protocols (Montreal, Kyoto) 2.4 Waste minimization hierarchy 2.5 Environmental planning/management 2.6 Community needs and expectations 2.7 Resource availability 2.8 Environment-friendly/environmental advocates 2.9 5S of Good Housekeeping 2.10 3Rs – Reduce, Reuse & Recycle 2.11 Sanitary Code 2.12 Environmental Code of practice
3. Underpinning skills	3.1 Communicating effectively 3.2 Performing research and analysis 3.3 Reading / interpreting data and information 3.4 Problem solving
4. Resource implications	The following resources **MUST** be provided: 4.1 Workplace/Assessment location 4.2 Legislation, policies, procedures, protocols and local ordinances relating to environmental protection 4.3 Case studies/scenarios relating to environmental protection
5. Method of assessment	Competency may be assessed through: 5.1 Written/ Oral Examination 5.2 Interview/Third Party Reports 5.3 Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad) 5.4 Simulations and role-plays
6. Context of assessment	6.1 Competency may be assessed in actual workplace or at the designated TESDA center.

COMMON COMPETENCIES

UNIT OF COMPETENCY: APPLY APPROPRIATE SEALANT/ADHESIVE

UNIT CODE: ALT723201

UNIT DESCRIPTOR: This unit covers the knowledge, skills and attitude in the selection and application of sealant/adhesives.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Identify appropriate Sealant/adhesive	1.1 ***Sealant/adhesive*** selected in line with job requirements and manufacturer's specification 1.1 ***Sealant/adhesive checking*** is performed to ensure that the product is fit for use.
2. Prepare surface for Sealant/adhesive	2.1 Surface materials are identified as per construction 2.2 Surface is cleaned and free of moisture, dust and other foreign matters to ensure maximum adhesion or seal.
3. Apply sealant/adhesive evenly	3.1 Sealant/adhesive is applied evenly on the surface in line with manufacturer's specification 3.2 Excess sealant/adhesive is removed by sanding or scrapping 3.3 ***Tools and equipment*** used to apply sealant/adhesive are appropriate to job requirements 3.4 ***Safety*** are observed and PPE are worn in accordance with industry SOP 3.5 ***Hazards*** associated with the use of sealant and adhesives are identified.
4. Store/Dispose of sealant/adhesive	4.1 Sealant/adhesive are stored as per prescribed procedure 4.2 Waste are disposed as per workshop standard operating procedure

RANGE OF VARIABLES

VARIABLE	RANGE
1. Sealant/Adhesive	May include: 1.1Form in Place Gasket (FIPG) 1.2 Ribbon Sealer 1.3Hametite 1.4Silicon Body sealer 1.5 Prestite for Auto and Auto Aircon
2. Tools and equipment	May include: 2.1 Putty knife 2.2 Scraper 2.3 Compressor 2.4 Steel brush 2.5 Paint brush 2.6 Rubber hammer 2.7 Hand tools Personal protective equipment include: 2.8 Gloves 2.9 Apron 2.10 Safety shoes 2.11Goggles 2.12Gas mask
3. Safety	May include: 3.1 Ventilation 3.2 Handling of Flammable/Irritating substances 3.3 Use of Personal Protective Equipment
4. Hazards	May include: 4.1 Fumes 4.2 Skin irritation 4.3 Burns
5.Adhesive/Sealant checking	May include: 5.1 Expiry date 5.2 Free of contamination 5.1 Cap/Covers 5.2 Tightly closed 5.3 Concentration

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Identified appropriate sealant/adhesives 1.2 Prepared surface for sealant/adhesive 1.3 Applied sealant/adhesive 1.4 Stored unused or dispose of used sealant/adhesive
2. Required knowledge	2.1 OH & S regulations 2.2 Safe handling of sealant/adhesive 2.3 Industry code of practice 2.2 Procedures in sealant/adhesive application 2.3 Procedures in interpreting manuals
3. Required skills	3.1 Handling sealant/adhesive 3.2 Applying sealant/adhesive 3.3.Sanding the surface 3.4 Use of tools, equipment 3.5 Mixing of body filler and epoxy base and hardener
4. Resource implication	The following resources should be provided: 4.1 Materials relevant to the activity 4.2 Appropriate tools and equipment 4.3 Real or simulated workplace
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Observation with questioning 5.2 Interview related to: • Safe and correct use of tools and equipment • Application of adhesive/sealant
6. Context of assessment	6.1 Competency elements must be assessed in a safe working environment 6.2 Assessment may be done in a workplace or simulated environment

UNIT OF COMPETENCY: MOVE AND POSITION VEHICLE

UNIT CODE: ALT723202

UNIT DESCRIPTOR: This unit covers the knowledge, skills and attitude needed to move and position vehicle in a workshop.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Prepare vehicle for driving	1.2 Correct ***check-up procedures*** performed based on vehicle manufacturer's standard
2. Move and position vehicle	2.1 Select vehicle to be moved or re-position. *2.2* Drive the vehicle to appropriate location *2.3* Park vehicle following ***parking safety techniques*** and procedure
3. Check the vehicle	3.1 ***Vehicle*** position is checked as per requirement 3.2 Vehicle is checked for external damages

RANGE OF VARIABLE

VARIABLE	RANGE
1. Check up procedure	May include: 1.1 Oil level 1.2 Brake fluid 1.3 Clutch fluid 1.4 Coolant level 1.5 Battery (electrolyte) 1.6 Tire pressure 1.7 Position of driving gear 1.8 Lighting and warning devices
2. Vehicles	May include: 2.1 Vehicles with automatic transmission 2.2 Vehicles with manual transmission
3.Parking safety techniques	May include: 3.1 Engaging of Park brake 3.2 Vehicle parking position 3.3 Front wheel position

EVIDENCE GUIDE

1.Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Prepared vehicle for driving. 1.2 Moved and positioned vehicle 1.3 Checked the vehicle.
2. Required knowledge	2.1 Driver's Code of conduct 2.2 Workshop signs and symbols 2.3 Driving skills 2.4 Vehicle accessories for safe driving and parking
3. Required skills	3.1 Ability to handle vehicle/maneuver vehicle the easiest way 3.2 Immediate response to accident 3.3 Preparing vehicle for driving 3.4 Parking Downhill, Uphill, Parallel 3.5 Shifting Gears 3.6 Maneuvering
4. Resource implications	The following resources should be provided: 4.1 Driving range/area 4.2 Appropriate vehicle for driving 4.3 Vehicle accessories
5.Method of assessment	Competency in this unit may be assessed through: 5.1 Observation with questioning 5.2 Written or oral examination
6 Context of assessment	6.1 Assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines 6.2 Assessment of practical skills must be done in a workplace or simulated environment.

UNIT OF COMPETENCY: PERFORM MENSURATION AND CALCULATION

UNIT CODE: ALT311202

UNIT DESCRIPTOR: This unit covers the knowledge, skills and attitudes in identifying, caring, handling and using the measuring instrument.

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 ***Calculation*** needed to complete work tasks are performed using the four fundamental operation 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	3.1 Measuring instruments are kept free from corrosion 3.2 Measuring instruments are not dropped to avoid damage 3.3 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 2.11Oil 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 3.3 Performing calculation by Addition, Subtraction, Multiplication and Division 3.4 Visualizing objects and shapes 3.5 Interpreting formula for volume, area, perimeter and other geometric figures
4. Resource implication	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 TITLE: **READ, INTERPRET AND APPLY SPECIFICATION AND MANUALS**.

UNIT CODE: ALT723203

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 relations 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 a simulated environment.

UNIT OF COMPETENCY: USE AND APPLY LUBRICANTS/COOLANTS

UNIT CODE: ALT723204

UNIT DESCRIPTOR: This unit covers the knowledge, skills and attitudes required in selecting and applying different types of lubricants.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Identify types of lubricants/ coolants	1.1 Correct information on ***lubrication schedule*** is accessed and interpreted from appropriate manufacturers specifications ***manuals*** 1.2 Type and quantity of ***lubricants/coolant*** are identified as per job requirements
2. Use and apply lubricants/coolants	2.1 Correct procedure for change of lubricant is identified following manufacturer's specification or manual 2.2 Correct tools and equipment are selected and used in line with job requirements 2.3 Existing lubricants are removed and replaced with specified types and quantity of new materials in line with manufacturer's specification 2.4 Safe procedure and use of ***PPE*** are observed when removing or replacing lubricant 2.5 Used lubricants are disposed in accordance with environmental guidelines 2.6 Work is checked in line with company SOP.
3. Perform housekeeping activities	*3.1* ***Tools, equipment*** and materials are properly stored as per company SOP 3.2 Workplace is free from waste materials

RANGE OF VARIABLES

VARIABLE	RANGE	
1. Manuals	May include: 1.1 Manufacturer's specification manual 1.2 Periodic Maintenance manual 1.3 Service Manual	
2.Lubricants/ Coolant	May include: 2.1 Engine oil: • Diesel engine oil • Gasoline engine oil 2.2 Automatic Transmission Fluid • Destro II • T4 2.3 Gear oil lubricants: • Oil #90 • Oil #140 • Oil #30 • Oil #40 2.4 Grease • Special (velocity joint) Molybdenum disolfate) • Ordinary • Multi-purpose oil • Contact point lubricant (grease)	2.5 Brake/Clutch System • Brake fluid • DOT3 2.6 Power Steering Fluid • Hydraulic Fluid 2.7 Radiator Coolant • Long last coolant 2.8 A/C Compressor Oil • Pag oil
3. Lubricant Schedule	May include: 3.1 Kilometers traveled/used 3.2 No. of Hours used 3.3 Monthly	
4. Tool and equipment	May include: 4.1 Hand tools 4.2 Oiler 4.3 Oil Dispenser 4.4 Grease gun	
5. Personal Protective Equipment (PPE)	May include: 5.1 Apron 5.2 Gloves 5.3 Goggles 5.4 Safety shoes	

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Identified types of lubricants and lubrication schedule. 1.2 Used and applied lubricants. 1.3 Performed housekeeping
2. Required knowledge	2.1 Types/Classification of Lubricants 2.2 Identifying lubrication schedule 2.3 Cause and Effects of Gear Oil Dilution 2.4 Purpose of Lubrication (Problem and effects) 2.5 Hazard associated with lubrication
3. Required skills	3.1 Handling of oils (Gear, oil, engine oil) 3.2 Familiarization/Classification of Lubricants 3.3 Lubrication Procedure
4. Resource implication	The following resources should be provided: 4.1 Workplace: Real or simulated work area 4.2 Appropriate tools and equipment 4.3 Materials relevant to activity
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Demonstration with questioning 5.2 Written/Oral examination
6. Context of assessment	6.1 Competency elements must be assessed in a safe working environment 6.2 Assessment must be undertaken in accordance with the endorsed industry assessment guidelines 6.3 Assessment of underpinning knowledge and skills may be assessed on or off-the-job

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	Wearing of Personal protective equipment 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 simulated environment. 6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience.

UNIT OF COMPETENCY: PREPARE JOB ESTIMATE/COSTING

CODE: ALT311204

UNIT DESCRIPTOR: This competency unit covers the knowledge, skills and attitude in estimating/costing automotive repair.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Identify nature/scope of work	1.1 Effective ***communication*** skills are applied to determine the nature and scope of work to be undertaken 1.2 Extent of service to be rendered in determined and documented in line with standard operating procedures (SOP)
2. Prepare and present estimate	2.1 Type and quantity of supplies, materials and labor required to perform work are identified in line with job requirements 2.2 Cost of supplies, materials are obtained from ***suppliers*** 2.3 ***Total cost*** of required services is calculated in line with SOP 2.4 Estimate is presented to customer in line with SOP.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Communication	May include: 1.1 Listening to customer 1.2 Speaking with suppliers, customers and co-workers 1.3 Questioning
2. Suppliers	May include: 2.1 Distributors 2.2 Managers 2.3 Proprietors
3. Cost	May include: 3.1 Materials 3.2 Labor 3.3 Overhead

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate 1.1 Identified nature/scope of work 1.2 Prepared and presented estimate
2. Required knowledge	2.1 Consumer mathematics 2.2 Replaceable/Fabricated Materials or Spare parts in a vehicle 2.3 Automotive Repair Procedures and Techniques 2.4 Job estimates 2.5 Honesty, Perseverance, Patience, Attention to Details
3. Required skills	3.1 Computing using the Four Mathematical Operations 3.2 Estimating repair works and activities
4. Resource implication	The following resources should be provided: 4.1 Appropriate tools such as calculator, paper, pen, and other measuring instruments relevant to activity
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Observation with questioning 5.2 Presentation of Finished drawing
6. Context of assessment	6.1 Competency must be assessed in a room or any simulated places 6.2 Assessment must be given according to industry standard

UNIT OF COMPETENCY: INTERPRET/DRAW TECHNICAL DRAWING

CODE: ALT311205

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

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** 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 4.6 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 implication	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 any simulated places 6.2 Assessment must be given according to industry standard

UNIT OF MPETENCY: **PRACTICE HEALTH, SAFETY AND ENVIRONMENT PROCEDURES**

UNIT CODE : **ALT723206**

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: 4.1. Sickness 4.2. Accident 4.3. 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: 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 1.5 Emergency procedures 1.7 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 1.6 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

1. 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	6.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions

UNIT OF COMPETENCY: PROVIDE WORK SKILL INSTRUCTION

UNIT CODE : ALT311209

UNIT DESCRIPTOR : This unit describes the performance outcomes, skills and knowledge required to conduct individual and group instruction and demonstrate work skills, using existing learning resources in a safe and comfortable learning environment. The unit also covers the skills and knowledge required to determine the success of both the training provided and one's own personal training performance. It emphasizes the training as being driven by the work process and context.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables
1. Organize instruction and demonstration	1.1 Gather information about ***learner characteristics*** and learning needs 1.2 Confirm a ***safe learning environment*** 1.3 Gather and check ***instruction and demonstration objectives*** and seek assistance if required 1.4 Access and review relevant ***learning resources*** and ***learning materials*** for suitability and relevance, and seek assistance to interpret the contextual application 1.5 Organize access to necessary equipment or physical resources required for instruction and demonstration 1.6. Notify learners of ***details*** regarding the implementation of the learning program and/or delivery plan
2. Conduct instruction and demonstration	2.1 Use interpersonal skills with learners to establish a safe and comfortable learning environment 2.2 Follow the learning program and/or delivery plan to cover all learning objectives 2.3 Brief learners on any ***OHS procedures*** and requirements prior to and during training 2.4 Use ***delivery techniques*** to structure, pace and enhance learning 2.5 Apply ***coaching*** techniques to assist learning 2.6 Use communication skills to provide information, instruct learners and demonstrate relevant work skills 2.7 Provide opportunities for practice during instruction and through work activities 2.8 Provide and discuss feedback on learner performance to support learning
3. Check training performance	3.1 Use ***measures*** to ensure learners are acquiring and can use new technical and generic skills and knowledge 3.2 Monitor learner progress and outcomes in consultation with learner 3.3 Review relationship between the trainer/coach and the learner and adjust to suit learner needs
4. Review personal training performance and finalize documentation	4.1 Reflect upon personal performance in providing instruction and demonstration, and document strategies for improvement 4.2 Maintain, store and secure learner records according to organizational and legal requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Learner Characteristics	May include: 1.1 Language, literacy and numeracy levels 1.2 Learning styles 1.3 Past learning and work experiences 1.4 Specific needs 1.5 Workplace culture
2. Safe Learning Environment	May include: 2.1 Exit requirements 2.2 Personal protective equipment 2.3 Safe access 2.4 Safe use of equipment
3. Instruction and demonstration objectives	May include: 3.1 Competencies to be achieved 3.2 Generic and technical skills, which may be provided by the organization, developed by a colleague and individual or group objectives 3.3 Learning outcomes.
4. Learning resources	May include: 4.1 Learner and user guides 4.2 Trainer and Facilitator guides 4.3 Example training programs 4.4 Specific case studies 4.5 Professional development materials 4.6 Assessment materials 4.7 A variety of formats produced locally or acquired from other sources
5. Learning materials	May include: 5.1 Handouts for learners 5.2 Materials sourced from the workplace, like workplace documentation, operating procedures, and specifications
6. Details	May include: 6.1 Location and time 6.2 Outcomes of instruction or demonstration 6.3 Reason for instruction or demonstration 6.4 Who will be attending instruction session
7. OHS procedures	May include: 7.1 Emergency procedures 7.2 Hazards and their means of control 7.3 Incident reporting 7.4 Use of personal protective equipment 7.5 Safe work practices 7.6 Safety briefings 7.7 Site-specific safety rules

8. Delivery techniques	May include: 8.1 Coaching 8.2 Demonstration 8.3 Explanation 8.4 Group or pair work providing opportunities to practice skills and solve problems 8.5 Questions and answers
9. Coaching	May include: 9.1 Learning arrangements requiring immediate interaction and feedback 9.2 On-the-job instruction and 'buddy' systems 9.3 Relationships targeting enhanced performance 9.4 Short-term learning arrangements 9.5 Working on a one-to-one basis.
10. Measures	May include: 10.1 Informal review or discussion 10.2 Learner survey 10.3 On-the-job observation 10.4 Review of peer coaching arrangements.

EVIDENCE GUIDE

1. Critical aspects of competency	1.1 Carried out a minimum of three training sessions, involving demonstrating and instructing particular work skills for different groups; with each session addressing: 1.1.1 Different learning objectives 1.1.2 A range of techniques and effective communication skills appropriate to the audience
2. Required knowledge	2.1 Learner characteristics and needs 2.2 Content and requirements of the relevant learning program and/or delivery plan 2.3 Sources and availability of relevant learning resources and learning materials 2.4 Content of learning resources and learning materials 2.5 Training techniques that enhance learning and when to use them 2.6 Introductory knowledge of learning principles and learning styles 2.7 Key OHS issues in the learning environment, including: • roles and responsibilities of key personnel • responsibilities of learners • relevant policies and procedures, including hazard identification, risk assessment, reporting requirements, safe use of equipment and emergency procedures • risk controls for the specific learning environment
3. Required skills	3.1 Non-verbal communication techniques, such as: • asking relevant and appropriate questions • providing explanations • demonstrating • using listening skills • providing information clearly 3.2 Safety skills to implement OHS requirements, by acting and responding safely in order to: • identify hazards • conduct prestart-up checks if required • observe and interpret learner behaviour that may put people at risk 3.3 Time-management, skills to: • ensure all learning objectives are covered • pace learning 3.4 Reflection skills in order to: • identify areas for improvement • maintain personal skill development

	3.5 Literacy skills to: • complete and maintain documentation • read and follow learning programs and plans • read and analyze learner information 3.6 Technology skills to operate audio-visual and technical equipment 3.7 Interpersonal skills to: • engage, motivate and connect with learners • provide constructive feedback • maintain appropriate relationships • establish trust • use appropriate body language • maintain humor • demonstrate tolerance • manage a group • recognize and be sensitive to individual difference and diversity 3.8 Observation skills to: • monitor learner acquisition of new skills, knowledge and competency requirements • assess learner communication and skills in interacting with others • identify learner concerns • recognize learner readiness to take on new skills and tasks
4. Resource implications	The following resources should be provide: Evidence must be gathered in the workplace wherever possible. Where no workplace is available, a simulated workplace must be provided
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: 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	Customer may require active assistance and questioning to fully describe requirement in terms of: 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

4 Resource implications	The following resources should be provided: 4.1 Workplace location or simulated workplace 4.2 Information and material identifying and selecting automotive parts and products 4.3 Equipment identifying and selecting automotive parts and products 4.4 Activities covering task requirements 4.5 Specifications and work instructions.
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

CORE COMPETENCIES

UNIT OF COMPETENCY : **SERVICE DIESEL ENGINE MANAGEMENT SYSTEM AND COMPONENTS**

UNIT CODE : **ALT 723323**

UNIT DESCRIPTOR : This unit identifies the competence required in servicing diesel engine management system and components. It also includes the competence in overhauling common rail injection pump and adjusting common rail mechanical governor.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables **(NOTE:** All standard of performance for ***Service Diesel Engine Management System Component*** is in accordance with ***Company Standard*** operating procedure **and** Manufacturer's specification ***manuals*** using specified ***tools*** and ***equipment.)***
1. Overhaul common rail injection pump	1.1 Common rail injection pump is disassembled 1.2 Failure analysis of common rail injection pump is 100%accurate 1.3 Corresponding recommendation is given based on the analysis 1.4 Injection pump parts double checked for completeness, reference marks and torque 1.5 Common rail injection pump is assembled
2. Adjust common rail mechanical governor	2.1 Completeness of common rail mechanical governor parts and initial setting performed 2.2 Set screw is sealed

RANGE OF VARIABLES

VARIABLE	RANGE
1. Diesel Injection System Component	May include: 1.1 Diesel engine
2. Manual	May include: 2.1 Manufacturer specification manual 2.2 Maintenance procedure manual 2.3 Periodic maintenance manual 2.4 Service manual 2.5 Parts Checklist
3. Tools and equipment	May include: 3.1 Common and special hand tools
4. Company standard operating procedure	May include: 4.1 Job order 4.2 Requisition slip 4.3 Wearing of personal protective equipment such as Apron, gloves, gas mask, goggles

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Overhauled common rail injection pump 1.2 Adjusted common rail mechanical governor
2. Required knowledge	2.1 Diesel fuel injector types/classification and characteristics 2.2 Procedure and precaution in disassembling Diesel Fuel Injector 2.3 Techniques in failure analysis 2.4 Procedure in Injector lapping 2.5 Procedure in Diesel fuel injector assembly 2.6 Common rail injector pump parts, function and operation 2.7 Procedure and precaution in overhauling common rail injection 2.8 Common rail injection pump parts reference mark use and application 2.9 Rotary injection pump parts, function and operation 2.10 Rotary injection pump parts reference mark use and application 2.11 Positive Work Values (Patience, Perseverance, Honesty, etc.) 2.12 Quality procedures, e.g., 5S 2.13 Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)
3. Required skills	3.1 Troubleshooting and servicing P.T., rotary injection, common rail injection and feed pumps 3.2 Overhauling P.T., rotary injection, common rail injection and feed pumps 3.3 Handling common and special tools and testing 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 Observation/Demonstration with Questioning 5.2 Portfolio
6. Context of assessment	6.1 Competency must be assessed on the job or simulated environment. 6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience.

UNIT OF COMPETENCY : SERVICE ELECTRONIC BODY MANAGEMENT SYSTEMS

UNIT CODE : ALT 723324

UNIT DESCRIPTOR : This unit identifies the competence required to service/repair electronic body management systems and/or associated components. Electronic body management systems may control the following functions: ride control, steering systems, central locking, electric windows, electric mirrors, security systems.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables (All standard of performance for Service and Repair ***Electronic Body Management Systems*** is in accordance with ***company standard operating procedure*** and manufacturer's specification ***Manuals*** using specified ***tools and equipment***)
1. Service electronic body management systems and/or associated components.	1.1 Service is performed without causing damage to any workplace property or vehicle. 1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. 1.3 Tests on electronic body management systems are carried out to determine faults using appropriate tools and techniques. 1.4 Necessary service and component replacement and adjustments are carried out

RANGE OF VARIABLES

VARIABLE	RANGE
1. Electronic Body Management Systems	May include: 1.1 Electronic body management systems fitted to light vehicles and plant and equipment and/or outdoor power equipment 1.2 Electronic body management may control the following functions: ride control, steering systems, control locking, electric windows, electric mirrors, security systems
2. Manuals	May include: 2.1 Manufacturer's specification manual 2.2 Preventive maintenance procedure manual 2.3 Preventive maintenance data 2.4 Service and repair manual 2.5 Parts checklist
3. Company Standard Operating procedure	May include: 3.1 Job order 3.2 Requisition slip 3.3 Wearing of Personal Protective Equipment such as: Apron, Safety shoes, Gloves, Goggles
4. Tools and equipment	May include: 4.1 Hand tools, testing equipment including: multimeter 4.2 Power tools, air tools, special tools for removal/adjustment, 4.3 Specialized system testers for ABS, ECU, Airbag, and Diagnostic

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Tested electronic body management systems 1.2 Serviced/repaired of electronic body management systems
2. Required knowledge	2.1 Advance electronics theory 2.2 Electrical Theory and principles 2.3 Service/repair, removal, replacement and adjustment procedures relevant to application 2.4 Operating principles of body management systems 2.5 Construction and operation of body management systems/components relevant to application 2.6 Positive Work Values (Patience, Perseverance, Honesty, etc.) 2.7 Quality procedures, e.g., 5S 2.8 Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)
3. Required skills	3.1 Testing electronic circuits and devices 3.2 Reading/Interpreting schematic diagram 3.3 Removing/Installing electronic devices 3.4 Using mathematical ideas and techniques 3.5 Solving problems 3.6 Using technology
4. Resource implications	The following resources should be provided: 4.1 Workplace or simulator 4.2 Appropriate tools and equipment 4.3 Materials relevant to the proposed activity and tasks
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Written examination 5.2 Observation/Demonstration with Questioning
6. Context of assessment	6.1 Competency must be assessed on the job or simulated environment. 6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience.

UNIT OF COMPETENCY : SERVICE DIESEL FUEL INJECTION SYSTEM/COMPONENTS

UNIT CODE : ALT 723325

UNIT DESCRIPTOR : This unit identifies the competence required in servicing diesel fuel injection system and components. It also includes the ability to overhaul rotary injection pump, setting of injection pump and pneumatic governor and testing injection pump.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables (NOTE: All standard of performance for Servicing ***Diesel Fuel Injection System/Components*** is in accordance with ***company standard operating procedure*** and manufacturer's specification ***manuals*** using specified ***tools and equipment***)
1. Overhaul rotary injection pump	1.1 Rotary injection pump is disassembled 1.2 No error in conducting failure analysis of injection pump 1.3 Corresponding recommendation is given based on the analysis 1.4 Injection pump parts is double checked for completeness, reference marks and torque 1.5 Rotary injection pump is assembled
2. Set rotary injection pump governor	2.1 Completeness of rotary injection governor parts and reference mark position is checked 2.2 No error in identifying rotary injection pump governor setting 2.3 Injection governor is adjusted
3. Set pneumatic governor	3.1 Completeness of pneumatic governor parts is checked. 3.2 No leak in the vacuum chamber 3.3 Initial setting is adjusted
4. Check injection automatic timing advance	4.1 Injection timing advance is read and verified 4.2 Injection timing advance checking device/tester is installed
5. Test injection pump	5.1 Governor setting determined accurately 5.2 Injection pump governor is adjusted 5.3 Damage governor parts is replaced
6. Overhaul feed pump	6.1 Feed pump is disassembled 6.2 No error in conducting failure analysis of feed pump 6.3 Corresponding recommendation is given based on the analysis 6.4 Feed pump parts double checked for completeness, reference mark, position and torque 6.5 Feed pump is assembled

RANGE OF VARIABLES

VARIABLE	RANGE
1. Injection Pump Governor	May include: 1.1 Unit injector governor 1.2 Rotary injection pump 1.3 Pneumatic governor 1.4 Common rail mechanical governor 1.5 Hydraulic governor
2. Manual	May include: 2.1 Manufacturer specification manual 2.2 Maintenance procedure manual 2.3 Periodic maintenance manual 2.4 Service manual 2.5 Parts Checklist
3. Tools and equipment	May include: Common and special service hand tools
4. Company standard operating procedure	May include: 4.1 Job order 4.2 Requisition slip 4.3 Wearing of personal protective equipment such as Apron, gloves, gas mask, goggles

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Overhauled rotary injection pump 1.2 Set rotary injection pump governor 1.3 Set pneumatic governor 1.4 Checked injection automatic timing advance 1.5 Tested injection pump
2. Required knowledge	2.1 Unit injector parts, function and operation and adjusting procedure 2.2 Rotary injection pump governor parts, function and operation 2.3 Precaution in setting injection pump governor 2.4 Pneumatic governor parts, function and operation 2.5 Setting procedure for pneumatic governor 2.6 Common rail mechanical governor, parts function and operation 2.7 Hydraulic governor parts, function and operation 2.8 Precaution in setting hydraulic governor 2.9 Positive Work Values (Patience, Perseverance, Honesty, etc.) 2.10 Quality procedures, e.g., 5S 2.11 Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)
3. Required skills	3.1 Setting hydraulic governor 3.2 Use of special tools and testing equipment 3.3 Troubleshooting and analysis of failures 3.4 Adjusting common rail mechanical governor 3.5 Setting rotary injection pump 3.6 Setting pneumatic governor 3.7 Reading and Interpreting manufacturer's manual
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 Observation/Demonstration with Questioning 5.2 Written test 5.3 Portfolio
6. Context of assessment	6.1 Competency must be assessed on the job or simulated environment. 6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience.

UNIT OF COMPETENCY : SERVICE ELECTRONIC DRIVE MANAGEMENT SYSTEMS

UNIT CODE : ALT 723326

UNIT DESCRIPTOR : This unit identifies the competence required to service drive management systems and/or associated components. Electronic drive management systems include: electrical/electronic components/systems found in automatic transmissions and/or 4WD driveline such as automatic free- wheeling hubs, differential and axle locks.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables (All standard of performance for Service and Repair ***Electronic Drive Management Systems*** is in accordance with ***company standard operating procedure*** and manufacturer's specification ***Manuals*** using specified ***tools and equipment)***
1. Service electronic drive Management systems and/or associated components	1.1 Service is performed without causing damage to any workplace property or vehicle. 1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. 1.3 Tests on electronic drive management systems are carried out to determine faults 1.4 Necessary service and component replacement/adjustments are carried out
2. Conduct air suspension system balance adjustment	2.1 Air suspension balance is adjusted 2.2 Cause of unbalanced air suspension is identified and remedied

RANGE OF VARIABLES

VARIABLE	RANGE
1. Electronic Drive Management Systems	May include: 1.1 Light vehicles and/or plant and equipment and/or heavy vehicles and/or outdoor power equipment 1.2 Electronic drive management systems include electronic controls of automatic transmissions. The electronic components of driveline control systems (e.g., traction control, auto transmission) 1.3 4WD applications such as automatic free wheeling hubs, differential and axle locks
2. Manuals	May include: 2.1 Manufacturer's specification manual 2.2 Preventive maintenance procedure manual 2.3 Preventive maintenance data 2.4 Service and repair manual 2.5 Parts checklist
3. Company standard operating procedure	May include: 3.1 Job order 3.2 Requisition slip 3.3 Wearing of Personal Protective Equipment such as: Apron, Safety shoes, Gloves, Goggles
4. Tools and equipment	May include: 4.1 Hand tools, vehicle lifting equipment, testing equipment including multimeter 4.2 Power tools, air tools, special tools for removal/adjustment 4.3 Specialized system testers
5. OHS requirements	May include: 5.1 Industry Safety and Health in Handling Electronic Devices including their disposal

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate 1.1 Tested electronic drive management systems and identified faults 1.2 Serviced/repaired electronic drive management systems 1.3 Conducted air suspension system balance adjustment
2. Required knowledge	2.1 Service/repair, removal, replacement and adjustment procedures 2.2 Occupational Health and Safety (OH&S) legislation 2.3 Testing/adjusting procedures 2.4 Construction and operation of drive management systems/components relevant to application 2.5 Personal safety requirements 2.6 Vehicle/equipment safety requirements 2.7 Positive Work Values (Patience, Perseverance, Honesty, etc.) 2.8 Quality procedures, e.g., 5S 2.9 Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)
3. Required skills	3.1 Testing electronic circuits and devices 3.2 Reading/Interpreting schematic diagram 3.3 Removing/Installing electronic devices 3.4 Using mathematical ideas and techniques 3.5 Solving problems 3.6 Using technology
4. Resource implications	The following resources should be provided: 4.1 Workplace and simulator 4.2 Appropriate tools and equipment 4.3 Materials relevant tot he proposed activity and tasks
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Written examination 5.2 Observation/Demonstration with Questioning
6. Context of assessment	6.1 Competency must be assessed on the job or simulated environment. 6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience.

UNIT OF COMPETENCY : SERVICE EMISSION CONTROL SYSTEMS

UNIT CODE : ALT 723327

UNIT DESCRIPTOR : This unit cover the skills, knowledge and attitudes required in servicing emission control systems and associated components.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables (NOTE: All standard of performance for Service and Repair ***Emission Systems*** is in accordance with ***company standard operating procedure*** and manufacturer's specification ***manuals*** using specified ***tools and equipment***.)
1. Inspect vehicle	1.1 Appropriate job order for vehicle is obtained and completed 1.2 Vehicle is parked with tail end facing open area but within shop area 1.3 Left and right fenders are covered with non-abrasive materials 1.4 No leak is inspected in between venting device 1.5 Venting device is pointed outside the work area 1.6 Engine water temperature is observed at 82°C operating condition 1.7 Inspection sheet is completely filled up
2. Conduct pre-emission inspection	2.1 Fuel metering system is determined if existing or not 2.2 Air injection system is determined if existing or not 2.3 Computer is determined if existing or not for EFI/carburetor engine 2.4 Other OEM installed devices are located and identified
3. Conduct emission testing (Diesel and gas)	3.1 Probe is connected at least 30 cm from the inside of the exhaust pipe 3.2 Temperature and RPM probes is connected 3.3 Range idle mode is adjusted 3.4 Free acceleration test is performed 3.5 Emission test (gas/diesel) is performed 3.6 Emission record sheet is completely filled up 3.7 No error in the emission test report 3.8 Emission Test Equipment (ETE) and other devices and tools are returned to appropriate storage
4. Service emission control systems and/or associated components	4.1 Work is completed without causing damage to any workplace property or vehicle. 4.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. 4.3 Appropriate test equipment is selected. 4.4 Tests are performed and results are analyzed 4.5 Emission control system, assemblies and components are serviced.

RANGE OF VARIABLES

VARIABLE	RANGE	
1. Emission control system	May include: 1.1 Positive Crankcase Ventilation (PCV) 1.2 Injection pump 1.3 Injection nozzle/injector 1.4 Fuel sedimeter 1.5 Air cleaner 1.6 Turbo Charger System 1.7 Exhaust System (muffler) 1.8 Catalytic converter	Gasoline engine emission components: 1.9 Air cleaner 1.10 Positive crankcase ventilation (PCV) 1.11 Charcoal canister 1.12 Catalytic converter 1.13 Oxygen sensor 1.14 MAP/PIM Sensor 1.15 High altitude Compensator 1.16 Automatic Hot Air intake System 1.17 Exhaust Gas Recirculation (EGR) 1.18 Fuel injector
2. Manuals	May include: 2.1 Manufacturer specification manual 2.2 Maintenance procedure manual 2.3 Periodic maintenance manual 2.4 Service manual 2.5 Parts Checklist	
3. Tools and equipment	May include: 3.1 Hand tools, test equipment including; exhaust gas analyzers, opacimeter, hand held meters 3.2 Power tools, special tools for testing, removal or adjustment, dynamometers	
4. Company standard operating procedure	May include: 4.1 Job order 4.2 Requisition slip 4.3 Wearing of personal protective equipment such as Apron, gloves, gas mask, goggles 4.4 Industry/Workplace Codes of Practice 4.5 IRR on Phil Clean Air Act 1999 4.6 Material safety data sheets 4.6 Appropriate licenses and certificates	

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1Conducted emission control test of vehicle 1.2 Serviced emission control systems and associated components
2. Required knowledge	2.1 OH&S legislation 2.2 Implementing Rules and Regulation for Phil. Clean Air Act 1999 2.3 Identification of motor vehicle emissions and their effects on the environment 2.4 The relationship between emission control system faults and their symptoms 2.5 Testing procedures 2.6 Types of emission systems and components 2.7 Operation of emission control systems, sub-assemblies and components (relevant to application) 2.8 Service, repair and adjustment principles for emission control systems 2.9 The interpretation of technical information, graphic symbols and diagrams 2.10 Positive Work Values (Patience, Perseverance, Honesty, etc.) 2.11Quality procedures, e.g., 5S 2.12Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)
3. Required skills	3.1 Work safety 3.2 Access, interpret and apply technical information 3.3 Test emission systems/component) 3.4 Safely and correctly use tools and equipment 3.5 Remove and replace emission control systems and components 3.6 Maintain customers records 3.7 Test, inspect and evaluate emission control system/components 3.8 Repair and adjust emission control systems
4. Resource implications	The following resources should be provided: 4.1 Workplace: Real workshop with gas and diesel vehicles 4.2 Appropriate Tools Materials relevant to the activity 4.3 Diesel and Gas emission test equipment 4.4 Protective devices; gas mask
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Observation/Demonstration with questioning 5.2 Written test 5.3 Portfolio
6. Context of assessment	6.1 Competency must be assessed on the job or simulated environment. 6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience

UNIT OF COMPETENCY : SERVICE AND REPAIR ELECTRONICALLY CONTROLLED ANTI-LOCK BRAKING SYSTEMS

UNIT CODE : ALT 723362

UNIT DESCRIPTOR : This unit covers the competence to carry out service / repairs to electronically controlled anti-lock brakes in accordance with manufacturer/component supplier specifications fitted to light vehicles and/or heavy vehicles, The unit includes identification and confirmation of work requirement, preparation for work, testing and diagnosis of faults, servicing, repair and retesting of systems and completion of work finalization processes, including clean-up and documentation..

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables (NOTE: All standard of performance for Service and Repair ***Emission Systems*** is in accordance with ***company standard operating procedure*** and manufacturer's specification ***manuals*** using specified ***tools and equipment***.)
1. Prepare for work	1.1 Work instructions are used to determine job requirements, including quality, material, equipment quantities and service manuals 1.2 Job specifications are read and interpreted 1.3 ***OH&S*** requirements, including personal protection needs, are observed throughout the work 1.4 Electronic system protection devices, processes and precautions are identified appropriate to the application 1.5 ***Tools and equipment*** are identified and checked for safety and correct operation 1.6 Procedures are identified to minimize task time
2. Test control system, diagnose faults and determine service/repair requirements	2.1 Correct ***information*** is accessed and interpreted from manufacturer/component supplier specifications 2.2 Tests are carried out according to manufacturer / component supplier recommended procedures using tooling, equipment and techniques 2.3 Testing is completed without causing damage to component or system 2.4 Test results are used to diagnose system/component ***faults*** 2.5 Service/repair requirements are determined 2.6 Testing is carried out according to industry regulations/guidelines OH&S and enterprise/procedures policies

3. Service/repair anti - lock braking systems	3.1 Correct information is accessed and interpreted from Manufacturer / component supplier specifications 3.2 Service/repair requirements are carried out according to manufacturer / component supplier recommended specifications and procedures 3.3 Service/repair is completed without causing damage to component or system 3.4 Electronic systems are tested and results are documented in accordance with workplace policies and procedures 3.5 Service, repair and retesting are carried out according to industry regulations/guidelines, OH&S and enterprise / procedures policies 3.6 Workplace and equipment documents are completed in accordance with site requirements
4. Clean up work area and maintain equipment	4.1 Material that can be reused is collected and stored 4.2 Waste and scrap are removed following workplace procedures 4.3 Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures 4.4 Unserviceable equipment is tagged and faults identified in accordance with workplace procedures 4.5 Operator maintenance is completed in accordance with manufacturer / component supplier specifications and site procedures 4.6 Tooling is maintained in accordance with workplace Procedures

RANGE OF VARIABLES

VARIABLE	RANGE
1. OH&S	1.1. OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. 1.1.1 Protective clothing and equipment, 1.1.2 use of tooling and equipment, 1.1.3 workplace environment and safety 1.1.4 handling of material 1.1.5 use of fire fighting equipment 1.1.6 enterprise first aid 1.1.7 hazard control and hazardous materials and substances 1.1.8 Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and procedures 1.2 Safe operating procedures are to include, but are not limited to the 1.2.1 conduct of operational risk assessment and treatments associated with vehicular movement 1.2.2 toxic substances 1.2.3 electrical safety 1.2.4 machinery movement and operation 1.2.5 manual and mechanical lifting and shifting
2. Tools and equipment	May include: 2.1 Hand tools 2.2 Multimeter, 2.3 Vehicle lifting devices 2.4 Power tools 2.5 Special tooling for removal/replacement 2.6 Brake and side slip tester 2.7 Electronic testing equipment 2.8 Oscilloscope and scan tools
3. Information	May include: 3.1 Verbal or written and graphical instructions, signage, work schedules / plans / specifications, work bulletins, memos, material safety data sheets, diagrams or sketches 3.2 Safe work procedures related to service and repair of electronically controlled anti-lock braking systems 3.3 Manufacturer specification and service manual
4. Fault	May include: 4.1 Component malfunction 4.2 System adjustment 4.3 Open, short and grounded circuits 4.4 Incorrect inputs and outputs 4.5 Incorrect information

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 Selected methods and techniques appropriate to the circumstances 1.4 Completed preparatory activity in a systematic manner 1.5 Tested, inspected and evaluated electronic anti-lock wheel systems, speed sensors and related components 1.6 Diagnosed and determined the repair/replacement requirements to rectify faults 1.7 Serviced /repaired electronic anti-lock braking systems to manufacturer/component supplier requirements 1.8 Completed the work within agreed time 1.9 Completed workplace and equipment documents
2. Required knowledge	2.1 OH&S regulations/requirement, equipment, material and personal safety requirements 2.2 Operating principles of electronic anti-lock braking systems 2.3 Construction and operation of electronic anti-lock braking systems 2.5 Types and layout of service/repair manuals (hard copy and electronic) 2.5 Relationship to other electronically controlled system(s), including shared components like ECUs, sensors 2.6 Testing, diagnosis and fault determination procedures 2.7 Servicing/repairing, removal, replacement and adjustment procedures relevant to application 2.8 Work organization and planning processes 2.9 Enterprise quality processes 2.10 Quality procedures, e.g., 5S 2.11 Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)

3. Required skills	3.1 Collecting, organizing and understanding information related to work orders, plans and safety procedures for servicing, repairing and testing electronic anti-lock braking systems 3.2 Planning and organizing activities, including preparation and layout of worksite and obtaining of equipment and material 3.3 Using pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material 3.4 Using workplace technology related to the service and repair of electronically controlled anti-lock braking systems, including the use of specialist tooling and equipment, measuring equipment, computerized technology and communication devices and the reporting/documenting of results
4. Resource implications	The following resources should be provided: 4.1 Workplace location or simulated workplace 4.2 Material relevant to the service and repair of electronically controlled anti-lock braking systems 4.3 Equipment, hand and power tools appropriate to the service and repair of electronically controlled anti-lock braking systems 4.4 Specifications and work instructions
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Observation/Demonstration with questioning 5.2 Written test 5.3 Portfolio
6. Context of assessment	6.1 Competency must be assessed on the job or simulated environment. 6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience

UNIT OF COMPETENCY : SERVICE AND REPAIR ELECTRONICALLY OPERATED TRACTION CONTROL SYSTEMS

UNIT CODE : ALT 723363

UNIT DESCRIPTOR : This unit covers the competence to carry out service/repairs to electronically operated traction control systems in accordance with manufacturer/component supplier specifications. It specifically applies to control systems and components. The unit includes identification and confirmation of work requirement, preparation for work, testing of systems, identification of servicing and repair requirements, servicing and repair of systems and completion of work finalization processes, including clean-up and documentation.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables (NOTE: All standard of performance for Service and Repair ***Emission Systems*** is in accordance with ***company standard operating procedure*** and manufacturer's specification ***manuals*** using specified ***tools and equipment***.)
1. Prepare for work	1.1 Work instructions are used to determine job requirements, including quality, material, equipment quantities and service manuals 1.2 Job specifications are read and interpreted 1.3 ***OH&S*** requirements, including personal protection needs, are observed throughout the work 1.4 Electronic system protection devices, processes and precautions are identified appropriate to the application 1.5 ***Tools and equipment*** are identified and checked for safety and correct operation 1.6 Procedures are identified to minimize task time
2. Test control system, and determine service/repair requirements	2.1 Correct ***information*** is accessed and interpreted from manufacturer/component supplier specifications 2.2 Tests are carried out according to manufacturer / component supplier recommended procedures using tooling, equipment and techniques 2.3 Testing is completed without causing damage to component or system 2.4 Test results are used to diagnose system/component ***faults*** 2.5 Service/repair requirements are determined 2.6 Testing is carried out according to industry regulations/guidelines OH&S and enterprise/ procedures policies

3. Service/repair electronic traction control	3.1 Correct information is accessed and interpreted from Manufacturer / component supplier specifications 3.2 Service/repair requirements are carried out according to manufacturer / component supplier recommended specifications and procedures 3.3 Service/repair is completed without causing damage to component or system 3.4 Service, repair and retesting are carried out according to industry regulations/guidelines, OH&S and enterprise / procedures policies
4. Clean up work area and maintain equipment	4.1 ***Material*** that can be reused is collected and stored 4.2 Waste and scrap are removed following workplace procedures 4.3 Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures 4.4 Unserviceable equipment is tagged and faults identified in accordance with workplace procedures 4.5 Operator maintenance is completed in accordance with manufacturer / component supplier specifications and site procedures 4.6 Tooling is maintained in accordance with workplace Procedures

RANGE OF VARIABLES

VARIABLE	RANGE
1. OH&S	1.1 OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. 1.1.1. Protective clothing and equipment, 1.1.2. use of tooling and equipment, 1.1.3. workplace environment and safety 1.1.4. handling of material 1.1.5. use of fire fighting equipment 1.1.6. enterprise first aid 1.1.7. hazard control and hazardous materials and substances 1.1.8. Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and procedures 1.2 Safe operating procedures are to include, but are not limited to the 1.2.1. conduct of operational risk assessment and 1.2.2. treatments associated with vehicular movement 1.2.3. toxic substances 1.2.4. electrical safety 1.2.5. machinery movement and operation 1.2.6. manual and mechanical lifting and shifting
2. Tools and equipment	May include: 2.1 Hand tools 2.2 Multimeter, 2.3 Vehicle lifting devices 2.4 Power tools 2.5 Specialist tooling for removal/replacement 2.6 Brake dynamometer 2.7 Electronic testing equipment 2.8 Oscilloscope and scan tools
3. Information	May include: 3.1 Verbal or written and graphical instructions, signage, work schedules / plans / specifications, work bulletins, memos, material safety data sheets, diagrams or sketches 3.2 Safe work procedures related to service and repair of electronically operated traction control systems 3.3 Manufacturer specification and service manual
4. Fault	May include: 4.1 Component malfunction 4.2 System adjustment 4.3 Open, short and grounded circuits 4.4 Incorrect inputs and outputs 4.5 Incorrect information

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 Selected methods and techniques appropriate to the circumstances 1.4 Completed preparatory activity in a systematic manner 1.5 Tested, inspected and evaluated electronically operated traction control systems, including wheel sensors 1.6 Diagnosed and determined the repair/replacement requirements to rectify faults 1.7 Serviced /repaired electronically operated traction control systems to manufacturer/component supplier requirements
2. Required knowledge	2.1 OH&S regulations/requirement, equipment, material and personal safety requirements 2.2 Operating principles of electronically operated traction control systems 2.3 Construction and operation of electronically operated traction control systems 2.4 Types and layout of service/repair manuals (hard copy and electronic) 2.5 Relationship to other electronically controlled system(s), including shared components like ECUs, sensors 2.6 Testing, diagnosis and fault determination procedures 2.7 Servicing/repairing, removal, replacement and adjustment procedures relevant to application 2.8 Work organization and planning processes 2.9 Enterprise quality processes 2.10 Quality procedures, e.g., 5S 2.11 Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)

3. Required skills	3.1 Collecting, organizing and understanding information related to work orders, plans and safety procedures for servicing, repairing and testing electronic traction control systems 3.2 Planning and organizing activities, including preparation and layout of worksite and obtaining of equipment and material 3.3 Using pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material 3.4 Using workplace technology related to the service and repair of electronically operated traction control systems, including the use of specialist tooling and equipment, measuring equipment, computerized technology and communication devices and the reporting/documenting of results
4. Resource implications	The following resources should be provided: 4.1 Workplace location or simulated workplace 4.2 Material relevant to the service and repair of electronically operated traction control systems 4.3 Equipment, hand and power tools appropriate to the service and repair of electronically operated traction control systems 4.4 Specifications and work instructions
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Observation/Demonstration with questioning 5.2 Written test 5.3 Portfolio
6. Context of assessment	6.1 Competency must be assessed on the job or simulated environment. 6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience

UNIT OF COMPETENCY : SERVICE AND REPAIR ELECTRONICALLY OPERATED STABILITY CONTROL SYSTEMS

UNIT CODE : ALT 723364

UNIT DESCRIPTOR : This unit covers the competence to carry out service/repairs to electronic stability control systems in accordance with manufacturer / component supplier specifications. The unit includes identification and confirmation of work requirement, preparation for work, testing of systems,identification of servicing and repair requirements, servicing and repair of systems and completion of work finalization processes, including clean-up and documentation.

ELEMENT	PERFORMANCE CRITERIA ***Italicized terms*** are elaborated in the Range of Variables (NOTE: All standard of performance for Service and Repair ***Emission Systems*** is in accordance with ***company standard operating procedure*** and manufacturer's specification ***manuals*** using specified ***tools and equipment***.)
1. Prepare for work	1.1 Work instructions are used to determine job requirements, including quality, material, equipment quantities and service manuals 1.2 Job specifications are read and interpreted 1.3 ***OH&S*** requirements, including personal protection needs, are observed throughout the work 1.4 Electronic system protection devices, processes and precautions are identified appropriate to the application 1.5 ***Tools and equipment*** are identified and checked for safety and correct operation 1.6 Procedures are identified to minimize task time
2. Test control system, diagnose faults and determine service / repair requirements	2.1 Correct ***information*** is accessed and interpreted from manufacturer/component supplier specifications 2.2 Tests are carried out according to manufacturer / component supplier recommended procedures using tooling, equipment and techniques 2.3 Testing is completed without causing damage to component or system 2.4 Test results are used to diagnose system/component ***faults*** 2.5 Service/repair requirements are determined 2.6 Testing is carried out according to industry regulations/guidelines OH&S and enterprise/ procedures policies

3. Service/repair electronic stability control systems	3.1 Correct information is accessed and interpreted from Manufacturer / component supplier specifications 3.2 Service/repair requirements are carried out according to manufacturer / component supplier recommended specifications and procedures 3.4 Service/repair is completed without causing damage to component or system 3.4 Service, repair and retesting are carried out according to industry regulations/guidelines, OH&S and enterprise / procedures policies
4. Clean up work area and maintain equipment	4.1 ***Material*** that can be reused is collected and stored 4.2 Waste and scrap are removed following workplace procedures 4.3 Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures 4.4 Unserviceable equipment is tagged and faults identified in accordance with workplace procedures 4.5 Operator maintenance is completed in accordance with manufacturer / component supplier specifications and site procedures 4.6 Tooling is maintained in accordance with workplace Procedures

RANGE OF VARIABLES

VARIABLE	RANGE
1. OH&S	1.1 OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. 1.1.1. Protective clothing and equipment, 1.1.2. use of tooling and equipment, 1.1.3. workplace environment and safety 1.1.4. handling of material 1.1.5. use of fire fighting equipment 1.1.6. enterprise first aid 1.1.7. hazard control and hazardous materials and substances 1.1.8. Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and procedures 1.3 Safe operating procedures are to include, but are not limited to the 1.1.1. conduct of operational risk assessment and 1.1.2. treatments associated with vehicular movement 1.1.3. toxic substances 1.1.4. electrical safety 1.1.5. machinery movement and operation 1.1.6. manual and mechanical lifting and shifting
2. Tools and equipment	May include: 2.1 Hand tools 2.2 Multimeter, 2.3 Vehicle lifting devices 2.4 Power tools 2.5 Special tooling for removal/replacement 2.6 Brake dynamometer 2.7 Electronic testing equipment 2.8 Oscilloscope and scan tools
3. Information	May include: 3.1 Verbal or written and graphical instructions, signage, work schedules / plans / specifications, work bulletins, memos, material safety data sheets, diagrams or sketches 3.2 Safe work procedures related to service and repair of electronically controlled anti-lock braking systems 3.3 Manufacturer specification and service manual
4. Fault	May include: 4.1 Component malfunction 4.2 System adjustment 4.3 Open, short and grounded circuits 4.4 Sensor malfunction 4.5 Sensor network 4.6 Network operation faults

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 Selected methods and techniques appropriate to the circumstances 1.4 Completed preparatory activity in a systematic manner 1.5 Tested, inspected and evaluated electronic stability control systems, including sensors 1.6 Diagnosed and determined the repair/replacement requirements to rectify faults 1.7 Serviced /repaired electronic stability control systems to workplace and manufacturer/component supplier requirements
2. Required knowledge	2.1 OH&S regulations/requirement, equipment, material and personal safety requirements 2.2 Operating principles of electronic stability control systems 2.3 Construction and operation of electronic stability control systems 2.4 Types and layout of service/repair manuals (hard copy and electronic) 2.5 Relationship to other electronically controlled system(s), including shared components like ECUs, sensors 2.6 Testing, diagnosis and fault determination procedures 2.7 Servicing/repairing, removal, replacement and adjustment procedures relevant to application 2.8 Work organization and planning processes 2.9 Enterprise quality processes 2.10 Quality procedures, e.g., 5S 2.11 Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)
3. Required skills	3.1 Collecting, organizing and understanding information related to work orders, plans and safety procedures for servicing, repairing and testing of electronic stability control systems 3.2 Planning and organizing activities, including preparation and layout of worksite and obtaining of equipment and material 3.3 Using pre-checking and inspection techniques to anticipate planning and scheduling problems, avoid wastage of time and material 3.4 Using workplace technology related to the service and repair of electronically operated stability control systems, including the use of specialist tooling and equipment, measuring equipment, computerized technology and communication devices and the reporting/documenting of results

4. Resource implications	The following resources should be provided: 4.1 Workplace location or simulated workplace 4.2 Material relevant to the service and repair of electronically operated stability control systems 4.3 Equipment, hand and power tools appropriate to the service and repair of electronically traction control systems 4.4 Specifications and work instructions
5. Method of assessment	Competency in this unit may be assessed through: 5.1 Observation/Demonstration with questioning 5.2 Written test 5.3 Portfolio
6. Context of assessment	6.1 Competency must be assessed on the job or simulated environment. 6.2 The assessment of practical skills must take place after a period of supervised practice and repetitive experience

UNIT OF COMPETENCY : **PLAN ASSESSMENT ACTIVITIES AND PROCESSES**

UNIT CODE : **ALT311365**

UNIT DESCRIPTOR : This unit describes the performance outcomes, skills and knowledge required to plan and organize the assessment process, including recognition of prior learning in a competency-based assessment system. It also includes the development of simple assessment instruments.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Determine assessment approach	1.1 Identify candidate and confirm ***purposes and context of assessment*** with relevant people according to ***legal, organizational and ethical requirements*** 1.2 Identify and access ***benchmarks for assessment*** and any specific assessment guidelines
2. Prepare the assessment plan	2.1. Determine evidence and ***types of evidence*** needed to demonstrate competence, according to the ***rules of evidence*** 2.2. Select ***assessment methods*** which will support the collection of defined evidence, taking into account the context in which the assessment will take place 2.3. Document all aspects of the ***assessment plan*** and confirm with relevant personnel
3. Develop assessment instruments	3.1. Develop ***simple assessment instruments*** to meet target group needs 3.2. Analyze ***available assessment instruments*** for their suitability for use and modify as required 3.3. ***Map assessment*** instruments against unit or course requirements 3.4. Write clear instructions for candidate about the use of the instruments 3.5. Trial draft assessment instruments to validate content and applicability, and record outcomes

RANGE OF VARIABLES

VARIABLE	RANGE
1. Purposes of assessment	May include: 1.1. Recognizing current existing competence of candidates 1.2. Determining if competence has been achieved following learning 1.3. Establishing candidate progress towards achievement of competence 1.4. Determining language, literacy and numeracy needs of candidates 1.5. Certifying competence through a qualification or Statement of Attainment 1.6. Licensing or regulatory requirements
2. Context of assessment	May include: 2.1. Environment in which the assessment will be carried out, including real or simulated workplace 2.2. Opportunities for collecting evidence in a number of situations 2.3. Relationships between competency standards and 2.3.1. Evidence to support recognition of prior learning 2.3.2. work activities in the candidate's workplace 2.3.3. learning activities 2.4. Who carries out the assessment
3. Organizational, legal and ethical requirements	May include: 3.1. Assessment system policies and procedures 3.2. Assessment strategy requirements 3.3. Reporting, recording and retrieval systems for assessment, including recognition of prior learning 3.4. Quality assurance systems 3.5. Business and performance plans 3.6. Access and equity policies and procedures 3.7. Collaborative and partnership arrangements 3.8. Defined resource parameters 3.9. mutual recognition arrangements 3.10. Industrial relations systems and processes, awards, and enterprise agreements 3.11. Registration scope 3.12. Human resources policies and procedures 3.13. Legal requirements, including 3.13.1. Anti-discrimination 3.13.2. Equal employment opportunity 3.13.3. Job role, responsibilities and conditions 3.14. Relevant industry codes of practice 3.15. Confidentiality and privacy requirements 3.16. OHS considerations, including: 3.16.1. Ensuring OHS requirements are adhered to during the assessment process 3.16.2. Identifying and reporting OHS hazards and concerns to relevant personnel

4. Benchmarks for assessment / recognition of prior learning	May include: 4.1. Criterion against which the candidate is assessed or prior learning recognized, which may be: 4.1.1. Competency standard/unit of competency 4.1.2. Assessment criteria of course curricula 4.1.3. Performance specifications of an enterprise or industry 4.1.4. Product specifications
5. Types of evidence	May include: 5.1. Direct 5.2. Indirect 5.3. Supplementary
6. Rules of evidence	May include: 6.1. Valid 6.2. Sufficient 6.3. Authentic 6.4. Reliable
7. Assessment methods	May include: 7.1. Direct observation 7.1.1. Real work/real time activities at the workplace 7.1.2. Work activities in a simulated workplace environment 7.2. Structured activities: 7.2.1. Simulation exercises and role-plays 7.2.2. Projects 7.2.3. Presentations 7.2.4. Activity sheets 7.3. Questioning: 7.3.1. Written questions, e.g. on a computer 7.3.2. Interviews 7.3.3. Self-assessment 7.3.4. Verbal questioning 7.3.5. Questionnaires 7.3.6. Oral or written examinations (applicable at higher AQF levels)
	7.4. Portfolios of evidence: 7.4.1. Collection of work samples compiled by candidate 7.4.2. Product with supporting documentation 7.4.3. Historical evidence 7.4.4. Journal or log book 7.4.5. Information about life experience 7.5. Review of products: 7.5.1. Testimonials and reports from employers and supervisors 7.5.2. Evidence of training 7.5.3. Authenticated prior achievements 7.5.4. Interview with employer, supervisor, or peer.

8. Assessment plan	May include: 8.1. Overall planning document describing: 8.2. What is to be assessed 8.3. When assessment is to take place 8.4. Where assessment is to take place 8.5. How assessment is to take place.
9. Simple assessment instruments	May include: 9.1. Instruments developed by an assessor as part of formative or summative assessment activities, including: 9.1.1. Profiles of acceptable performance measures 9.1.2. Templates 9.1.3. Specific questions or activities 9.1.4. Evidence and observation checklists 9.1.5. Checklists for the evaluation of work samples 9.1.6. Recognition portfolios 9.1.7. Candidate self-assessment materials 9.2. Instruments developed elsewhere that have been modified by the assessor for use with a particular client group.
10. Available assessment instruments	May include: 10.1. Commercially available instruments 10.2. Those created by others inside the registered training organization.
11. Map assessment	May include: Showing a clear relationship between the evidence and the requirements of the unit.

EVIDENCE GUIDE

1. Critical Aspects of Competency	Evidence of the ability to: 1.1. Planned and organized the assessment process on a minimum of two occasions 1.2. Collected evidence that demonstrates: 1.2.1. Documented assessment plans 1.2.2. Covered a range of assessment events 1.2.3. Catered for a number of candidates 1.2.4. Different competency standards or accredited curricula 1.2.5. Recognition of prior learning assessment 1.2.6. Contextualisation of competency standards and the selected assessment tools, where required 1.2.7. Incorporation of reasonable adjustment strategies 1.2.8. Development of simple assessment instruments for use in the process 1.2.9. Organisational arrangements
2. Required knowledge	2.1. Ethical and legal requirements of an assessor 2.2. Competency-based assessment, including: 2.2.1. Work-focused 2.2.2. Criterion-referenced 2.2.3. Standards-based 2.2.4. Evidence-based 2.3. Different purposes of assessment and different assessment contexts, including recognition of prior learning 2.4. How to read and interpret the identified competency standards as the benchmarks for assessment 2.5. How to contextualise competency standards within relevant guidelines 2.6. Four principles of assessment and how they guide the assessment process 2.7. Purpose and features of evidence, and different types of evidence used in competency-based assessments, including recognition of learning process 2.8. Rules of evidence and how they guide evidence collection 2.9. Different types of assessment methods, including suitability for collecting various types of evidence 2.10. Assessment tools and their purpose; different types of tools; relevance of different tools for specific evidence-gathering opportunities 2.11. Quality procedures, e.g., 5S 2.12. Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)

3. Required Skills	3.1 Cognitive interpretation skills to: 3.1.1 Interpret competency standards and other assessment documentation, including material relating to reasonable adjustment 3.1.2 Identify opportunities for integrated competency assessment 3.1.3 Contextualize competency standards to the operating assessment environment, including recognition of prior learning 3.1.4 Consider access and equity needs of diverse candidates 3.2 Technology skills to use appropriate equipment and software to communicate effectively with others 3.3 Research and evaluation skills to: 3.3.1 Obtain competency standards, assessment tools and other relevant assessment resources 3.3.2 Research candidate characteristics and any reasonable adjustment needs 3.3.3 Evaluate feedback, and determine and implement improvements to processes 3.4 Literacy skills to read and interpret relevant information to design and facilitate assessment and recognition processes 3.5 Communication skills to discuss assessment, including recognition of learning process processes with clients and other assessors 3.6 Interpersonal skills to: 3.6.1 Demonstrate sensitivity to access and equity considerations and candidate diversity 3.6.2 Promote and implement equity, fairness, validity, reliability and flexibility in planning an assessment processes
4.Resource Implications	The following resources should be provided: 4.1. Evidence must be gathered in the workplace wherever possible. Where no workplace is available, a simulated workplace must be provided. 4.2. Assessment must ensure access to training products, such as training packages and accredited course documentation.
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 OFMPETENCY : MANAGE FACILITY AND INVENTORY REQUIREMENTS
UNIT CODE : ALT311366
UNIT DESCRIPTOR : This unit involves the skills and knowledge required to manage a facility and its inventory requirements. It includes identifying space, safety and security requirements; developing a documentation system; designing storage zones; and evaluating facility utilization.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Identify space requirements	1.1 The medium-term and long-term storage needs of the organization are assessed to facilitate planning in accordance with the business plan of the enterprise 1.2 Product type, picking frequencies, value, fragility, weight, handling characteristics, quantity and holding periods are assessed to consider ***type and amount of storage*** 1.3 Facility is assessed to determine the stock holding and ***handling requirements*** for each inventory item 1.4 Volume requirements are calculated to ensure that ongoing stock holding needs are met 1.5 The total space requirement is calculated and used to formulate plan for ***space utilization***
2 Identify safety and security requirements	2.1 An assessment is made of risks to ensure maximum safety and security for personnel, stock and facilities 2.2 ***Storage handling security*** and incident/emergency procedures for each class or type of product are identified and documented 2.3 Fire prevention and firefighting systems are identified in accordance with building code regulations and storage material requirements 2.4 An evacuation plan is developed in accordance with the safety program of the enterprise
3 Develop documentation system	3.1 An inventory system for recording and tracing stock location, receiving, throughput and dispatch is developed and implemented to enable reporting, quality assurance and financial requirements to be met 3.2 A system for recording communication with carriers, customers and employees is developed and implemented to assess operational effectiveness and to provide data for system improvement.

4	Design storage zones	4.1	Space requirements and equipment operation are accurately assessed to facilitate the planning of warehouse zones
		4.2	An assessment is made of the facility to enable the most effective use of available space
		4.3	Positioning of storage areas, bays, work stations and the like is undertaken in accordance with data obtained from the ***planning process***
		4.4	Provision for maintenance and cleaning is catered for
5	Evaluate facility utilization	5.1	A continual system of review is used involving regular checks to ensure storage areas and systems are functioning at optimum levels
		5.2	Receiving and dispatch systems provide efficient operations
		5.3	Storage and handling systems provide ease of access and comply with ergonomic principles
		5.4	Product handling and storage minimizes product damage, contamination and stock losses
		5.5	Facility layout remains sufficiently flexible to meet changing storage and handling requirements
		5.6	***Appropriate reporting systems*** are established and used to maintain data for the design of improved facilities and systems

RANGE OF VARIABLES

VARIABLE	RANGE
1. Type and amount of storage	May include: 1.1. Fast moving item 1.2. Slow moving item 1.3. Amount in terms of number or quantity 1.4. Amount in terms of standard number of packaging (SNP)
2. Handling requirements	May include: 2.1. Hand pallet truck 2.2. Forklift 2.3. Pallets 2.4. Tote bins
3. Space utilization	May involve: 3.1. Twenty four hour operation 3.2. Single and multi-site location 3.3. Large, medium and small companies 3.4. Horizontal and or vertical space utilization
4. Storage handling procedures	May include: 4.1. Standard operating procedures (SOPs) 4.2. Company procedures 4.3. Organizational procedures 4.4. Established procedures
5. Planning process	May include: 5.1. Material requirement planning (MRP) 5.2. Economic ordering quantity (EOQ) 5.3. Just in time delivery system (JIT)

6. Communication in the work area	May include: 6.1 Phone 6.2 Electronic data interchange (EDI) 6.3 Fax 6.4 E-mail 6.5 Internet 6.6 RF systems 6.7 Oral, aural or signed communications
7. Appropriate reporting system	May involve: 7.1. Other employees and supervisors 7.2. Relevant authorities and institutions 7.3. Management and union representatives 7.4. Industrial relations and OH&S specialists 7.5. Customers and suppliers 7.6. Other professional or technical staff, contractors and maintenance personnel

EVIDENCE GUIDE

1. Critical Aspects of Competency	The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying: 1.1. the underpinning knowledge and skills 1.2. relevant legislation and workplace procedures 1.3. other relevant aspects of the range statement
2. Required knowledge	2.1. Relevant sections of national and state or territory regulatory requirements and codes of practice, including knowledge of fire safety and building regulations applicable to the facility 2.2. Relevant OH&S and environmental procedures and regulations 2.3. Focus of operation of warehouse systems, resources, management and workplace operating systems 2.4. Enterprise business policies and plans including procedures for operations of the facility 2.5. Throughput and storage requirements for specific types of inventory 2.6. Principles, purpose and location of controls, monitoring devices, and systems 2.7. Selection and appropriate application of technology, information systems and procedures 2.8. Procedures for operating electronic communications equipment 2.9. Requirements for completing relevant documentation 2.10. Procedures for managing and controlling hazardous situations when carrying out work activities, particularly those that relate to the storage of materials 2.11. Procedures to be followed in the event of an emergency 2.12. Quality procedures, e.g., 5S 2.13. Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)
3. Required Skills	3.1 Communicate effectively with others when managing facility and inventory requirements 3.2 Read and interpret plans, diagrams, regulations, codes of practice and other documentation relevant to the management of facilities and inventory requirements 3.3 Provide leadership to others when managing facilities and inventory requirements 3.4 Adapt appropriately to cultural differences in the workplace, including modes of behavior and interactions with others 3.5 Promptly report and or rectify any identified problems that may arise during the planning and management of facilities and inventory requirements 3.6 Develop and implement contingency plans for unplanned events which may arise during the management of facilities and inventory requirements 3.7 Prioritize work and coordinate the work of others 3.8 Apply precautions and required action to minimize, control or eliminate hazards that may exist during work activities 3.9 Select and apply appropriate technology, information systems and procedures when managing facility and inventory requirements

4. Resource Implications	The following resources should be provided: 4.1. A range of relevant exercises, case studies and/or other simulated practical and knowledge assessment 4.2. Access to an appropriate range of relevant operational situations in the workplace 4.3. Relevant and appropriate materials and equipment, 4.4. Applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
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 : ESTIMATE COMPLEX JOB
UNIT CODE : ALT311367
UNIT DESCRIPTOR : This unit of competency covers the competence required to estimate the time requirements for complex jobs, source requirements, gather cost estimates from external service providers and document quotations.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Estimate time requirements for jobs	1.1 ***Methods*** used for time estimates for job requirements are calculated based on warranty times, staff estimates, standard service/repair times, specifications, and subcontracted timeframes 1.2 Service/repair times are estimated and compared to documented estimate to ensure repair job is viable 1.3 Turn-around times for work completed by subcontractor are incorporated into total time estimates
2 Source parts	2.1. Viability of replacement compared to repair is ascertained to meet quality standards and ***legal requirements*** 2.2. Part requirements are determined to ensure cost constraints are met 2.3. Parts and consumables required for the job are ordered 2.4. Parts are sourced externally when internal stock is not available to meet customer requirements
3 Identify subcontract testing and/or service/ repair work costs for incorporation into the total estimated cost	3.1. Estimate is documented 3.2. Service/repair requirements, procedures and costs are documented in a logical order 3.3. Service/repair requirements are documented in detail 3.4. Estimate is relevant to the identified service/repair requirements 3.5. Potential ***variations*** are noted on the estimate
4 Estimate total job costs	4.1. External service providers are given a clear outline of the work and time requirements of the job 4.2. ***Job cost estimate*** is documented and agreed with external service providers 4.3. Cost of parts and consumables are estimated according to industry and/or enterprise pricing standards 4.4. Supplementary estimate is prepared, to gain authorization from owner for additional service/repairs 4.5. Final estimate is documented 4.6. Authorization is gained from customer to commence work and/or undertake supplementary work
5 Report estimations to customer	5.1. Report of findings is completed in the enterprise-approved format 5.2. Customer is advised of the estimation 5.3. Job card is completed and delivered to appropriate persons

RANGE OF VARIABLES

VARIABLE	RANGE
1. Methods	May include: 1.1 Written and verbal communication 1.2 Sourcing of parts 1.3 Estimating costs 1.5 Documentation
2. Legal requirements	May include: 2.1 Regional / territory OHS legislation, manufacturer/component supplier specifications and safe operating procedures 2.2 Environmental requirements, manual handling procedures and insurance requirements
3. Variations	May include: 3.1 Jobs involving subcontracted work 3.2 Jobs involving a mix of vocations (e.g. mechanical, body and electrical)
4. Job cost estimate	May include: 4.1. Manufacturer/component supplier specifications 4.2. Enterprise operating procedures 4.3. Customer requirements 4.4. Industry/workplace codes of practice

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 Selected methods and techniques appropriate to the circumstances 1.4 Completed preparatory activity in a systematic manner 1.5 Estimated manufacturer/component supplier requirements 1.6 Estimated the work completed within workplace timeframes 1.7 Reported presented to customer is in compliance with workplace requirements.
2. Required knowledge	2.1 OHS regulations/requirements, equipment, material and personal safety requirements 2.2 Principles of estimating and job costing 2.3 Enterprise quality procedures 2.4 Work organisation and planning processes 2.5 Contract law 2.6 Sale-contracting principles 2.7 Written communication and report writing skills procedures relevant to application 2.8 Oral communication skills procedures relevant to application 2.9 Quality procedures, e.g., 5S 2.10 Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)
3 Required Skills	3.1 Research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures 3.2 Analytical skills required for the identification and analysis of technical information 3.3 Plain English literacy and communication skills in relation to dealing with customers and team members 3.4 Questioning and active listening skills for example when obtaining information from customers 3.5 Oral communication skills sufficient to convey information and concepts to customers 3.6 Making good use of time and resources, sorting out priorities and monitoring own performance 3.7 Interacting effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal 3.8 Use mathematical ideas and techniques such as number and space and techniques, e.g. estimation and approximation, for practical purposes 3.9 Apply problem-solving strategies in purposeful ways, both in situations where the problem and the desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome 3.10 Combine the physical and sensory skills needed to operate equipment with understanding of scientific and technological principles needed to explore and adapt systems

4 Resource Implications	The following resources should be provided: 4.1. A workplace or simulated workplace 4.2. Enterprise stationery, telephone and forms/business documents 4.3. Repair order, job cards and quotes / estimates 4.4. Computer and software, calculator 4.5. Hand tooling, workshop equipment
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 MPETENCY: **ENSURE A SAFE WORKPLACE**
UNIT CODE : **ALT311368**
UNIT DESCRIPTOR : This unit describes the performance outcomes, skills and knowledge required to establish, maintain and evaluate the organization's occupational health and safety (OHS) policies, procedures and programs in the relevant work area in accordance with OHS legal requirements.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Establish and maintain an OHS system	1.1 Locate and communicate OHS policies which clearly express the organization's commitment to implement relevant ***OHS legislation*** in the enterprise 1.2 Define OHS responsibilities for all workplace personnel in accordance with OHS policies, procedures and programs 1.3 Identify and approve financial and human resources for the effective operation of the OHS system
2. Establish and maintain participative arrangements for the management of OHS	2.1. Establish and maintain participative arrangements with employees and their representatives in accordance with relevant OHS legislation 2.2. Appropriately resolve issues raised through participative arrangements and consultation 2.3. Promptly provide information about the outcomes of participation and consultation in a manner accessible to employees
3. Establish and maintain procedures for identifying hazards, and assessing and controlling risks	3.1. Develop procedures for ongoing hazard identification, and assessment and ***control of associated risks*** 3.2. Include hazard identification at the planning, design and evaluation stages of any change in the workplace to ensure that new hazards are not created by the proposed changes 3.3. Develop and maintain procedures for selection and implementation of risk control measures in accordance with the hierarchy of control 3.4. Identify inadequacies in existing risk control measures in accordance with the hierarchy of control and promptly provide resources to enable implementation of new measures 3.5. Identify intervention points for expert OHS advice
4. Establish and maintain a quality OHS management system	4.1. Develop and provide an OHS induction and training program for all employees as part of the organization's training program 4.2. Utilize system for ***OHS record keeping*** to allow identification of patterns of occupational injury and disease in the organization 4.3. Measure and evaluate the OHS system in line with the organization's quality systems framework 4.4. Develop and implement improvements to the OHS system to achieve organizational OHS objectives 4.5. Ensure compliance with the OHS legislative framework so that legal OHS standards are maintained as a minimum

RANGE OF VARIABLES

VARIABLE	RANGE
1. OHS legislation	May include: 1.1 Common law duties to meet general duty of care requirements 1.2 Regulations and approved codes of practice relating to hazards in the work area 1.3 Requirements for establishment of consultative arrangements including those for health and safety representatives, and health and safety committees 1.4 Requirements for effective management of hazards 1.5 Requirements for provision of information and training including training in safe operating procedures, procedures for workplace hazards, hazard identification, risk assessment and risk control, and emergency and evacuation procedures 1.6 Requirements for the maintenance and confidentiality of records of occupational injury and disease
2. Control of associated risks	May include: 2.1 Administrative 2.2. Counseling / disciplinary processes 2.3. Elimination 2.4. Engineering 2.5. Housekeeping and storage 2.6. Issue resolution 2.7. OHS records maintenance and analysis 2.8. Personal protective equipment 2.9. Purchasing of supplies and equipment 2.10. Workplace inspections including plant and equipment
3. Organizational health and safety record keeping	May include: 3.1 Audit and inspection reports 3.2 workplace environmental monitoring records 3.3 consultation e.g. meetings of health & safety committees, work group meeting agendas including OHS items and actions 3.4 induction, instruction and training 3.5 manufacturers' and suppliers' information including dangerous goods storage lists 3.6 hazardous substances registers 3.7 plant and equipment maintenance and testing reports 3.8 workers compensation and rehabilitation records 3.9 first aid/medical post records

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate understand and explain: 1.1 Detailed knowledge and application of all relevant OHS legislative frameworks 1.2 Establishment and maintenance of arrangements for managing OHS within the organizations' business systems and practices 1.3 Identification of intervention points for expert OHS advice 1.4 Principles and practice of effective OHS management in a small, medium or large business.
2. Required knowledge	6.1 Application of the hierarchy of control (the preferred order of risk control measures from most to least preferred, that is, elimination, engineering controls, administrative controls, personal protective equipment) 6.2 Hazard identification and risk management 6.3 Relevant legislation from all levels of government that affects business operation, especially in regard to OHS and environmental issues, equal opportunity, industrial relations and anti-discrimination 6.4 Reporting requirements 6.5 Quality procedures, e.g., 5S 6.6 Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)
3. Required Skills	3.1 Analytic skills to analyze relevant workplace data in order to identify hazards, and to assess and control risks 3.2 Communication skills to consult with staff and to promote a safe workplace 3.3 Problem-solving skills to deal with complex and non-routine difficulties 3.4 Technology skills to store and retrieve relevant workplace data
4 Resource Implications	The following resources should be provided: • Access to appropriate documentation and resources normally used in the workplace e following resources must be provided:
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 MPETENCY : IMPLEMENT CONTINUOUS IMPROVEMENT
UNIT CODE : ALT311369
UNIT DESCRIPTOR : This unit describes the performance outcomes, skills and knowledge required to implement the organization's continuous improvement systems and processes. Particular emphasis is on using systems and strategies to actively encourage the team to participate in the process, monitoring and reviewing performance, and identifying opportunities for further improvements

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Implement continuous improvement systems and processes	1.1 Implement ***systems*** to ensure that individuals and teams are actively encouraged and supported to ***participate in decision making processes***, assume responsibility and exercise initiative 1.2 Communicate the organization's ***continuous improvement processes*** to individuals and teams, and obtain feedback 1.3 Ensure effective ***mentoring and coaching*** allows individuals and teams to implement the organization's continuous improvement processes
2. Monitor and review performance	2.1. Use the organization's systems and ***technology*** to monitor and review progress and to identify ways in which planning and operations could be improved 2.2. Improve ***customer service*** through continuous improvement techniques and processes 2.3. Formulate and communicate recommendations for adjustments to those who have a role in their development and implementation
3. Provide opportunities for further improvement	3.1. Implement ***processes to ensure that team members are informed of savings and productivity/service improvements*** in achieving the business plan 3.2. Document work performance to aid the identification of further opportunities for improvement 3.3. Manage records, reports and recommendations for improvement within the organization's systems and processes

RANGE OF VARIABLES

VARIABLE	RANGE
1. Systems	May refer to: 1.1. Forums, meetings 1.2. Newsletters and reports 1.3. Organizational policies and procedures 1.4. Web-based communication devices
2. Participation in decision making processes	May include: 2.1. Feedback in relation to outcomes of the consultative process 2.2. Processes which ensures all employees have the opportunity to contribute to organizational issues
3. Continuous improvement processes	May include: 3.1. Cyclical audits and reviews of workplace, team and individual performance 3.2. Evaluations and monitoring of effectiveness 3.3. Implementation of quality systems, such as International Standardization for Organization (ISO) 3.4. Modifications and improvements to systems, processes, services and products 3.5. Policies and procedures which allow the organization to systematically review and improve the quality of its products, services and procedures 3.6. Seeking and considering feedback from a range of stakeholders
4. Mentoring and coaching	May refer to: 4.1. Providing assistance with problem-solving 4.2. Providing feedback, support and encouragement 4.3. Teaching another member of the team, usually focusing on a specific work task or skill
5. Technology	May include: 5.1. Computerized systems and software such as databases, project management and word processing 5.2. Telecommunications devices 5.3. any other technology used to carry out work roles and responsibilities
6. Customer service	May include: 6.1. Internal or external 6.2. to existing, new or potential clients
7. Processes to ensure that team members are informed of savings and productivity/service improvements	May refer to: 7.1. Email/intranet, newsletters or other communication devices 7.2. Newsletters and bulletins 7.3. Staff reward mechanisms 7.4. Team meetings

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Took active steps to implement, monitor and adjust plans, processes and procedures to improve performance 1.2 Supported others to implement the continuous improvement system/processes, and to identify and report opportunities for further improvement 1.3 Knowledge of principles and techniques associated with continuous improvement systems and processes
2. Required knowledge	Principles and techniques associated with: 2.1 benchmarking 2.2 best practice 2.3 change management 2.4 continuous improvement systems and processes 2.5 quality systems 2.6 Quality procedures, e.g., 5S 2.7 Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)
3 Required Skills	Communication skills to: 3.1. Coach and mentor team members 3.2 Gain the commitment of individuals and teams to continuously improve 3.3 Innovation skills to design better ways of performing work
4 Resource Implications	The following resources should be provided: 4.1. Access to an automotive business which includes waste materials of various types, recycling bins, liquid, sludge and solid wastes 4.2. Resources may include pressure washing and facilities for the use of recycled water
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 : MANAGE PEOPLE PERFORMANCE
UNIT CODE : ALT311370
UNIT DESCRIPTOR : This unit applies to all managers and team leaders who manage people. It covers work allocation and the methods to review performance, reward excellence and provide feedback where there is a need for improvement.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Allocate work	1.1 Consult relevant groups and individuals on work to be allocated and resources available. 1.2 Develop work plans in accordance with operational plans. 1.3 Allocate work in a way that is efficient, cost effective and outcome focused. 1.4 Confirm ***performance standards***, ***Code of Conduct*** and work outputs with relevant teams and individuals. 1.5 Develop and agree ***performance indicators*** with relevant staff prior to commencement of work. 1.6 Conduct ***risk analysis*** in accordance with the organizational risk management plan and legal requirements.
2. Assess performance	2.1. Design ***performance management*** and review processes to ensure consistency with organizational objectives and policies 2.2. Train participants in the performance management and review process 2.3. Conduct performance management in accordance with organizational protocols and time lines 2.4. Monitor and evaluate performance on a continuous basis
3. Provide feedback	3.1. Provide informal feedback to staff on a regular basis 3.2. Advise relevant people where there is poor performance and take necessary actions 3.3. Provide on-the-job coaching when necessary to improve performance and to confirm ***excellence in performance*** 3.4. Document performance in accordance with the organizational performance management system 3.5. Conduct formal structured feedback sessions as necessary and in accordance with organizational policy
4. Manage follow up	4.1. Write and agree performance improvement and development plans in accordance with organizational policies 4.2. Seek assistance from human resources specialists where appropriate 4.3. Reinforce excellence in performance through recognition and continuous feedback 4.4. Monitor and coach individuals with poor performance 4.5. Provide support services where necessary 4.6. Counsel individuals who continue to perform below expectations and implement the disciplinary process if necessary 4.7. ***Terminate*** staff in accordance with legal and organizational requirements where serious misconduct occurs or ongoing poor-performance continues

RANGE OF VARIABLES

VARIABLE	RANGE
1. Performance standards	May include: 1.1. Level of performance sought from an individual or group which may be expressed either quantitatively or qualitatively
2. Code of Conduct	May include: 2.1. Agreed (or decreed) set of rules relating to employee behavior / conduct with other employees or an agreed (or decreed) set of rules relating to employee behavior / conduct with other employees or customers
3. Performance indicators	May include: 3.1. Measures against which performance outcomes are gauged
4. Risk analysis	May include: 4.1. Determination of the likelihood of a negative event preventing the organization meeting its objectives and the likely consequences of such an event on organizational performance
5. Performance management	May include: 5.1. In accordance with relevant industrial agreements 5.2. Process or set of processes for establishing a shared understanding of what an individual or group is to achieve, and managing and developing individuals in a way which increases the probability it will be achieved in both the short- and long-term
6. Excellence in performance	May include: 6.1. Regularly and consistently exceeding the performance targets established while meeting the organization's performance standards
7. Termination	May include: 7.1. Cessation of the contract of employment between an employer and an employee, at the initiative of the employer within relevant industrial agreements

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Documented performance indicators and a critical description and analysis of performance management system from the workplace 1.2 Demonstrated techniques in providing feedback and coaching for improvement in performance 1.3 Demonstrated knowledge of relevant awards and certified agreements
2. Required knowledge	2.1. Relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination 2.2. Relevant awards and certified agreements 2.3. Performance measurement systems utilised within the organisation 2.4. Unlawful dismissal rules and due process 2.5. Staff development options and information 2.6. Quality procedures, e.g., 5S 2.7. Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)
3. Required Skills	3.1. Communication skills to articulate expected standards of performance, to provide effective feedback and to coach staff who need development 3.2. Risk management skills to analyze, identify and develop mitigation strategies for identified risks 3.3. Planning and organization skills to ensure a planned and objective approach to the performance management system.
4. Resource Implications	The following resources should be provided: • Access to appropriate documentation and resources normally used in the workplace e following resources must be provided:
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 OFMPETENCY : PLAN AND MANAGE COMPLIANCE WITH ENVIRONMENTAL REGULATIONS IN A WORKPLACE OR BUSINESS

UNIT CODE : ALT311371

UNIT DESCRIPTOR : This unit of competency covers the competence to plan and implement management system that ensures the protection of the environment in a workplace or business.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Plan and manage compliance with environmental regulations	1.1 Reasons for ethical environmental practice in a workplace or business are identified 1.2 Environmental responsibilities of employers and employees in an ***automotive workplace or business*** are identified 1.3 Penalties for enterprise and individual breaches of the legislation are identified 1.4 Waste products are minimized and facilities provided for waste materials to be stored in bins for recycling or disposal 1.5 Collection and recycling arrangements are implemented for liquids, sludge, solids and other waste 1.6 Suppliers with minimal excess packaging on goods received are sourced and packaging on goods received is sorted and disposed of appropriately 1.7 ***Waste and energy conservation strategies*** are identified and implemented
2 Manage potential hazards to storm water system to avoid contamination	2.1. ***Systems*** are in place to ensure wastewater does not enter the storm water system 2.2. All drains and flows are identified on a worksite map directly indicating where they flow 2.3. Trade waste permits are in place 2.4. Undercover and drained areas are provided and used for the storage of all materials containing environmentally hazardous substances 2.5. Proper ***tools and equipment*** are provided and used to prevent storm water contamination 2.6. Workplace is kept clean to prevent unintentional storm water pollution

3	Manage potential hazards to air quality to avoid contamination	3.1. Hazards of airborne particles are identified, minimized and contained 3.2. Hazards of gases and fumes are identified, minimized and contained 3.3. A well-ventilated area is provided for any welding activities
4	Minimization of noise hazards is planned and managed	4.1. Noise creating activities are minimized and carried out within approved operating hours 4.2. Fixed machinery is fitted with silencers or surrounded by noise containment material
5	Management systems	5.1. An environmental policy and contingency plan suitable to the needs of the business is developed and implemented 5.2. Waste to landfill is calculated and possible savings through reuse and recycling are calculated 5.3. Payback period on environmental equipment is calculated 5.4. Manage staff adherence to environmental responsibilities 5.5. ***Environmental documents*** are maintained and stored securely in a form accessible for reporting procedures

RANGE OF VARIABLES

VARIABLE	RANGE
1. Automotive business	May include: Any automotive business excluding body repair, marine and mechanical involving the removal of components containing oils or other fluids
2. Waste and energy conservation strategies	May include: 2.1. Utilities consumption reduction program 2.2. Waste reduction program 2.3. Effective waste disposal program
3. Systems	System is carried out in accordance with: 3.1 OHS legislation, material safety data sheets (MSDS), hazardous substances and dangerous goods code and local safe operating procedures 3.2 Legislative obligations, environmental legislation, health regulations, and manual handling procedures and organization insurance requirements
4. Tools and equipment	May include: 4.1 Spill kits 4.2 Recycling bins 4.3 Drums
5. Environmental documents	May include: 5.1 Environmental legislation, regulations and advice 5.2 Workplace procedures relating to the use of tools and equipment 5.3 Work instructions and procedures 5.4 Worksite environmental policy 5.5 Workplace procedures relating to reporting and communication 5.6 Manufacturer/component supplier specifications and operational procedures 5.7 Local council and waterways regulations 5.8 Environmental documents, manufacturer/component supplier specifications, costing of equipment and waste removal 5.9 Staff environmental induction material

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Planned and managed safe handling requirements for equipment, products and materials, including use of personal protective equipment 1.2 Planned and mange environmental protection procedures 1.3 Identified materials used in the business and assess and manage their environmental impact 1.4 Planned and managed work instructions, operating procedures and inspection processes to: 1.5 Minimized the risk of injury to self or others 1.6 Maintained a clean workplace 1.7 Prevented damage and wastage of goods, equipment and products 1.8 Disposed of waste in accordance with legislative requirements and best practice 1.9 Maintained production output, and product and service quality 1.10 Reported environmental damage or spills 1.11 Planned and managed operator maintenance on equipment to ensure environmental efficiency 1.12 Managed effective planning and teamwork related to environmental best practice 1.13 Developed / implemented or audited an existing business environmental policy which covers at a minimum: waste, recycling, hazards to storm water, air quality, noise, energy minimization and costs 1.14 Modified activities to cater for variations in workplace context and environment.
2 Required knowledge	2.1 Aspects of environmental legislation and its relationship with occupational health and safety (OHS), finance and risk management 2.2 Requirements for trade waste permits 2.3 Spill clean-up procedures 2.4 Characteristics and potential environmental impact of products used in the business 2.5 Philosophy of sustainability through prevention, reuse, reduce and recycle 2.6 Procedures for rectifying machinery faults and material defects 2.7 Actions to be taken in case of environmental threat in the workplace 2.8 Reporting procedures for environmental damage occurring in the workplace 2.9 Cleaner production and eco-efficient strategies to avoid the production of waste 2.10 Quality procedures, e.g., 5S 2.11 Environmental-conservation procedures, e.g., 3R (reduce, reuse, recycle)

3 Required Skills	3.1 Collect, organize and understand information related to environmental procedures from legislation, regulations, policies, guidelines, standards and workplace best practices in an automotive business 3.2 Communicate ideas and information to ensure all work undertaken is in accordance with environmental best practice, support from stakeholders is actively sought for implementing suitable innovation and continuous improvement 3.3 Plan and organize activities including the preparation of equipment and materials recycling and waste management systems and the selection of worksite to avoid environmental contamination, back tracking, workflow interruptions or wastage 3.4 Promote work with others and in a team by recognizing dependencies and using cooperative approaches to minimize wastage, optimize workflow and productivity 3.5 Use mathematical ideas and techniques to complete measurements and estimate material requirements required for the work and calculate wastage rates of various methods 3.6 Use planning, checking and inspection techniques to avoid environmental contamination and wastage 3.7 Use the workplace technology related to environmental protection and recycling equipment
4 Resource Implications	The following resources should be provided: 4.1 Access to an automotive business which includes waste materials of various types, recycling bins, liquid, sludge and solid wastes 4.2 Resources may include pressure washing and facilities for the use of recycled water
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

SECTION 3. TRAINING STANDARDS

These standards are set to provide technical and vocational education and training (TVET) providers with information and other important requirements to consider when designing training programs for Automotive Servicing NC IV.

3.1 CURRICULUM DESIGN

Course Title: **AUTOMOTIVE SERVICING** NC Level **NC IV**

Nominal Training Duration: **56 Hours** (Basic Competencies)
40 Hours (Common Competencies)
708 Hours (Core Competencies)
804 Hrs.

Course Description:

This course is designed to enhance the knowledge, skills and attitudes of an individual in the field of automotive servicing in accordance with industry standards. It covers core competencies such as; Service diesel engine management system; Service electronic body management system; Service diesel fuel injection system components; Service electronic drive management system; Service emission control; Service and repair electronically controlled anti-locking braking system; Service and repair electronically operated traction control system and Service and repair ellectronically operated stability control system.

This course is also designed to enhance the basic and common knowledge, skills and attitudes of an individual in the field of automotive servicing.

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

BASIC COMPETENCIES

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Utilize specialized communication skills	1.1 Apply communication strategies to meet specific needs of internal and external client. 1.2 Represent the organization in internal and external forums. 1.3 Facilitate group discussion 1.4 Conduct interview	• Discussion method • Role Play • Brainstorming • Lecture	• Written test • Performance test • Interview
2. Develop team and individual needs	2.1 Determine development needs. 2.2 Foster individual and organization growth 2.3 Monitor and evaluate workplace learning 2.4 Develop team commitment and cooperation 2.5 Facilitate accomplishment of organizational goals	• Discussion • Role playing • Observation	• Written test • Direct observation • Role playing

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
3. Apply problem solving techniques in the workplace	3.1 Analyze the problem 3.2 Identify fundamental cause of the problem 3.3 Determine possible solution 3.4 Prepare communication or documentation report 3.5 Present recommendation to appropriate personnel 3.6 Implement solution	• Brainstorming • Discussion • Case studies • Role playing • Small group work	• Written test • Direct observation • Interview
4. Collect, analyze and organize information	4.1 Study information requirements. 4.2 Process data. 4.3 Analyze, interpret and organize information gathered. 4.4 Present findings/recommendations	• Group discussion • Case study • Interaction	• Written test • Practical/ performance test
5. Plan and organize work	5.1 Set work objectives 5.2 Plan and schedule work activities 5.3 Implement and monitor plans/activities 5.4 Review and evaluate work plans and activities	• Brainstorming • Discussion • Case studies • Role playing • Small group work	• Written test • Direct observation • Interview
6. Promote environmental protection	6.1 Study guidelines for environmental concerns. 6.2 Implement specific environmental programs 6.3 Monitor activities on environmental protection/programs	• Group discussion • Case study • Interaction	• Written test • Practical/ performance test

COMMON COMPETENCIES

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Apply appropriate sealant/ adhesive	1.1 Identify appropriate sealant/ adhesive 1.2 Prepare surface for sealant / adhesive application 1.3 Store unused and dispose used sealant/adhesive	• Lecture/ Demonstration • Dual training • Self-paced (modular) • Distance learning	• Written test • Oral questioning • Direct observation • Project method • Interview
2. Move and position vehicle	2.1 Prepare vehicle for driving 2.2 Move and position vehicle 2.3 Check the vehicle	• Lecture/ Demonstration • Dual training • Self-paced (modular) • Distance learning	• Written test • Oral questioning • Direct observation • Project method • Interview
3. Perform mensuration and calculation	3.1 Select measuring instrument and carry out measurement and calculations 3.2 Maintain measuring instruments	• Lecture/ Demonstration • Dual training • Self-paced (modular) • Distance learning	• Written test • Oral questioning • Direct observation • Project method • Interview
4. Read, interpret and apply specifications and manual	4.1 Identify/access manuals and interpret data and specification 4.2 Apply information accessed in manual 4.3 Store manual	• Lecture/ Demonstration • Dual training • Self-paced (modular) • Distance learning	• Written test • Oral questioning • Direct observation • Project method • Interview
5. Use and apply lubricants/ coolants	5.1 Identify type of lubricant/ coolant 5.2 Use and apply lubricant	• Lecture/ Demonstration • Dual training • Self-paced (modular) • Distance learning	• Written test • Oral questioning • Direct observation • Project method • Interview
6. Perform shop maintenance	6.1 Inspect/clean tools and work area 6.2 Store/arrange tools and shop equipment 6.3 Dispose waste/used lubricants 6.4 Report damaged tools/equipment	• Lecture/ Demonstration • Dual training • Self-paced (modular) • Distance learning	• Written test • Oral questioning • Direct observation • Project method • Interview
7.Prepare job estimates	7.1 Identify nature/scope of work 7.2 Prepare and present estimates	• Lecture/ Demonstration • Dual training • Self-paced (modular) • Distance learning	• Written test • Oral questioning • Direct observation • Project method • Interview

8. Interpret/Draw technical drawing	8.1 Interpret technical drawing 8.2 Select correct technical drawing 8.3 Apply freehand sketching	• Lecture/ Demonstration • Dual training • Self-paced (modular) • Distance learning	• Written test • Oral questioning • Direct observation • Project method • Interview
9.Practice health, safety and environment procedures	9.1 Apply basic safety procedures 9.2 Apply emergency procedures	• Lecture/ Demonstration • Dual training • Self-paced (modular) • Distance learning	• Written test • Oral questioning • Direct observation • Project method • Interview
10.Inspect technical quality of work	10.1 Gather information to carry out inspection 10.2 Inspect and apply quality standards to work 10.3 Achieve quality work outcomes	• Lecture/ Demonstration • Dual training • Self-paced (modular) • Distance learning	• Written test • Oral questioning • Direct observation • Project method • Interview
11.Maintain quality systems	11.1 Conduct final quality check on completed work/ orders 11.2 Report on the quality of processes and work outcomes 11.3 Implement improvements to work processes	• Lecture/ Demonstration • Dual training • Self-paced (modular) • Distance learning	• Written test • Oral questioning • Direct observation • Project method • Interview
12.Provide work skill instructions	12.1 Organize instruction and demonstration 12.2 Conduct instruction and demonstration 12.3 Check training performance 12.4 Review personal training performance and finalize documentation	• Lecture/ Demonstration • Dual training • Self-paced (modular) • Distance learning	• Written test • Oral questioning • Direct observation • Project method • Interview
13.Identify and select original automotive parts and products	13.1 Identify the part/ product and its end use 13.2 Identify details of the part/ product 13.3 part/ product is supplied or ordered for customer	• Lecture/ Demonstration • Dual training • Self-paced (modular) • Distance learning	• Written test • Oral questioning • Direct observation • Project method • Interview

CORE COMPETENCIES

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Service diesel engine management system and components	1.1 Troubleshoot diesel engine management system 1.2 Test diesel engine management components parts 1.3 Pull out electronic control injection pump 1.4 Overhaul electronic control injection pump 1.5 Assemble electronic control injection pump 1.6 Calibrate electronic control injection pump 1.7 Install electronic control injection pump	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview
2. Service electronic body management systems	2.1 Test ride/cruise control 2.2 Test steering system 2.3 Test power windows, electric mirror and security system 2.4 Service electronic body management and associated components	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview
3. Service diesel fuel injection system/ components	3.1 Overhaul mechanical control injection pump and components 3.2 Check injection pump governor 3.3 Check automatic timer 3.4 Install injection pump 3.5 Check injection timing and timing advance	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview
4. Service electronic drive management system	4.1 Service electronic control automatic transmission and system component 4.2 Service traction control 4.3 Service over drive electronic control 4.4 Balance air suspension system 4.5 Service ABS system and component	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview
5. Service emission control systems	5.1 Conduct pre-emission inspection 5.2 Set emission test equipment 5.3 Conduct emission testing for gasoline engine 5.4 Conduct emission testing for diesel engine 5.5 Service emission control and associated components	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
6. Service and repair electronically controlled anti-lock braking systems	6.1 Prepare for work 6.2 Test control system, diagnose faults and determine service/repair requirements 6.3 Service/repair anti -lock braking Systems 6.4 Clean up work area and maintain equipment	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview
7. Service and repair electronically operated traction control systems	7.1 Prepare for work 7.2 Test and control system, and determine service/repair requirements 7.3 Service/ repair electronic traction control 7.4 Clean up work area and maintain equipment	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview
8. Service and repair electronically operated stability control systems	8.1 Prepare for work 8.2 Test and control system, and diagnose faults and determine service/repair requirements 8.3 Service/ repair electronic stability control systems 8.4 Clean up work area and maintain equipment	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview
9. Plan assessment activities and processes	9.1 Determine assessment approach 9.2 Prepare the assessment plan 9.3 Develop assessment instruments	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview
10. Manage facility and inventory requirements	10.1 Identify space requirements 10.2 Identify safety and security requirements 10.3 Develop documentation system 10.4 Design storage zones 10.5 Evaluate facility utilization	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview
11. Estimate complex job	11.1 Estimate time requirements for jobs 11.2 Source parts 11.3 Identify subcontract testing and/or service/ repair work costs for incorporation into the total estimated cost 11.4 Estimate total job costs 11.5 Report estimations to customer	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
12. Ensure a safe workplace	12.1 Establish and maintain an OHS system 12.2 Establish and maintain participative arrangements for the management of OHS 12.3 Establish and maintain procedures for identifying hazards, and assessing and controlling risks 12.4 Establish and maintain a quality OHS management system	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview
13. Implement continuous improvement	13.1 Implement continuous improvement systems and processes 13.2 Monitor and review performance 13.3 Provide opportunities for further improvement	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview
14. Manage people performance	14.1 Allocate work 14.2 Assess performance 14.3 Provide feedback 14.4 Manage follow up	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview
15. Plan and manage compliance with environmental regulations in a workplace or business	15.1 Plan and manage compliance with environmental regulations 15.2 Manage potential hazards to storm water system to avoid contamination 15.3 Manage potential hazards to air quality to avoid contamination 15.4 Minimization of noise hazards is planned and managed 15.5 Management systems	• Discussion • Dual training • Blended learning	• Written examination • Demonstration of practical skills • Interview

3.2 TRAINING DELIVERY

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

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

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

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

3.3 TRAINEE ENTRY REQUIREMENTS

Trainees or students should possess the following requirements:

- Preferably holder of Automotive Servicing NC III
- can communicate both oral and written; and
- can perform basic mathematical computation.

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

3.4 TOOLS, EQUIPMENT AND MATERIALS
AUTOMOTIVE SERVICING – NC IV

Recommended list of tools, equipment and materials for the training of 20 trainees for Automotive Servicing – NC IV

TOOLS		EQUIPMENT			MATERIALS
QTY.	**DESCRIPTION**	**QTY.**	**DESCRIPTION**	**QTY.**	**DESCRIPTION**
6 pcs	Screw driver, one of each kind	4 units	Power window assembly	4 units	Car alarm
2 sets	Box wrench of 28 pcs, 4mm-32mm	4 units	Multimeter	1 kg.	Hand cleaning detergents
2 sets	Open end wrench of 28 pcs, 4mm-32mm	1 unit	Injector cleaner	10 kg	Rugs
2 sets	Socket wrench	1 unit	Vehicle lifting equipment	20 L	A/T fluid
2 pcs	Pliers	4 units	Creeper	20 L	Engine oil
2 units	Fuel pressure gauge	1 unit	Electronics controlled Automatic transmission	25 pairs	Gloves
4 pcs	LED tester	4 units	Electronic control injection pump	25 pcs	mask
10 pcs	Test light	1 unit	Air compressor with accessories	25 pcs.	Apron
4 pcs	Wire stripper	1 unit	Vehicle (EFI) equipped with electronic body and drive management system	25 pcs.	Goggles
2 units	Torque wrench, click type				
2 pcs	Dial indicator with stand				
2 pcs	Micrometer (25mm-100mm)	4 units	Rotary injection pump		
1 init	A/T pressure gage	1 unit	Exhaust gas analyzer		
2 sets	Allen wrench	1 unit	Opacimeter		
2 sets	Combination wrench, 12 pcs, 6mm-19mm	2 unit	Electronic Automotive Diagnostic Scanner with software		
2 pcs	Snap ring pliers, internal				
2 pcs	Snap ring pliers, external				
4 pcs	Trouble light				
4 pcs	Magnetic pick up				
2 sets	Leaf feeler gauge				
2 pcs	Vernier caliper				
2 sets	Outside micrometer				
2 sets	Cylinder bore gauge				
2 pcs	Straight edge				
2 sets	Engine Overhauling & automatic transmission (SST) per model				

3.5 TRAINING FACILITIES

AUTOMOTIVE SERVICING – NC IV

The automotive workshop must be made of reinforced concrete or steel structure. The size must be suited on the requirements of the competencies. The class size of 25 students/trainees is reserved for the lecture room and the practical demonstration area for carrying out servicing of minor automotive parts. Most of the learning activities such as on-vehicle servicing are performed in the workshop.

SPACE REQUIREMENT	SIZE IN METERS	AREA IN SQ. METERS	TOTAL AREA IN SQ. METERS
Workshop/Laboratory area		6 sq.m/trainee	150
Lecture Room		28.00	28.00
Learning Resource Center		20.00	20.00
Wash/Comfort room (male/female)		10	10
Storage/Tool room		20	20
Circulation Area			60
Total Area			**288**

3.6 TRAINERS' QUALIFICATION FOR AUTOMOTIVE/LAND TRANSPORT SECTOR

AUTOMOTIVE SERVICING - NC IV

- Holder of National TVET Trainers Certificate (NTTC) Level 1 - Automotive Servicing NC IV
- Must be computer literate
- Must have at least 2 years job/industry experience

3.7 INSTITUTIONAL ASSESSMENT

Institutional assessment is undertaken by trainees to determine their achievement of units of competency. A certificate of achievement is issued for each unit of competency.

SECTION 4 NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

4.1 To attain the National Qualification of Automotive Servicing NC IV, the candidate must demonstrate competence through project-type assessment covering all units of listed in 4.1.1. Successful candidates shall be awarded a National Certificate signed by the TESDA Director General.

4.1.1

• Plan assessment activities and processes
• Manage facility and inventory requirements
• Estimate complex job
• Ensure a safe workplace
• Implement continuous improvement
• Manage people performance
• Plan and manage compliance with environmental regulations in a workplace or business
• Service Electronic Body Management System
• Service and repair electronically controlled anti-lock braking system
• Service and repair electronically operated traction control System
• Service and repair electronically operated stability control System
• Service Diesel Fuel Injection System Components
• Service Electronic Drive Management System
• Service Diesel Engine Management System
• Service Emission Control System
• Estimate complex job
• Ensure a safe workplace
• Implement continuous improvement

4.2 Individual aspiring to be awarded the qualification of Automotive Servicing NC IV must acquire Certificates of Competency in all the following cluster of units of competency or core unit of the Qualification. Candidates may apply for assessment in any accredited assessment center.

4.2.1 Managing Service Shop
• Plan assessment activities and processes
• Manage facility and inventory requirements
• Estimate complex job
• Ensure a safe workplace
• Implement continuous improvement
• Manage people performance
• Plan and manage compliance with environmental regulations in a workplace or business
4.2.2 Body management and underchassis electronic control system servicing
• Service Electronic Body Management System
• Service and repair electronically controlled anti-lock braking system
• Service and repair electronically operated traction control System
• Service and repair electronically operated stability control System

4.2.3 Engine electronic control system servicing
• Service Diesel Fuel Injection System Components
• Service Electronic Drive Management System
• Service Diesel Engine Management System
4.2.4Service Emission Control System

Successful candidates shall be awarded Certificates of Competency (COC).

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

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

4.4.1 Graduates of formal, non-formal and informal including enterprise-based training programs.

4.4.2 Experienced workers (wage employed or self employed)

4.5 Reassessment is allowed only after one month from the date of assessment. Reassessment for a National Certificate shall be done only on the task/s that the candidate did not successfully achieve.

4.6 A candidate who fails the assessment for two (2) consecutive times will be required to go through a refresher course before taking another assessment.

4.7 Only certificated individuals in this Qualification may be nominated by the industry for accreditation as competency assessor.

4.8 Only accredited competency assessors are allowed to conduct competency assessment, however, trainers who are accredited competency assessors are not allowed to assess their trainees.

4.9 Assessment on competence must be undertaken only in the TESDA accredited assessment center. The performance assessment (demonstration of competence), however, may be done in any venue or workplace duly designated by an accredited assessment center.

4.10 The guidelines on assessment and certification are discussed in detail in the Procedures Manual on Assessment and Certification.

COMPETENCY MAP - AUTOMOTIVE SERVICING NC IV

CORE COMPETENCIES

Service diesel engine management system	Service electronic body management system	Service diesel fuel injection system	Service electronic drive management system	Service emission control system	Plan assessment activities and processes	Service and repair electronically operated traction control system	Service and repair electronically operated stability control system
Manage facility and inventory requirements	Estimate complex jobs	Ensure a safe workplace	Implement continuous improvement programs	Manage people performance	Plan and manage compliance with environmental regulations	Service and repair electronically controlled anti-lock braking system	

COMMON COMPETENCIES

Practice health safety and environment procedures	Inspect technical quality of work	Maintain quality systems	Provide work skill instructions	Identify and select original automotive parts and products			
Perform mensuration and calculation	Move and position vehicle	Apply appropriate sealant/adhesive	Use and apply lubricant/coolant	Perform shop maintenance	Read, interpret and apply specification and manuals	Interpret/draw technical drawing	Prepare job estimate/costing

BASIC COMPETENCIES

Receive and respond workplace communication	Work with Other	Demonstrate work values	Practice basic housekeeping procedures	Lead in workplace communication	Develop and practice negotiation skills	Use relevant technologies	Solve problems related to work activities	
Participate in workplace communication	Work in team environment	Practice career professionalism	Practice occupational health and safety procedures	Lead small Team	Use mathematical concepts and techniques			
Plan and organize work	Utilize specialist communication skills	Promote environmental Protection	Develop team and individual	Apply problem solving techniques in the workplace	Collect, analyze and organize work			

DEFINITION OF TERMS

1. **Light Duty Vehicles**	These are motor vehicles whose gross vehicle weight is equal or less than 3,500 kgs. Powered by a gas or diesel engine.
2. **Automotive Service Technician**	Refers to an all around auto serviceman that can perform both mechanical and electrical as well as auto electronics maintenance checking and inspection of motor vehicle. Assesses vehicle problems, perform all necessary diagnostic test or installation of accessories and competently repairs or replaces faulty parts.
3. **Adhesives**	Substance used to hold gasket in place during assembly. It also maintains a tight seal by filling in small irregularities on a surface and prevents gasket from shifting due to vibration.
4. **Anti-Lock Braking System**	System that automatically controls wheel slip or prevents sustained wheel locking on braking
5. **Automatic Transmission**	A transmission in which gear or ratio changes are self-activated, eliminating the necessity of hand shifting gears
6. **Backlash**	The amount of clearance or play between two meshed gears
7. **Catalytic Converter**	Emission The control device fitted in the exhaust system of an internal combustion engine. The converter reduces the toxicity of products of combustion by catalytic re-combination
8. **Charcoal Canister**	Trap containing charcoal granules to store fuel evaporating from a fuel system and prevent its loss to atmosphere, particularly from a carburetor and fuel tank.
9. **Electronics**	Electrical assemblies, circuit and system that use electronic devices such as transistors and diodes.
10. **Emissions**	Any air contaminant, pollutant, gas stream from a known source which is introduced into the atmosphere.
11. **Final Drive**	The end of the drive train before power is transmitted to the wheels**.**
12. **Fuel Injection**	An electronic system that increases the performance ad fuel economy because it monitors engine conditions and provides the correct air/fuel mixture based on the engine's demand. It injects fuel directly into the cylinder head enabling more precise control over the quantity used.
13. **Governor**	A speed sensing device that employs centrifugal force and spring tension to govern engine speed.
14. **Hotchkiss Drive**	The type of rear suspension in which leaf springs absorbs the rear axle housing torque.
15. **Intake Manifold**	Tubing attached to the engine through which the air/fuel mixture reaches the cylinder.

16. **Ignition System**	Electrical system devised to produce timed sparks from engine spark plug. Consisting of a battery, induction coil, capacitor, distributor, spark plugs and relevant switches and wiring.
17. **Master Cylinder**	The liquid-filled cylinder in the hydraulic brake system or clutch, where hydraulic pressure is developed when depresses a foot pedal.
18. **Periodic Maintenance Service**	The regular servicing prescribed by manufacturer to maintain the vehicle's top performance.
19. **Positive Crank Ventilation**	Emission control system that prevents crank case gases from entering the atmosphere, usually by drawing the gases from the crank case and feeding them into the engine's induction system.
20. **Power Steering**	Steering that has been designed to make the wheel move more easily than in a manual steering system. Hydraulic assists the process utilizing hydraulic fluid. The fluid increases pressure in the power steering pump and aids in the movement of the steering mechanism. This fluid, called power steering fluid, is what is replaced at regular intervals to keep steering soft and comfortable.
21. **Super Charged Engine**	An engine that is similar to a turbo-charged engine which uses a series of belts or chains from the crankshaft to turn the turbines that forces the air/fuel mixture into the cylinder heads under pressure creating a bigger explosion which generates more power. A turbocharger uses the exhaust gases to turn the turbines to create the same effect.
22. **Transaxle**	Type of construction in which the transmission and differential are combined in one unit.
23. **Thermostat**	A device for automatic regulation of temperature
24. **Turbo Charged Engine**	A performance-increasing turbine positioned in the exhaust system. Expanding exhaust gases spin an impeller (very small fan-type blades) at speeds up to 25 thousand rpm, driving a similar compressing impeller. Compressed air from the driven impeller is forced into the induction system, which squeezes more air/fuel mixture into the combustion chambers. With the greater charge of air and fuel, a more powerful combustion burn results, thus more power. The big advantage of the turbo over directly driven superchargers is the increased efficiency, although there is a slight lag before the turbine spins up and increases the power output. Originally turbo were developed to enable aircraft to fly at high altitudes, then they found use in diesel trucks and train engines to increase their torque.
25. **U-joint**	A four-joint cross-connected to two U-shaped yokes that serve as a flexible coupling between shafts.

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