



THE REPUBLIC OF KENYA

NATIONAL OCCUPATIONAL STANDARDS

FOR

AUTOMOTIVE MECHANIC

LEVEL 3



TVET CDACC
P.O BOX 15745-00100
NAIROBI

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Council Secretary/CEO
TVET Curriculum Development, Assessment and Certification Council
P.O. Box 15745–00100
Nairobi, Kenya
Email: info@tvetcdacc.go.ke

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FOREWORD

The provision of quality education and training is fundamental to the Government's overall strategy for social economic development. Quality education and training will contribute to achievement of Kenya's development blueprint, Vision 2030 and sustainable development goals.

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution of Kenya 2010 and this resulted in the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No. 4 of 2016). A key feature of this policy is the radical change in the design and delivery of the TVET training.

This policy document requires that training in TVET be competency based, curriculum development be industry led, certification be based on demonstration of competence and mode of delivery allows for multiple entry and exit in TVET programs. These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs.

It is against this background that these Occupational Standards were developed for the purpose of developing a competency-based curriculum for Automotive Mechanic Level 3. These Occupational Standards will also be the basis for assessment of an individual for competence certification.

It is my conviction that these Occupational Standards will play a great role towards development of competent human resource for the Engineering sector's growth and development.

**PRINCIPAL SECRETARY
VOCATIONAL AND TECHNICAL TRAINING
MINISTRY OF EDUCATION**

PREFACE

Kenya Vision 2030 aims to transform the country into a newly industrializing, “middle-income country providing a high-quality life to all its citizens by the year 2030”. Kenya intends to create a globally competitive and adaptive human resource base to meet the requirements of a rapidly industrializing economy through life-long education and training. TVET has a responsibility of facilitating the process of inculcating knowledge, skills and attitudes necessary for catapulting the nation to a globally competitive country, hence the paradigm shift to embrace Competency Based Education and Training (CBET).

The Technical and Vocational Education and Training Act No. 29 of 2013 emphasized the need to reform curriculum development, assessment and certification. This called for a shift to CBET in order to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labor force.

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), in conjunction with Automotive Sector Skills Advisory Committee (SSAC) have developed these Occupational Standards for Automotive mechanics. These standards will be the basis for development of competency-based curriculum for Automotive Technology Level 3.

The Occupational Standards are designed and organized with clear performance criteria for each element of a unit of competency. These Standards also outline the required knowledge and skills as well as evidence guide.

I am grateful to the Council Members, Council Secretariat, Automotive SSAC, expert workers and all those who participated in the development of these Occupational Standards.

**CHAIRMAN
TVET CDACC**

ACKNOWLEDGMENT

These occupational standards have been designed for competency-based training and has independent units of learning that allow the trainee flexibility in entry and exit. In developing these standards, significant involvement and support was received from various organisations.

I appreciate the funding of the Government of Canada and its implementing partner Colleges and Institutes Canada (CICan) which enabled the development of these standards through the Kenya Education for Employment Program (KEFEP).

I also appreciate the North Eastern National Polytechnic and its Canadian technical partners from College of the North Atlantic who collaborated to identify industry skills gaps and develop these standards.

I recognize with appreciation the role of industry partners including the National Polytechnic's Industry Advisory Committee and the National Automotive Sector Skills Advisory Committee (SSAC) in ensuring that competencies required by the industry are addressed in these standards. I also thank all stakeholders in the sector for their valuable input and all those who participated in the process of developing these standards.

I am convinced that these Standards will go a long way in ensuring that workers in this sector acquire competencies that will enable them to perform their work more efficiently.

COUNCIL SECRETARY/CEO

TVET CDACC

ABBREVIATIONS AND ACRONYMS

| | |
|-------|---|
| ABS | Automotive Braking System |
| BC | Basic Competency |
| CC | Common Competency |
| CPU | Central processing Unit |
| CR | Core Competency |
| CDACC | Curriculum Development Assessment and Certification Council |
| IT | Information Technology |
| ICT | Information Communications Technology |
| PPE | Personal Protective Equipment |
| SOP | Standard Operational Plan |
| OEM | Original Equipment Manufacturer |
| OS | Occupational Standards |
| OSH | Occupation Safety and Health |

KEY TO UNIT CODE

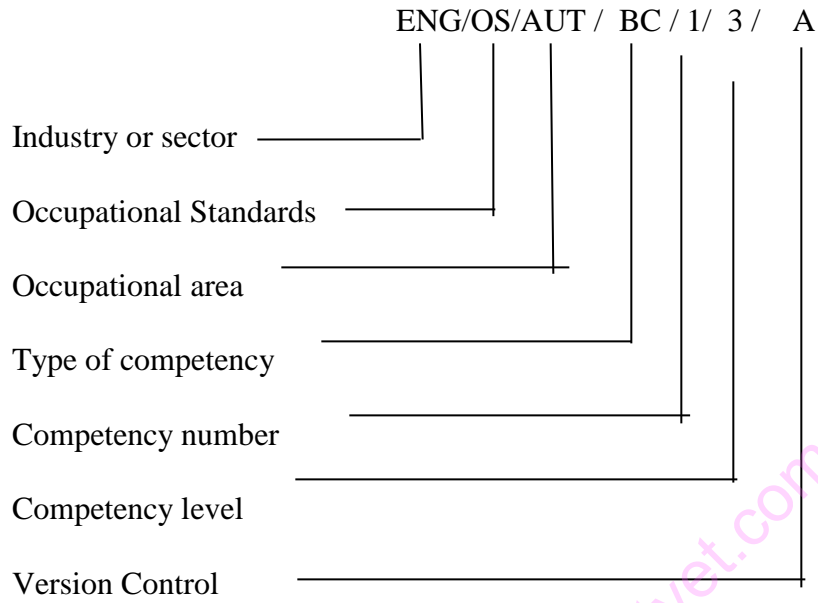


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OVERVIEW

AUTOMOTIVE MECHANIC Level 3 qualification consists of the competencies that an individual must achieve to work as a competent Automotive Mechanic Level 3. These competencies enable him/her to perform shop housekeeping, maintain shop tools, equipment and measuring devices, perform vehicle preventive maintenance, inspect steering and suspension, and brake systems in an automotive service environment.

The Units of Competency comprising Automotive Mechanic Level 3 includes the following:

Basic Units of Competency

| Unit Code | Unit Title |
|---------------------|--|
| ENG/OS/AUT/BC/1/3/A | Demonstrate Communication Skills |
| ENG/OS/AUT/BC/2/3/A | Demonstrate Numeracy Skills |
| ENG/OS/AUT/BC/3/3/A | Demonstrate Digital Skills |
| ENG/OS/AUT/BC/4/3/A | Demonstrate Entrepreneurial Skills |
| ENG/OS/AUT/BC/5/3/A | Demonstrate Employability Skills |
| ENG/OS/AUT/BC/6/3/A | Demonstrate Environmental Literacy |
| ENG/OS/AUT/BC/7/3/A | Demonstrate Occupational Safety and Health Practices |

Common Units of Competency

| Unit Code | Unit Title |
|---------------------|--|
| ENG/OS/AUT/CC/1/3/A | Perform Workshop Housekeeping |
| ENG/OS/AUT/CC/2/3/A | Participate in an Automotive Industry Attachment |

Core Units of Competency

| Unit Code | Unit Title |
|---------------------|--|
| ENG/OS/AUT/CR/1/3/A | Maintain Shop Tools, Equipment and Measuring Devices |
| ENG/OS/AUT/CR/2/3/A | Perform Vehicle Preventive Maintenance |

| | |
|----------------------------|--|
| ENG/OS/AUT/CR/3/3/A | Inspect Automotive Steering and Suspension Systems |
| ENG/CU/AUT/CR/4/3/A | Inspect Automotive Brake Systems |

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BASIC UNITS OF COMPETENCY

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1. DEMONSTRATE COMMUNICATION SKILLS

UNIT CODE: ENG/OS/AUT/BC/1/3/A

UNIT DESCRIPTION

This unit specifies the competencies required to demonstrate communication skills. It involves obtaining and conveying workplace information, speaking English at a basic operational level, participating in workplace meetings and discussions, and completing relevant work-related documents.

ELEMENTS AND PERFORMANCE CRITERIA

| ELEMENT | PERFORMANCE CRITERIA |
|--|---|
| These describe the key outcomes which make up workplace function | These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the Range</i> |
| 1. Obtain and convey workplace information | 1.1 Specific and relevant information is accessed from <i>appropriate sources</i> based on standard procedures 1.2 Effective questioning, active listening and speaking skills are used to gather and convey information based on communication needs 1.3 Appropriate <i>medium</i> is used to transfer information and ideas in accordance with workplace guidelines 1.4 Appropriate non- verbal communication is used as per the communication needs 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed based on workplace requirements 1.6 Location and storage of information is undertaken according to workplace procedures 1.7 Personal interaction is carried out clearly and concisely according to workplace requirements |
| 2. Speak English at a basic operational level | 2.1 Participation in simple conversations with work colleagues is undertaken based on familiar topics 2.2 Simple verbal instructions and requests are responded to according to workplace guidelines |

| | |
|--|---|
| | <p>2.3 Routine procedures are provided in accordance with workplace policy</p> <p>2.4 Likes, dislikes and preferences are expressed based on individual preference</p> <p>2.5 Different forms of expression in English are identified in line with workplace requirements</p> |
| 3. Participate in workplace meetings and discussions | <p>3.1 Team meetings are attended on time according to schedules</p> <p>3.2 Own opinions are clearly expressed and those of others are listened to in accordance with workplace guidelines</p> <p>3.3 Meeting inputs are provided based on the meeting purpose and established protocols</p> <p>3.4 Workplace interactions are conducted as per organizations' code of conduct</p> <p>3.5 Work-related questions are asked and responded based on set protocols</p> <p>3.6 Meetings outcomes are interpreted and implemented as per organizations' objectives</p> |
| 4. Complete relevant work-related documents | <p>4.1 Range of forms relating to conditions of employment are completed according to workplace procedures</p> <p>4.2 Workplace data is recorded based on workplace requirements</p> <p>4.3 Errors in recording information are identified and acted upon in accordance with workplace policies</p> <p>4.4 Reporting requirements are completed according to organizational guidelines</p> |

RANGE

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

| Variable | Range |
|--|---|
| 1. Appropriate Sources may include but not limited to: | <ul style="list-style-type: none"> ● Various department heads, ● organization documents |
| 2. Medium may include but not limited to: | <ul style="list-style-type: none"> ● Method of communication ● Physical media |

| | |
|---|---|
| | <ul style="list-style-type: none"> ● Mechanical media |
| 3. Routine procedures may include but not limited to: | <ul style="list-style-type: none"> ● Day to day activities |
| 4. Protocols may include but not limited to: | <ul style="list-style-type: none"> ● Procedures for doing a task |
| 5. Workplace interactions may include but not limited to: | <ul style="list-style-type: none"> ● Official inter relations |

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Analytical
- Active Listening
- Communication
- writing
- Interpretation
- Basic Information Technology (IT)

Required Knowledge

The individual needs to demonstrate knowledge of:

- Minutes writing
- Report writing

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

| | |
|-----------------------------------|---|
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate: <ul style="list-style-type: none"> 1.1 Prepared written communication following standard format of the organization 1.2 Accessed information using communication equipment |
|-----------------------------------|---|

| | |
|--|--|
| | <p>1.3 Spoken English at a basic operational level</p> <p>1.4 Made use of relevant terms as an aid to transfer information effectively</p> <p>1.5 Conveyed information effectively adopting the formal or informal communication</p> |
| 2. Resource Implications | <p>The following resources should be provided:</p> <p>2. 1 Access to relevant workplace where assessment can take place</p> <p>2. 2 Appropriately simulated environment where assessment can take place</p> <p>2. 3 Materials relevant to the proposed activity or tasks</p> |
| 3. Methods of Assessment | <p>3.1 Direct Observation</p> <p>3.2 Interview</p> <p>3.3 Written test</p> |
| 4. Context of Assessment | <p>Competency may be assessed</p> <p>4.1 On the job</p> <p>4.2 Off the job</p> <p>4.3 During industrial attachment</p> |
| 5. Guidance information for assessment | <p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p> |

2. DEMONSTRATE NUMERACY SKILLS

UNIT CODE: ENG/OS/AUT/BC/2/3/A

UNIT DESCRIPTION:

This unit covers the competencies required to demonstrate numeracy skills. It involves using whole numbers and money up to one hundred thousand for work, Locating, comparing and using highly familiar measurement for work, using highly familiar maps and diagrams for work, identifying and using some common 2D shapes for work and locating specific information in highly familiar tables, graphs and charts for work

Elements and Performance Criteria

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| Element | Performance Criteria |
|---|--|
| Elements describe the essential outcomes. | Performance criteria describe the performance needed to demonstrate achievement of the element. <i>Bold and italicized terms are elaborated in the Range</i> |
| 1. Use whole numbers for work | <p>1.1 Whole numbers and money amount up to 100,000 in highly familiar workplace documents and tasks are named and read according to workplace procedures.</p> <p>1.2 Understanding of place value and the role of zero is demonstrate according to standard operating procedures.</p> <p>1.3 Halves are recognised and understood in workplace as per Standard operating procedures.</p> <p>1.4 Whole numbers and money amounting up to 100,000 are organised in size order and are compared as per workplace procedures.</p> <p>1.5 Counting is done in numbers as per standard operating procedures.</p> <p>1.6 Addition and subtraction of whole numbers and money up to 100,000 done in accordance with workplace requirement</p> <p>1.7 Links between operations of addition and subtraction are clearly described as per job requirement.</p> <p>1.8 Reasonableness of outcome with prompting and support is checked as per work requirement.</p> <p>1.9 Numerical information is recorded, and the result of the task is communicated using informal language and symbolism as per workplace procedures.</p> |

| | |
|--|--|
| <p>2. Locate, compare and use highly familiar measurement for work</p> | <p>2.1 Measurements in highly familiar workplace documents and tasks are located as per standard operating procedures</p> <p>2.2 Different units of measurements and their uses are identified in accordance with job specifications</p> <p>2.3 The comparative relationship between the units of measurement identified as per standard operating procedures.</p> <p>2.4 Understanding of conversion of amounts is demonstrated in accordance with requirements.</p> <p>2.5 Informal language is used to compare measurements as per workplace procedures.</p> <p>2.6 Digital time is well read and am and pm used in reference to time</p> <p>2.7 Calendar used appropriately to record information in accordance with organizational events.</p> <p>2.8 Basic measurement information is well read and recorded as per the manuals</p> <p>2.9 Additions and subtraction of simple quantities done in workplace as per SOPs.</p> |
| <p>3. Use highly familiar maps and diagrams for work</p> | <p>3.1 Familiar items or places are in highly familiar maps and diagrams in accordance with SOPs</p> <p>3.2 Simple symbols and pictorial representations are identified in accordance with familiar maps and diagrams</p> <p>3.3 Simple oral directions are given to locate objects as per SOPs</p> <p>3.4 Simple oral directions followed to locate objects as per job specifications</p> <p>3.5 Understanding of informal directional language is demonstrated as per work procedures.</p> |
| <p>4. Identify and use some common 2D shapes for work</p> | <p>4.1 Common two-dimensional shapes are identified and named as per SOPs</p> <p>4.2 Common objects are described in terms of size and shape as per SOPs</p> <p>4.3 Common, every day, informal language is used to compare objects in accordance SOPs</p> <p>4.4 Common objects are grouped based on shape, size, colour and features as per job requirements</p> |

| | |
|---|---|
| <p>5. Locate specific information in highly familiar tables, graphs and charts for work</p> | <p>5.1 Features of simple tables identified as per work place procedures</p> <p>5.2 Specific numerical information located in highly familiar tables using grid movement (up and down columns and across rows) and key as graph and chart manuals</p> <p>5.3 Numerical information and data in highly familiar tables compared using appropriate informal language as per workplace procedures.</p> <p>5.4 Information related to relevant workplace tasks as per workplace procedures</p> <p>5.5 Features of simple graphs and charts identified as per SOPs</p> <p>5.6 Specific numerical information located in highly familiar graphs and charts as per workplace procedures.</p> <p>5.7 Numerical information and data compared using appropriate informal language as per SOPs.</p> |
|---|---|

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

| Variable | Range |
|--|---|
| <p>1. Common two - dimensional shapes: may include but not limited to:</p> | <ul style="list-style-type: none"> ● Round/circle ● Square ● Rectangular ● Triangle |

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Measuring
- Logical thinking
- Computing
- Drawing of graphs
- Applying mathematical formulas

- Analytical

Required knowledge

The individual needs to demonstrate knowledge of:

- Types of common shapes
- Differentiation between two dimensional shapes / objects
- Formulae for calculating area and volume
- Types and purpose of measuring instruments
- Units of measurement and abbreviations
- Fundamental operations (addition, subtraction, division, multiplication)
- Rounding techniques
- Types of fractions
- Different types of tables and graphs
- Meaning of graphs, such as increasing, decreasing, and constant value
- Preparation of basic data, tables & graphs

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

| | |
|---|--|
| <p>1. Critical Aspects of Competency</p> | <p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Measured objects or materials as per job requirements 1.2 Used calculator to perform the four fundamental operations 1.3 Performed calculations involving money up to one hundred thousand 1.4 Performed conversions between hours, minutes and seconds 1.5 Calculated area and volume of regular shapes 1.6 Created tables and graphs to represent and interpret information |
| <p>2. Resource Implications for competence assessment</p> | <p>The following resources should be provided:</p> |

| | |
|--|--|
| | <ul style="list-style-type: none"> 2. 1 Access to relevant workplace where assessment can take place 2. 2 Appropriately simulated environment where assessment can take place 2. 3 Materials relevant to the proposed activity or tasks |
| 3. Methods of Assessment | <p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Written Test 3.2 Interview 3.3 Oral Questioning 3.4 Demonstration |
| 4. Context of Assessment | <p>Competency may be assessed</p> <ul style="list-style-type: none"> 4.1 On the job 4.2 Off the job 4.3 During industrial attachment |
| 5. Guidance information for assessment | <p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p> |

3. DEMONSTRATE DIGITAL LITERACY

UNIT CODE: ENG/OS/AUT/BC/3/3/A

UNIT DESCRIPTION

This unit covers the competencies required to demonstrate digital literacy in a working environment. It entails identifying computer software and hardware, applying security measures to data, hardware, software, applying computer software in solving tasks and applying internet and email in communication at workplace.

ELEMENTS AND PERFORMANCE CRITERIA

| ELEMENT These describe the key outcomes which make up workplace function | PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the Range</i> |
|--|--|
| 1. Identify computer software and hardware | 1.1 Computer software are identified according to manufacturer's specification 1.2 Appropriate computer hardware is identified according to manufacturer's specification |
| 2. Apply security measures to data, hardware, software | 2.1 Data security and privacy are classified in accordance with the technological situation 2.2 Security and control measures are applied in accordance with laws governing protection of ICT 2.3 Computer threats and crimes are detected in accordance with information management guidelines. 2.4 Protection against computer crimes is undertaken in accordance with laws governing protection of ICT |
| 3. Apply computer software in solving tasks | 3.1 Basic word processing concepts are applied in resolving workplace tasks as per job requirement. 3.2 Word processing utilities are applied in accordance with workplace procedures 3.3 Data is manipulated on worksheet in accordance with office procedures |
| 4. Apply internet and email in | 4.1 Electronic mail is applied in workplace communication in accordance with office procedures |

| | |
|----------------------------|--|
| communication at workplace | <p>4.2 Office internet functions are defined and executed in accordance with office procedures</p> <p>4.3 Network configuration and uses are determined in accordance with office operations procedures</p> |
|----------------------------|--|

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

| Variable | Range |
|--|---|
| 1. Computer software may include but not limited to: | <ul style="list-style-type: none"> ● Operating system ● MS office ● Web browser <p>Media players</p> |
| 2. Computer hardware may include but not limited to: | <ul style="list-style-type: none"> ● Computer Case ● Monitor ● Keyboard ● Mouse ● Hard Disk Drive ● Motherboard ● Video Card |
| 3. Data security and privacy may include but not limited to: | <ul style="list-style-type: none"> ● Confidentiality ● Cloud computing ● Confidentiality ● Cyber terrorism ● Integrity -but-curious data serving |
| 4. Security and control measures may include but not limited to: | <ul style="list-style-type: none"> ● Countermeasures and risk reduction ● Cyber threat issues ● Risk management |
| 5. Word processing concepts may include but not limited to: | <ul style="list-style-type: none"> ● Create ● Edit ● Print ● Documents |

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Analytical skills
- Interpretation
- Typing
- Communication
- Computing skills
- Basic ICT skills

Required Knowledge

The individual needs to demonstrate knowledge of:

- Input and output devices
- Central processing Unit (CPU)
- Peripherals
- Storage Media
- Software concept
- Types of concept
- Function of computer software
- Data security and privacy
- Security threats and control measures
- Computer crimes
- Detection and protection of computer crimes
- Laws governing protection of ICT
- Word processing;
 - Functions and concepts of word processing.
 - Documents and tables creation and manipulations
 - Mail merging
 - Word processing utilities
- Spread sheet;
 - Meaning, formulae, function and charts, uses, layout, data manipulation and application to cell

- Networking and Internet;
 - Meaning, functions and uses of networking and internet.
 - Electronic mail and world wide web
- Emerging trends and issues in ICT;
 - Identify and apply emerging trends and issues in ICT
 - Challenges posed by emerging trends and issues

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

| | |
|---|--|
| <p>1. Critical Aspects of Competency</p> | <p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Identified input, output, CPU and storage media devices of computers in accordance to computer specification 1.2 Identified concepts, types and functions of computer software according to operation manual 1.3 Identified and controlled security threats 1.4 Detected and protected computer crimes 1.5 Applied word processing in office tasks 1.6 Prepared work sheet and applied data to the cells in accordance to workplace procedures 1.7 Used Electronic Mail for office communication as per workplace procedure 1.8 Applied internet and World Wide Web for office tasks in accordance with office procedures 1.9 Applied laws governing protection of ICT |
| <p>2. Resource Implications for competence assessment</p> | <p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Access to relevant workplace where assessment can take place 2.2 Appropriately simulated environment where assessment can take place 2.3 Materials relevant to the proposed activity or tasks |
| <p>3. Methods of Assessment</p> | <p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Written Test 3.2 Observation 3.3 Practical assignment 3.4 Interview 3.5 Oral Questioning |

| | |
|--|--|
| 4. Context of Assessment | Competency may be assessed 4.1 On the job 4.2 Off the job 4.3 During industrial attachment |
| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

4. DEMONSTRATE ENTREPRENEURIAL SKILLS

UNIT CODE : ENG/OS/AUT/BC/1/4/A

UNIT DESCRIPTION

This unit specifies the competencies required to demonstrate Entrepreneurial skills. It involves developing entrepreneurial culture, identifying entrepreneurial opportunities, starting, operating and growing a small business.

ELEMENTS AND PERFORMANCE CRITERIA

| ELEMENT | PERFORMANCE CRITERIA |
|---|---|
| These describe the key outcomes which make up workplace function. | These are assessable statements which specify the required level of performance for each of the elements. Bold and italicized terms are elaborated in the Range |
| 1. Develop entrepreneurial culture | 1.1 <i>Entrepreneurship terminologies</i> are defined following established procedures. 1.2 Contribution of entrepreneurship towards national development is identified in accordance to national development goals 1.3 Self-employment benefit are identified and emphasized to help create a positive attitude 1.4 Cultural factors that promote or inhibit entrepreneurial development are identified and emphasis made on entrepreneurial promotion |

| | |
|---|--|
| | 1.5 Ways of managing factors that inhibit development of entrepreneurial culture are identified in accordance with cultural background and national social economic situation |
| 2. Identify entrepreneurial opportunities | <p>2.1 Myths associated with entrepreneurship, types of entrepreneurs and characteristics of entrepreneurship are determined in accordance with the set procedures</p> <p>2.2 Identification of <i>sources of business ideas</i>, generation of business ideas is undertaken in accordance with the existing procedure</p> <p>2.3 Evaluation of business opportunities is undertaken according to prevailing office procedures</p> <p>2.4 Competencies are matched with business opportunities in accordance with business practices.</p> |
| 3. Start a small business | <p>3.1 Factors to consider when starting a small business are identified according to business sector.</p> <p>3.2 <i>Forms of business ownership</i> are identified and procedure of starting a small business stipulated according to relevant legal requirements</p> <p>3.3 Procedure of starting a small business is identified as per the legal requirements</p> <p>3.3 Challenges faced when starting a small business are identified and mitigating factors provided for in accordance prevailing legal and regulatory requirement</p> <p>3.4 Resource requirement for a small business are specified according to nature of business</p> <p>3.5 Business life cycle is projected as per the nature of business and national social economic situation</p> |
| 4. Operate a small business | <p>4.1 Relevant terms are defined in accordance with the set rules</p> <p>4.3 Small business record is maintained in accordance with office procedures</p> <p>4.4 Business support services are set up in accordance with the nature and size of business</p> <p>4.5 Marketing activities are effected according to the nature and size of business</p> |

| | |
|---------------------------------|---|
| | <p>4.6 Small enterprise business plan is prepared depending on the size and nature of business and the client specification</p> <p>4.6 Small business resources are run for efficiency and profitability</p> <p>4.6 Small business records are kept for decision making purposes</p> <p>4.7 Word processing concepts are applied in the management of small business according to office procedures</p> <p>4.8 Basic computer application software and emerging trends and concerns are applied in small business management in accordance with office procedures</p> |
| <p>5. Grow a small business</p> | <p>5.1 Methods of growing/expanding a small business are identified and implemented in accordance with growth schedule</p> <p>5.2 Resources for growing small business are identified and implementing</p> <p>5.3 Small business growth plans are prepared according to growth schedule</p> <p>5.4 ICT and small business growth schedule is prepared in accordance with office procedures</p> <p>5.5 Use of computers and technology is incorporated in small scale business growth schedule in accordance with technological trends</p> <p>5.6 Social media is used for business growth and profitability</p> <p>5.7 Emerging issues and trends are considered in accordance with business growth schedule and activities</p> <p>5.8 Community interest is built in product/service according to growth plan</p> <p>5.9 Business communication is enhanced according to business communication plan and profitability</p> <p>5.10 Basic business growth strategies are identified and implemented for increased profitability</p> <p>5.11 Word processing concepts are applied in growing of small business according to office procedures</p> <p>5.12 Basic computer application software, programming and emerging trends and concerns are applied in small business growth in accordance with office procedures for growth and profitability</p> |

RANGE

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance

| Variable | Range |
|--|---|
| 1. Entrepreneurship terminologies include but not limited to: | <ul style="list-style-type: none">● Intrapreneurship● Enterprise● Business vision. Mission, core values, objectives |
| 2. Sources of business ideas may include but not limited to: | <ul style="list-style-type: none">● Brainstorming● Personal hobbies● Newspapers, magazines,● Friends and relatives● Accounting/Administrative work● Modern trends and concerns |
| 3. Forms of business ownership may include but not limited to: | <ul style="list-style-type: none">● Sole proprietorship● Partnership● Limited Company● Unlimited Company |

REQUIRED SKILLS AND KNOWLEDGE

Required Skills

This section describes the skills and knowledge required for this unit of competency.

The individual needs to demonstrate the following skills:

- Marketing skills
- Advertising
- Basic book-keeping
- accounting skills
- Communication skills

Required Knowledge

The individual needs to demonstrate knowledge of:

- Public relations concepts
- Basic product promotion strategies
- Basic market and feasibility studies
- Basic business ethics
- Building customer relations
- Business models and strategies
- Types and categories of businesses
- Business internal controls
- Relevant national and local legislation and regulations
- Basic quality control and assurance concepts
- Building relations with customer and employees
- Building competitive advantage of the enterprise

EVIDENCE GUIDE

This section describes the required skills which supports performance. These skills will need to be considered in the learning and assessment process.

| | |
|---|--|
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate: 1.1 Demonstrated basic entrepreneurial skills 1.2 Demonstrated ability to conceptualize and plan a micro/small enterprise 1.3 Demonstrated ability to manage/operate a micro/small-scale business 1.4 Demonstrated basic marketing skills |
| 2. Resource Implications for assessment | The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place 2.2 Appropriately simulated environment where assessment can take place 2.3 Materials relevant to the proposed activity or tasks |
| 3. Methods of Assessment | Competency in this unit may be assessed through: 3.1 Written tests 3.2 Oral Questioning 3.3 Observation 3.4 Third Party Report |

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| 4. Context of Assessment | Competency may be assessed 4.1 On the job 4.2 Off the job 4.3 During industrial attachment |
| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

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5. DEMONSTRATE EMPLOYABILITY SKILLS

UNIT CODE: ENG/OS/AUT/BC/5/3/A

UNIT DESCRIPTION

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating critical safe work habits, demonstrating workplace learning and workplace ethics.

ELEMENTS AND PERFORMANCE CRITERIA

| ELEMENT | PERFORMANCE CRITERIA |
|---|---|
| These describe the key outcomes which make up workplace function. | These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the Range</i> |
| 1. Conduct self-management | 1.1 Personal vision, mission and goals are formulated based on potential and in relation to organization objectives 1.2 Emotional intelligence is demonstrated as per workplace requirements. 1.3 Individual performance is evaluated and monitored according to the agreed targets. 1.4 Assertiveness is developed and maintained based on the requirements of the job. 1.5 Accountability and responsibility for own actions are demonstrated based on workplace instructions. 1.6 Self-esteem and a positive self-image are developed and maintained based on values. 1.7 Time management, attendance and punctuality are observed as per the organization policy. 1.8 Goals are managed as per the organization's objectives 1.9 Self-strengths and weaknesses are identified based on personal objectives |

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| <p>2. Demonstrate critical safe work habits</p> | <p>2.1.Stress is managed in accordance with workplace policy. 2.2.Punctuality and time consciousness is demonstrated in line with workplace policy. 2.3.Personal objectives are integrated with organization goals based on organization’s strategic plan. 2.4.Resources are utilized in accordance with workplace policy. 2.5.Work priorities are set in accordance to workplace goals and objectives. 2.6.Leisure time is recognized and utilized in line with personal objectives. 2.7.Drugs and substances of abuse are identified and avoided based on workplace policy. 2.8.HIV and AIDS prevention awareness is demonstrated in line with workplace policy. 2.9.Safety consciousness is demonstrated in the workplace based on organization safety policy. 2.10. Emerging issues are identified and dealt with in accordance with organization policy.</p> |
| <p>3. Demonstrate workplace learning</p> | <p>3.1 Learning opportunities are sought and managed based on job requirement and organization policy. 3.2 Improvement in performance is demonstrated based on courses attended. 3.3 Application of learning is demonstrated in both technical and non-technical aspects based on requirements of the job 3.4 Time and effort is invested in learning new skills based on job requirements 3.5 Initiative is taken to create more effective and efficient processes and procedures in line with workplace policy. 3.6 New systems are developed and maintained in accordance with the requirements of the job. 3.7 Awareness of personal role in workplace innovation is demonstrated based on requirements of the job.</p> |
| <p>4. Demonstrate workplace ethics</p> | <p>4.1 Policies and guidelines are observed as per the workplace requirements 4.2 Self-worth and professionalism is exercised in line with personal goals and organizational policies 4.3 Code of conduct is observed as per the workplace requirements 4.4 Integrity is demonstrated as per legal requirement</p> |

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RANGE

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

| Range | Variable |
|---|---|
| 1. Drug and substance abuse may include but not limited to: | Commonly abused <ul style="list-style-type: none"> ● Alcohol ● Tobacco ● Miraa ● Over-the-counter drugs ● Cocaine ● Bhang ● Glue |
| 2. Feedback may include but not limited to: | <ul style="list-style-type: none"> ● Verbal ● Written ● Informal ● Formal |
| 3. Team may include but not limited to: | <ul style="list-style-type: none"> ● Small work group ● Staff in a section/department ● Inter-agency group |
| 4. Innovation may include but not limited to: | <ul style="list-style-type: none"> ● New ideas ● Original ideas ● Different ideas ● Methods/procedures ● Processes ● New tools |
| 5. Emerging issues may include but not limited to: | <ul style="list-style-type: none"> ● Terrorism ● Social media ● National cohesion ● Open offices |

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Communication
- Critical thinking
- Observation
- Organizing
- Record keeping
- Problem solving
- Decision Making
- Resource utilization

Required Knowledge

The individual needs to demonstrate knowledge of:

- Work values and ethics
- Company policies
- Company operations, procedures and standards
- Occupational Health and safety procedures
- Fundamental rights at work
- Personal hygiene practices
- Workplace communication
- Concept of time
- Time management
- Decision making
- Types of resources
- Work planning
- Organizing work
- Record keeping
- Workplace problems and how to deal with them
- Assertiveness
- Team work
- HIV and AIDS
- Drug and substance abuse
- Safe work habits
- Professional growth and development

- Technology in the workplace
- Innovation
- Emerging issues
 - Social media
 - Terrorism
 - National cohesion

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

| | |
|--|--|
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate: <ul style="list-style-type: none"> 1.1 Conducted self-management 1.2 Demonstrated critical safe work habits 1.3 Demonstrated workplace learning 1.4 Demonstrated workplace ethics |
| 2. Resource Implications | The following resources should be provided: <ul style="list-style-type: none"> 2. 1 Access to relevant workplace where assessment can take place 2. 2 Appropriately simulated environment where assessment can take place |
| 3. Methods of Assessment | Competency in this unit may be assessed through: <ul style="list-style-type: none"> 3.1 Oral questioning 3.2 Portfolio of evidence 3.3 Third Party Reports 3.4 Written tests |
| 4. Context of Assessment | Competency may be assessed <ul style="list-style-type: none"> 4.1 On-the-job 4.2 Off-the –job 4.3 During Industrial attachment |
| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

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6. DEMONSTRATE ENVIRONMENTAL LITERACY

UNIT CODE : ENG/OS/AUT/BC/1/6/A

UNIT DESCRIPTION

This unit specifies the competencies required to demonstrate environmental literacy. It involves controlling environmental hazard, controlling environmental pollution and demonstrating sustainable resource use.

ELEMENTS AND PERFORMANCE CRITERIA

| ELEMENT These describe the key outcomes which make up workplace function. | PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the Range</i> |
|---|---|
| 1. Control environmental hazard | 1.1 Storage and handling methods for environmentally hazardous materials are strictly followed according to environmental regulations and OSHS. 1.2 Disposal methods of hazardous wastes are followed at all times according to environmental regulations and OSHS. 1.3 PPE is used according to OSHS. |
| 2. Control environmental Pollution | 2.1 Environmental pollution control measures are complied with following standard protocol. 2.2 Procedures for solid waste management are observed according Environmental Management and Coordination Act 1999 2.3 Methods for minimizing noise pollution complied following environmental regulations. |
| 3. Demonstrate sustainable use of resource | 3.1 Methods for minimizing wastage are complied with. 3.2 Waste management procedures are employed following principles of 3Rs (Reduce, Reuse, Recycle) 3.3 Methods for economizing or reducing resource consumption are practiced. |

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

| Variable | Range |
|---|---|
| 1. PPE may include but not limited to: | <ul style="list-style-type: none"> ● Mask ● Gloves ● Goggles ● Safety hat ● Overall ● Hearing protector |
| 2. Environmental pollution control measures may include but not limited to: | <ul style="list-style-type: none"> ● Methods for minimizing or stopping spread and ingestion of airborne particles ● Methods for minimizing or stopping spread and ingestion of gases and fumes ● Methods for minimizing or stopping spread and ingestion of liquid wastes |
| 3. Waste management procedures may include but not limited to: | <ul style="list-style-type: none"> ● Sorting ● Storing of items ● Recycling of items ● Disposal of items |
| 4. Resources may include but not limited to: | <ul style="list-style-type: none"> ● Electric ● Water ● Fuel ● Telecommunications ● Supplies ● Materials |
| 5. Workplace environmental hazards may include but not limited to: | <ul style="list-style-type: none"> ● Biological hazards ● Chemical and dust hazards ● Physical hazards |

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Communication
- Observation
- Writing
- Analytical

Required Knowledge

The individual needs to demonstrate knowledge of:

- Storage methods of environmentally hazardous materials
- Disposal methods of hazardous wastes
- Usage of PPE Environmental regulations
- OSHS
- Types of pollution
- Environmental pollution control measures
- Different solid wastes
- Solid waste management
- Different noise pollution
- Methods of minimizing noise pollution
- Solid Waste Act
- Methods of minimizing wastage
- Waste management procedures
- Economizing of resource consumption
- Principle of 3Rs

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

| | |
|--|---|
| <p>1. Critical Aspects of Competency</p> | <p>Assessment requires evidence that the candidate:</p> <p>1.1 Controlled environmental hazard</p> <p>1.2 Controlled environmental pollution</p> <p>1.3 Demonstrated sustainable resource use</p> |
| <p>2. Resource Implications for assessment</p> | <p>The following resources should be provided:</p> <p>2.1 Workplace with storage facilities</p> |

| | |
|---------------------------------------|---|
| | <p>2.2 Tools, materials and equipment relevant to the tasks (ex. Cleaning tools, cleaning materials, trash bags, etc.)</p> <p>2.3 PPE</p> <p>2.4 Manuals and references</p> |
| 3 Methods of Assessment | <p>Competency in this unit may be assessed through:</p> <p>3.1 Observation</p> <p>3.2 Oral questioning</p> <p>3.3 Written examination</p> |
| 4 Context of Assessment | <p>Competency may be assessed</p> <p>4.1 On the job</p> <p>4.2 Off the job</p> <p>4.3 During industrial attachment</p> |
| 5 Guidance information for assessment | <p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p> |

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7. DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES

UNIT CODE: ENG/OS/AUT/BC/7/3/A

UNIT DESCRIPTION

This unit specifies the competencies required to practice and promote safety and health at work. This entails preparing to practice safety and health at work and complying and promoting compliance of workers to organization's occupational safety and health instructions and requirements

ELEMENTS AND PERFORMANCE CRITERIA

| ELEMENT | PERFORMANCE CRITERIA |
|---|---|
| These describe the key outcomes which make up workplace function. | These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the Range</i> |
| 1. Prepare to practice safety and health at work | 1.1 Awareness of legislation that outlines the minimum standards for occupational safety and health requirements/ regulations are emphasized 1.2 Benefits of implementing an occupational safety and health program are identified 1.3 <i>Safety requirements/ regulations</i> of own work and of other workers are familiarized 1.4 Workplace standards and procedures <i>for incidents and Emergencies</i> are determined 1.5 <i>Prevention and control measures</i> , including use of <i>safety gears/PPE</i> (Personal Protective Equipment) to avoid accident, injuries and sickness are identified |
| 2. Comply and promote compliance of workers to | 2.1 Safety instructions and safety signs are followed and |

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| <p>organization's occupational safety and health instructions and requirements</p> | <p>disseminated to co-workers</p> <p>2.2 Safe handling of tools, equipment and materials is learned and shared with co-workers</p> <p>2.3 Execution of own work and of co-workers is monitored in according to safe work procedures</p> <p>2.4 Use of safe guards and safety devices is monitored</p> <p>2.5 Hazards, incidents, injuries and sickness in the workplace are reported properly following standards and procedures</p> |
|--|--|

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

| Variable | Range |
|--|--|
| <p>1. Safety requirements / regulations may include but are not limited to:</p> | <ul style="list-style-type: none"> ● Building code ● Permit to Operate ● Occupational Safety and Health Standards |
| <p>2. Incidents and emergencies may include but are not limited to:</p> | <ul style="list-style-type: none"> ● Chemical spills ● Equipment/vehicle accidents ● Explosion ● Fire ● Gas leak ● Injury to personnel ● Structural collapse ● Toxic and/or flammable vapors emission. |
| <p>3. Prevention and control measures may include but are not limited to:</p> | <ul style="list-style-type: none"> ● Eliminate the hazard ● Isolate the hazard ● Substitute the hazard with a safer alternative ● Use administrative controls to reduce the risk ● Use engineering controls to reduce the risk ● Use personal protective equipment ● Safety, Health and Work Environment Evaluation |

| | |
|---|---|
| | <ul style="list-style-type: none"> ● Periodic and/or special medical examinations of workers |
| <p>4. Safety devices/ PPEs (personal protective equipment) May include but are not limited to:</p> | <ul style="list-style-type: none"> ● Arm/Hand guard, gloves ● Eye protection (goggles, shield) ● Hearing protection (ear muffs, ear plugs) ● Hair Net/cap/bonnet ● Hard hat ● Face protection (mask, shield) ● Apron/Gown/coverall/jump suit ● Anti-static suits ● High-visibility reflective vest |

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Communication
- Observation
- Reporting
- Organizing

Required Knowledge

The individual needs to demonstrate knowledge of:

- Elements of an effective occupational safety and health program
- Benefits of implementing an occupational safety and health program
- Safety requirements of own work and of other workers
- Standard emergency plan and procedures in the workplace
- Different OSH control measures
- General OSH principles
- Work standards and procedures
- Safe handling procedures of tools, equipment's and materials
- Standard emergency plan and procedures in the workplace
- Different OSH control measures
- Standard accident and illness reporting procedures in the workplace
- Monitoring system on compliance to work safety and health

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

| | |
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| <p>1. Critical Aspects of Competency</p> | <p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1. Arranged work area and items in accordance with workplace procedures requirements 1.2. Followed work standards and procedures based on instructions 1.3. Applied <i>Prevention and control measures</i> based on instructions 1.4. Undertook orientations on <i>OSH requirements and regulations</i> in line with policy. 1.5. Provided feedback on occupational health and safety as per workplace instructions. 1.6. Adhered to workplace procedures for reporting hazards, incidents, injuries and sickness to as per workplace policy. 1.7. Identified and proposed <i>OSH-related training needs</i> as per workplace policy. |
| <p>2. Resource Implications for assessment</p> | <p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Access to relevant workplace where assessment can take place 2.2 Appropriately simulated environment where assessment can take place |
| <p>3. Methods of Assessment</p> | <p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Oral questioning 3.2 Portfolio of evidence 3.3 Third Party Reports 3.4 Written tests |
| <p>4. Context of Assessment</p> | <p>Competency may be assessed</p> <ul style="list-style-type: none"> 4.1 On-the-job 4.2 Off-the –job 4.3 During Industrial attachment |

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| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |
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COMMON UNITS OF COMPETENCY

8. PERFORM WORKSHOP HOUSEKEEPING

UNIT CODE: ENG/OS/AUT/CC/1/3/A

UNIT DESCRIPTION:

This unit describes the competences required to perform workshop housekeeping. It involves preparing to perform shop housekeeping, preparing and organizing your work area, handling materials mechanical, physical, and hazardous. Applying safety measures, preparing periodic tools and equipment reports, preparing safety violations and injuries reports in an automotive service environment.

ELEMENTS AND PERFORMANCE CRITERIA

| ELEMENT | PERFORMANCE CRITERIA |
|--|--|
| <p>These describe the key outcomes which make up workplace function.</p> | <p>These are assessable statements which specify the required level of performance for each of the elements.</p> <p><i>Bold and italicized terms are elaborated in the Range</i></p> |
| <p>1. Prepare to perform shop housekeeping</p> | <p>1.1 <i>Personal protective equipment</i> is identified in terms of type and quantity according to OS&H.</p> <p>1.2 Personal protective equipment is used to ensure correct fit and optimum protection according to OS&H.</p> <p>1.3 Personal protective equipment is maintained to ensure correct fit and optimum protection according to OS&H.</p> <p>1.4 Personal protective equipment is cleaned and stored in the proper place according to manufacturer's specifications.</p> |
| <p>2. Prepare and organize work area</p> | <p>2.1 <i>Site policies</i> and procedures are identified for organizing a work area and its surroundings as per job requirement.</p> <p>2.2 <i>Tools and equipment</i> for handling materials/goods are identified as per job requirement.</p> |
| <p>3. Handle materials mechanical</p> | <p>3.1 <i>Materials</i> are recognized and identified for sorting and stacking/stockpiling as per supervisor's instructions and/or product specifications.</p> <p>3.2 Materials are stacked/banded for mechanical handling in accordance with the type of material and plant/equipment as per OS&H.</p> <p>3.3 Materials are safely moved with assistance of a pallet trolley, forklift and hoisted as per workshop rules, operation manual and OS&H.</p> |

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| 4. Handle materials physical | <p>4.1 Materials are recognized and identified for sorting and stacking/stockpiling as per supervisor’s instructions and/or product specifications.</p> <p>4.2 Handling characteristics of materials and appropriate handling techniques are identified as per supervisor’s instruction and/or product specifications.</p> <p>4.3 Specific handling requirements for hazardous materials are identified as per OS&H.</p> <p>4.4 Materials are stored, stacked/stockpiled and protected, clear of traffic ways according to shop regulations.</p> <p>4.5 Appropriate signage and barricades are identified where applicable according to OS&H.</p> <p>4.6 Physical handling techniques are identified as per shop rules and regulations.</p> |
| 5. Handle automotive hazardous materials | <p>5.1 Hazardous materials are stored in specified room/place according to OS&H.</p> <p>5.2 Spoilage of hazardous materials is reported immediately to the senior supervisor according to OS&H.</p> <p>5.3 Hazardous materials are disposed of according to OS&H.</p> |
| 6. Apply safety measures | <p>6.1 Safety/accidents are assessed according to OS&H.</p> <p>6.2 Safety measures are confirmed according to OS&H.</p> <p>6.3 Fire extinguisher is extinguished according to manufacturer’s specifications.</p> <p>6.4 Fire classifications are identified according to OS&H</p> <p>6.5 Types of fire extinguishers are identified according to classification of fire.</p> <p>6.6 Fire marshals are identified as per workplace policy.</p> <p>6.7 Fire drill procedures are performed according to OS&H and facility’s policy.</p> |
| 7. Prepare periodic tools and equipment reports | <p>7.1 Tools and equipment report templates are provided as per Standard Operational Plan (SOPs).</p> <p>7.2 Complete inventory of tools/equipment is maintained as per SOPs.</p> <p>7.3 Damaged tools/equipment/facilities are identified as per user manual and OS&H.</p> <p>7.4 Repair recommendations are given to supervisor as per user manual and OS&H.</p> |

| | |
|---|---|
| | 7.5 Reports are prepared as per shop regulations and OS&H. |
| 8. Prepare safety violations and injuries reports | 8.1 Safety violation and injury report templates are provided as per SOPs. 8.2 <i>Safety violations</i> are communicated as per OS&H. 8.3 Safety injuries are communicated as per OS&H. |

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

| VARIABLE | RANGE |
|--|--|
| 1. Personal protective equipment may include but are not limited to: | <ul style="list-style-type: none"> ● Head hat ● Overalls ● Dust coat ● Safety glasses ● Ear protection ● Safety boots ● Masks ● Gloves |
| 2. Site policies may include but are not limited to: | <ul style="list-style-type: none"> ● Workshop procedures ● OS&H ● Standard Operational Procedures |
| 3. Tools and equipment may include but are not limited to: | <ul style="list-style-type: none"> ● Forklift ● Hydraulic jack ● Chain block ● Hoist ● Trolley |
| 4. Materials (mechanical) may include but are not limited to: | <ul style="list-style-type: none"> ● Automotive spare parts ● Large pieces of equipment ● Large engine parts |
| 5. Materials (physical) may include but are not limited to: | <ul style="list-style-type: none"> ● Small engine parts ● Hand tools ● Small equipment ● Liquid cans |
| 6. Stored, stacked/stockpiled and | <ul style="list-style-type: none"> ● Covering |

| | |
|--|---|
| protected may include but are not limited to: | <ul style="list-style-type: none"> ● Tying or banding ● Barricades ● Signs ● Locked away (hazardous materials) |
| 7. Hazardous materials may include but are not limited to: | <ul style="list-style-type: none"> ● Gasoline ● Propane ● Diesel fuel ● Cleaners ● Oils ● Gases ● Fumes ● Brake/clutch fluids |
| 8. Safety violation may include but are not limited to: | <ul style="list-style-type: none"> ● Procedure breeches ● Accidents ● Incidents |
| 9. Safety measures may include but are not limited to: | <ul style="list-style-type: none"> ● Alarms ● Signage ● Hose rig |

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Problem solving
- Handling/storing of tools/equipment/supplies and material
- Disposing of wastes and fluid
- Identify workshop tools and equipment
- Complete the work within the available time
- Utilize the resources in the best way
- Perform the work safely
- Produce quality work
- Perform the work, with minimum cost
- Give job satisfaction
- Communications (verbal)
- Listening
- Trouble shooting

- Time management
- Work safely to instructions
- Report writing

Required Knowledge

The individual needs to demonstrate knowledge of:

- Service procedures
- Safe handling of equipment and tools
- Workshop policies and regulations
- Personal safety procedures
- Positive Work Values (Perseverance, Honesty, Patience, Attention to Details)
- Workplace and equipment safety requirements and OH&S guidelines
- Work shop procedures
- Hand tools related to auto service
- Power tools related to auto service
- Equipment related to auto service
- Fire fighting

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

| | |
|-----------------------------------|---|
| 1. Critical Aspects of Competency | <p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Prepared to perform shop housekeeping. 1.2 Prepared and organized work area. 1.3 Handled materials mechanical. 1.4 Handled materials physical. 1.5 Handled automotive hazardous materials. 1.6 Applied safety measures. 1.7 Prepared periodic tools and equipment reports. 1.8 Prepared safety violation and injury reports. |
| 2. Resource Implications | <p>The following resources must be provided:</p> <ul style="list-style-type: none"> 2.1 Comprehensive set of tools for performing shop housekeeping. 2.2 Equipment relevant to activities or tasks including a forklift, hydraulic jack, hoist, chain block and trolley. 2.3 Materials and supplies relevant to activities or tasks including a tarp or covering, gasoline, propane, diesel fuel, cleaners, oils, gases, first aid kit and safety charts. 2.4 OSH Act 2.5 Equipment manuals 2.6 Shop Procedures |

| | |
|--|--|
| | 2.7 Standard Operations Procedures 2.8 Report templates |
| 3. Methods of Assessment | Competency in this unit may be assessed through: 3.1 Real work observation (checklist, projects, job aids, project teams) 3.2 Simulated work 3.3 Written tasks (multiple choice, short answers, assignments, projects, essays, true/false) 3.4 Oral questions (role plays, interviews, presentation by learner, discussion groups) |
| 4. Context of Assessment | Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment or during Industrial Attachment. |
| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

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9. PARTICIPATE IN AN AUTOMOTIVE INDUSTRY ATTACHMENT

UNIT CODE: ENG/OS/AUT/CC/2/3/A

UNIT DESCRIPTION

This unit specifies the competencies required to participate in an industry attachment. It involves preparing for an industry attachment, applying automotive mechanic level 3 competencies and preparing an industry attachment report in an automotive service environment.

ELEMENTS AND PERFORMANCE CRITERIA

| ELEMENT These describe the key outcomes which make up workplace function. | PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the Range</i> |
|---|--|
| 1. Prepare for an industry attachment | 1.1 Research of the selected industry is completed according institutional policy. 1.2 Letter of introduction is written according to spelling, punctuation and grammar rules. 1.3 Preparation for an interview is completed according to interview best practices. |
| 2. Apply automotive mechanic level 3 competencies through industry attachment | 2.1 Shop housekeeping is performed as per workplace SOP's. 2.2 <i>Shop tools, equipment and measuring devices</i> are maintained as per workplace SOP's and OS&H. 2.3 Vehicle preventative maintenance is performed as per manufacturer's service manual. 2.4 Automotive <i>steering and suspension</i> systems are inspected as per manufacturer's service manual. 2.5 Automotive <i>brake systems</i> are inspected as per manufacturer's service manual. |
| 3. Prepare an industry attachment report | 3.1 Report is written using appropriate terminology where required as per grammar and writing rules. 3.2 Skills and knowledge gained from the industry attachment are reported as per grammar and writing rules. 3.3 Report is completed and submitted within specified time as per grammar and writing rules. |

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

| VARIABLE | RANGE |
|---|--|
| <p>1. Shop tools, equipment may include but are not limited to:</p> | <ul style="list-style-type: none"> ● Hacksaws ● Hammers ● Punches ● Screwdrivers ● Sockets ● Wrenches ● Scrapers ● Chisels ● Gauges ● Files of all cross-sectional shapes and types ● Drills ● Grinders ● Jigsaws ● Nibblers ● Cutting saws ● Threading machine ● Sanders ● Pedestal drills ● Pedestal grinders ● Car lift ● Brake lathe ● Part cleaner ● Tire changer ● Tire balancer ● Ventilation systems ● Floor jacks ● Hydraulic press ● Service information center ● Tool boxes ● Benches ● Tool cabinet |
| <p>2. Measuring Devices may include but are not limited to:</p> | <ul style="list-style-type: none"> ● Feeler gauges ● Pressure gauge |

| | |
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| | <ul style="list-style-type: none"> ● Squares ● Levels ● Thermometers ● Measuring tapes ● Protractors ● Steel rule ● Hydrometer |
| 3. Steering may include but are not limited to: | <ul style="list-style-type: none"> ● Rack and pinion ● Parallelogram |
| 4. Suspension may include but are not limited to: | <ul style="list-style-type: none"> ● Leaf ● Spring ● Torsion bar ● Modified strut |
| 5. Brake systems may include but are not limited to: | <ul style="list-style-type: none"> ● Brake pedal ● Brake booster ● Master cylinder ● Brake fluid ● Hydraulic line ● Proportional valve ● Hydraulic calipers ● Disc brakes ● Brake pads ● Rotor ● Drum brakes ● Drum ● Brake shoes ● Wheel cylinder system |

Required Skills

The individual needs to demonstrate the following skills:

- Problem solving
- Communication
- Listening
- Diagnostic
- Technical

- Handling/storing of tools/equipment/supplies and materials
- Cleaning grease/lubricants
- Disposing of wastes and fluid
- Completing checklists
- Leadership
- Time management
- Troubleshooting
- Planning
- Decision making
- Multitasking
- Observation
- Written
- Reading

Required Knowledge

The individual needs to demonstrate knowledge of:

- Safety requirements
- Interpret service manuals
- Select required tools and equipment
- Identify possible problems
- Vehicle safety requirements
- Workshop policies and regulations
- Personal safety procedures
- Company policies and procedures
- Statutory regulations
- OS&H

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

| | |
|-----------------------------------|--|
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate: 1.1 Prepared for an industry attachment. 1.2 Applied automotive mechanic level 3 competencies through industry attachment. 1.3 Prepared an industry attachment report. |
| 2. Resource Implications | The following resources must be provided: 2.1 Comprehensive set of tools to participate in industry attachment. 2.2 Materials and supplies relevant to the proposed activity or tasks during the industry attachment. |

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| | <p>2.3 Equipment relevant to activities or tasks during the industry attachment.</p> <p>2.4 Access to relevant workplace or appropriate simulated environment where assessment can take place.</p> <p>2.5 Report template.</p> |
| 3. Methods of Assessment | <p>Competency in this unit may be assessed through:</p> <p>3.1 Real work observation (checklist, projects, job aids, project teams)</p> <p>3.2 Simulated work</p> <p>3.3 Written tasks (multiple choice, short answers, assignments, projects, essays, true/false)</p> |
| 4. Context of Assessment | <p>Competency may be assessed on the job, off the job or a combination of these or during Industrial Attachment. Off the job assessment must be undertaken in a closely simulated workplace environment.</p> |
| 5. Guidance information for assessment | <p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p> |

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CORE UNITS OF COMPETENCY

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10. MAINTAIN SHOP TOOLS, EQUIPMENT AND MEASURING DEVICES

UNIT CODE: ENG/OS/AUT/CR/1/3/A

UNIT DESCRIPTION

This unit describes the competences required to maintain shop tools, equipment and measuring devices. It involves maintaining automotive hand tools, power tools, shop equipment, applying and maintaining measuring devices in an automotive service environment.

ELEMENTS AND PERFORMANCE CRITERIA

| ELEMENT These describe the key outcomes which make up workplace function. | PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the Range</i> |
|---|--|
| 1. Maintain automotive hand tools | 1.1 Appropriate hand tools are identified according to task requirements. 1.2 Hand tools are identified to produce desired outcomes as per job specifications. 1.3 All safety requirements are identified before, during and after use of hand tools as per workshop procedures and manuals. 1.4 Unsafe or faulty tools are identified and marked for repair as per tool manual and OS&H. 1.5 Hand tools are cleaned and stored safely in an appropriate location as per SOPs and manufacturer's recommendations. |
| 2. Maintain automotive power tools | 2.1 Appropriate power tools are identified according to task requirements. 2.2 Power tool operation procedures are identified according to manufacturer's service manual. 2.3 Safety requirements are identified for before, during and after use according to OS&H. 2.4 Unsafe or faulty power tools are identified and marked for repair according to OS&H. 2.5 Operational maintenance of power tools is identified according to workplace procedures. |

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| | 2.6 Power tools are cleaned and stored safely according to standard workshop procedures and manufacturer's service manual. |
| 3. Maintain automotive shop equipment | <p>3.1 Appropriate <i>shop equipment</i> is identified according to task requirements.</p> <p>3.2 Shop equipment operation procedures are identified according to manufacturer's service manual.</p> <p>3.3 All safety requirements are identified for before, during and after use according to OS&H.</p> <p>3.4 Unsafe or faulty shop equipment is identified and marked for repair according to OS&H.</p> <p>3.5 Operational maintenance of shop equipment is identified according to workplace procedures.</p> <p>3.6 Shop equipment is cleaned and stored safely according to standard workshop procedures and manufacturer's service manual.</p> |
| 4. Apply automotive measuring devices | <p>4.1 Appropriate <i>measuring devices</i> or equipment are identified according to the task.</p> <p>4.2 Measuring techniques are identified according to manuals and manufacturer's specification.</p> <p>4.3 Measurements are accurate to the finest graduation of the instrument according to the task.</p> |
| 5. Maintain automotive measuring devices | <p>5.1 Measuring devices are cared for and stored according to manufacturer's specification or standard operating procedures.</p> <p>5.2 Measuring devices are checked, and routine adjustments made to devices according to manufacturer's service manual.</p> |

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

| VARIABLE | RANGE |
|---|---|
| 1. Hand tools may include but are not limited to: | <ul style="list-style-type: none"> ● Hacksaws ● Hammers ● Punches ● Screwdrivers ● Sockets ● Wrenches |

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| | <ul style="list-style-type: none"> ● Scrapers ● Chisels ● Gauges ● Files of all cross-sectional shapes and types ● Mallets ● Spanners ● Allen keys |
| 2. Power tools may include but are not limited to: | <ul style="list-style-type: none"> ● Drills ● Grinders ● Jigsaws ● Nibblers ● Cutting saws ● Threading machine ● Sanders ● Pedestal drills ● Pedestal grinders |
| 3. Shop equipment may include but are not limited to: | <ul style="list-style-type: none"> ● Car lift ● Brake lathe ● Parts Cleaner ● Tire changer ● Tire balancer ● Ventilation systems ● Floor jacks ● Hydraulic press ● Service information center ● Tool boxes ● Benches ● Tool cabinet ● Air compressor |
| 4. Measuring Devices may include but are not limited to: | <ul style="list-style-type: none"> ● Feeler gauges ● Pressure gauges ● Squares ● Levels ● Steel rule ● Thermometers ● Measuring tapes ● Protractors ● Hydrometer ● Bore gauges |

Required Skills

The individual needs to demonstrate the following skills:

- Work safely following instructions
- Apply appropriate hand-eye co-ordination in the use of tools and equipment
- Select appropriate tools and equipment for usage
- Communicate effectively
- Use tools/equipment correctly
- Visualizing objects and shapes
- Observation
- Listening

Required Knowledge

The individual needs to demonstrate knowledge of:

- Workplace and equipment safety requirements and OS&H guidelines
- Work shop procedures
- Hand tools related to auto service and repairs
- Power tools related to auto service and repairs
- Equipment related to auto service and repairs
- Types of measuring instruments and its uses
- Safe handling procedures in using measuring instruments
- Reading and interpolating
- Numeracy
- Use of tool service manuals
- Selection of proper devices for the job
- Safe use of tools

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

| | |
|-----------------------------------|---|
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate: 1.1 Maintained automotive hand tools. 1.2 Maintained automotive power tools. 1.3 Maintained automotive shop equipment. 1.4 Applied automotive measuring devices. 1.5 Maintained automotive measuring devices. |
|-----------------------------------|---|

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| <p>2. Resource Implications</p> | <p>The following resources must be provided:</p> <p>2.1 Comprehensive set of tools for maintaining shop tools, equipment and measuring devices.</p> <p>2.2 Equipment relevant to activities or tasks including taps and die set, pedestal drill, pedestal grinder, car lift, brake lathe, Varsol bath, tire changer, tire balancer, ventilation system, floor jack, hydraulic jack, service information center, tool box, bench and tool crib.</p> <p>2.3 Material and supplies relevant to activities or tasks including hacksaw blades, cotton towels, hand cleaner, jig saw blades, Varsol, cutting oil, wheel weights, brake lathe tips, file brush, sandpaper, grinding disc, cleaners, oil and a soft brush.</p> <p>2.4 Shop Procedures</p> <p>2.5 Standard Operations Procedures</p> <p>2.6 Product and manufacturing specifications</p> <p>2.7 Codes, standards, manuals and reference materials for the tools and measuring devices being used.</p> |
| <p>3. Methods of Assessment</p> | <p>Competency in this unit may be assessed through:</p> <p>3.1 Real work observation (checklist, projects, job aids, project teams)</p> <p>3.2 Simulated work</p> <p>3.3 Written tasks (multiple choice, short answers, assignments, projects, essays, true/false)</p> <p>3.4 Oral questions (role plays, interviews, presentation by learner, discussion groups)</p> |
| <p>4. Context of Assessment</p> | <p>Competency may be assessed on the job, off the job or a combination of these od during Industrial Attachment. Off the job, assessment must be undertaken in a closely simulated workplace environment.</p> |
| <p>5. Guidance information for assessment</p> | <p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p> |

11. PERFORM VEHICLE PREVENTIVE MAINTENANCE

UNIT CODE: ENG/OS/AUT/CR/2/3/A

UNIT DESCRIPTION

This unit describes the competences required to perform vehicle preventive maintenance. It involves conducting vehicle familiarization, external inspections, under vehicle inspections, under hood inspections, following Original Equipment Manufacturer (OEM) instructions, changing oil and oil filters, replacing/servicing air filters, maintaining spark plugs, replacing drive belts, performing lubrication, inspecting fluid levels and inspecting tire and rims in an automobile service environment.

ELEMENTS AND PERFORMANCE CRITERIA

| ELEMENT These describe the key outcomes which make up workplace function. | PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the Range</i> |
|---|--|
| 1. Conduct vehicle familiarization | 1.1 Vehicle familiarization checklist is provided as per SOPs. 1.2 Physical body shape of the vehicle is identified as per manufacturer's specification. 1.3 Shape and features of the dashboard are identified as per manufacture's specification. 1.4 Service features and location are identified as per the model. |
| 2. Conduct vehicle external inspection | 2.1 Vehicle external inspection checklist is provided as per SOPs. 2.2 Exterior damages of vehicle are identified as per manufacture's specifications. 2.3 Vehicle tires/wheels are <i>inspected</i> as per manufacturer's specifications. 2.4 Windshield/wiper/glasses inspections are conducted as per manufacture's specifications. 2.5 Vehicle bumpers and grills are inspected as per manufacture's service manual. |
| 3. Conduct under vehicle inspection | 3.1 Under vehicle inspection checklist is provided according to SOPs. 3.2 Station/place automobile for under vehicle inspection is completed according to manufacturer's specifications. |

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| | 3.3 Suspension, fuel tanks, linkages, mounting, shields, silencer are inspected according to manufacturer's specifications. |
| 4. Conduct under hood inspection | 4.1 Under hood inspection checklist is provided as per SOPs. 4.2 Vehicle under hood components are identified as per the model. |
| 5. Follow OEM instructions | 5.1 Vehicle <i>maintenance schedule</i> is identified according to OEM manual. 5.2 Stripe and decal is interpreted on the vehicle according to manufacturer's service manual. |
| 6. Change engine oil | 6.1 Engine oil level is determined as per manufacturer's service manual. 6.2 Oil drainage system is located as per manufacturer's service manual. 6.3 Oil from engine is drained as per manufacturer's service manual. 6.4 Recommended quantity and quality of oil is added as per manufacturer's service manual. 6.5 Contaminated oil is disposed of per OS&H. |
| 7. Replace oil filter | 7.1 Oil filter is located as per manufacturer's service manual. 7.2 Oil filter is removed as per manufacturer's service manual. 7.3 Oil filter is fixed as per manufacturer's service manual. |
| 8. Service/Replace air filter | 8.1 Air filter is located as per manufacturer's service manual. 8.2 Air filter is removed as per manufacturer's service manual. 8.3 Service air filter for clog/dust is removed as per manufacturer's service manual. 8.4 Air filter is fixed into the vehicle as per manufacturer's service manual. |
| 9. Maintain spark plug | 9.1 Spark plug is removed as per manufacturer's service manual. 9.2 Spark plug is serviced/replaced as per manufacturer's service manual. 9.3 Spark plug is fixed for normal operation as per manufacturer's service manual. |

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| 10. Replace drive belts | <p>10.1 Drive belt is inspected for correct tension, wear and tear as per manufacturer’s service manual.</p> <p>10.2 Drive belt is removed as per manufacturer’s service manual.</p> <p>10.3 Drive belt is replaced as per manufacturer’s service manual.</p> |
| 11. Perform lubrication | <p>11.1 Lubricants are selected according to OEM manual.</p> <p>11.2 Greasing/lubrication points are located according to OEM manual.</p> <p>11.3 Chassis lubrication is performed according to OEM manual.</p> <p>11.4 Body lubrication is performed according to OEM manual.</p> <p>11.5 Excess grease/lubricant is cleaned from vehicle body according to SOPs.</p> |
| 12. Inspect and maintain fluid levels | <p>12.1 Checklist for fluid levels is provided as per SOPs.</p> <p>12.1 Fluid levels are determined as per manufacturer’s service manual.</p> <p>12.3 Contaminated fluids are replaced as per manufacturer’s service manual.</p> <p>12.4 Fluids are changed as per manufacturer’s service manual.</p> |
| 13. Inspect tires and rims | <p>13.1 Checklist for tire and rim inspection is provided as per SOPs.</p> <p>13.2 Tire condition is inspected for normal operation as per auto workshop SOPs.</p> <p>13.3 Tire is removed from vehicle as per SOPs.</p> <p>13.4 Tire is inspected as per auto workshop SOPs.</p> <p>13.5 Tire is fixed on vehicle as per manufacturer’s specifications.</p> |

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

| VARIABLE | RANGE |
|---|---|
| 1. Inspected may include but are not limited to: | <ul style="list-style-type: none"> ● Visual ● Documentation |
| 2. Maintenance schedule may include but are not limited to: | <ul style="list-style-type: none"> ● Intervals ● Routine ● Planned ● Preventative ● Conditional |
| 3. Lubricants may include but are not limited to: | <ul style="list-style-type: none"> ● Grease ● Oils ● Sprays |
| 4. Fluids may include but are not limited to: | <ul style="list-style-type: none"> ● Transmission system fluids ● Brake ● Antifreeze ● Washer ● Power steering fluids ● Axles ● Transfer case ● Engine oil ● Fuel ● Antirust fluids |

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Skills on preliminary identification of workplace hazards/risks
- Critical thinking
- Troubleshooting
- Work safely to instructions
- Dispose of material safely
- Use disposal equipment and tools as required
- Communications (verbal and written)
- Listening
- Observation
- Measuring
- Multitasking

- Planning
- Time management

Required Knowledge

The individual needs to demonstrate knowledge of:

- Use of service manuals
- Inspection techniques
- Interpretation of pictorial diagrams
- Select proper tools for the job
- Vehicle layout
- Tool safety
- Proper tightening torques
- Oil grades
- Workshop processes
- Personal safety procedures

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

| | |
|--|--|
| <p>1. Critical Aspects of Competency</p> | <p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Conducted vehicle familiarization. 1.2 Conducted vehicle external inspection. 1.3 Conducted under vehicle inspection. 1.4 Conducted under hood inspection. 1.5 Followed OEM instructions. 1.6 Changed engine oil. 1.7 Replaced oil filter. 1.8 Serviced/repaired air filter. 1.9 Maintained spark plugs. 1.10 Replaced drive belts. 1.11 Performed lubrication. 1.12 Inspected and maintained fluid levels. 1.13 Inspected tires and rims. |
| <p>2. Resource Implications</p> | <p>The following resources must be provided:</p> <ul style="list-style-type: none"> 2.1 Comprehensive set of tools for performing vehicle preventive maintenance. 2.2 Equipment relevant to activities or tasks including an air compressor, funnel, hydraulic jack, hoist, vehicle stand, battery |

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| | <p>tester, grease gun, jumper lead set, oil disposal container, oil tray and oil drum.</p> <p>2.3 Materials and supplies relevant to activities or tasks including grease, oil, sprays, transmission fluid, brake fluid, drive belts, washer fluid, power steering fluid, axles fluid, transfer case oil, engine oil, fuel, oil filter, air filter, spark plugs and antifreeze.</p> <p>2.4 Access to relevant workplace or appropriate simulated environment where assessment can take place.</p> <p>2.5 OEM manual</p> <p>2.6 Standard Operational Procedures</p> <p>2.7 Workshop checklists</p> |
| 3. Methods of Assessment | <p>Competency in this unit may be assessed through:</p> <p>3.1 Real work observation (checklist, projects, job aids, project teams)</p> <p>3.2 Simulated work</p> <p>3.3 Written tasks (multiple choice, short answers, assignments, projects, essays, true/false)</p> <p>3.4 Oral questions (role plays, interviews, presentation by learner, discussion groups)</p> |
| 4. Context of Assessment | <p>Competency may be assessed on the job, off the job or a combination of these or during Industrial Attachment. Off the job assessment must be undertaken in a closely simulated workplace environment.</p> |
| 5. Guidance information for assessment | <p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p> |

12. INSPECT AUTOMOTIVE STEERING AND SUSPENSION SYSTEMS

UNIT CODE: ENG/OS/AUT/CR/3/3/A

UNIT DESCRIPTION

This unit describes the competences required to inspect automotive steering and suspension systems. It involves conducting steering and suspension systems familiarization, inspecting suspension bushes, steering systems, coil springs, struts, control arms and linkages, shock absorbers, leaf springs and tires and rims in an automotive service environment.

ELEMENTS AND PERFORMANCE CRITERIA

| ELEMENT These describe the key outcomes which make up workplace function. | PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the Range</i> |
|---|--|
| 1. Conduct steering and suspension familiarization | 1.1 Checklist for steering and suspension familiarization is provided as per SOPs. 1.2 <i>Types of steering system</i> are inspected as per manufacture's service manual. 1.3 <i>Types of suspension</i> system are inspection as per manufacture's service manual. 1.4 Components of steering & suspension system are inspected as per manufacturer's service manual. |
| 2. Inspect suspension bushes | 2.1 Checklist for suspension bushes inspection is provided as per SOPs. 2.2 Bushes in suspension system of vehicle are inspected as per manufacture's service manual. 2.3 Suspension bushes for normal function are inspected as per manufacture's service manual. |
| 3. Inspect steering system | 3.1 Checklist for steering system is provided as per SOPs. 3.2 Steering gearboxes are inspected for damage, leakage, wear as per manufacture's service manual. 3.3 Steering column is inspected for wear and tear as manufacturer's service manual. 3.4 Steering pump is inspected for leakage as per manufacturer's service manual. 3.5 Inner and outer tie rods are inspected for normal working as per manufacturer's service manual. 3.6 Steering fluid levels and characteristics are inspected for normal performance as per manufacturer's service manual. 3.7 Steering pump belt is inspected for normal performance as per manufacturer's service manual. |

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| 4. Inspect coil springs, struts, control arms and linkages | 4.1 Checklist for coils springs, struts, control arms and linkages is provided as per SOPs. 4.2 Coil springs, struts, control arms and linkages are inspected as per manufacture's service manual. |
| 5. Inspect shock absorbers | 5.1 Checklist for shock absorber inspection is provided as per SOPs. 5.2 Shock absorbers in suspension systems are inspected as per manufacturer's service manual. |
| 6. Inspect leaf springs | 6.1 Checklist for leaf spring inspection is provided as per SOPs. 6.2 Leafs springs in suspension are identified as per manufacturer's service manual. 6.3 Leaf springs in suspension are visually inspected as per manufacture's service manual. 6.4 Leaf springs rebound clips are inspected as per manufacturer's service manual. 6.5 Leaf springs bushes are inspected for wear as per manufacturer's service manual. |
| 7. Inspect tires and rims | 7.1 Checklist for tire and rim inspection is provided as per SOPs. 7.2 Tires and rims are inspected as per manufacture's service manual. |

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

| VARIABLE | RANGE |
|---|--|
| 1. Types of steering system may include but are not limited to: | <ul style="list-style-type: none"> ● Rack and pinion ● Parallelogram ● Worm and wheel ● Worm and sector ● Cam and peg |
| 2. Type of suspension may include but are not limited to: | <ul style="list-style-type: none"> ● Leaf spring ● Coil spring ● Torsion bar ● Modified strut ● Rubber |

| | |
|--|--|
| | <ul style="list-style-type: none"> ● Air suspension ● Stabilizer bar |
|--|--|

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Skills on preliminary identification of workplace hazards/risks
- Critical thinking
- Troubleshooting
- Problem solving
- Decision making
- Observation
- Communication
- Listening
- Measuring
- Visualizing objects and shape
- Reading

Required Knowledge

The individual needs to demonstrate knowledge of:

- Use OEM manual
- Interpret service manual
- Interpret pictorial drawings
- Select proper tools
- Safety precautions
- Identify required tools and equipment
- Enumerate required procedures
- Knowledge of steering components
- Knowledge on suspension components

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

| | |
|-----------------------------------|--|
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate: <ul style="list-style-type: none"> 1.1 Conducted steering and suspension familiarization. 1.2 Inspected suspension bushes. 1.3 Inspected steering systems. |
|-----------------------------------|--|

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|--|--|
| | <p>1.4 Inspected coil springs, struts, control arms and linkages.</p> <p>1.5 Inspected shock absorbers.</p> <p>1.6 Inspected leaf springs.</p> <p>1.7 Inspected tires and rims.</p> |
| 2. Resource Implications | <p>The following resources must be provided:</p> <p>2.1 Comprehensive set of tools for inspecting automotive steering and suspension systems.</p> <p>2.2 Materials and supplies relevant to activities or tasks including tire grease, wheel weights, cotter pins, center bolts, tires, rims, tire lube, grease, oil, power steering fluid, leaf spring, coil spring, steering pump and steering fluids.</p> <p>2.3 Equipment relevant to activities or tasks including a tire changer, tire balancer, jack stands, vehicle jack or lift, steering gear box, hydraulic press, impact gun, engine stand, coil spring compressor, hydraulic jack, hoist/car lift, steering system model, bearing remover and steering gear box.</p> <p>2.4 Access to relevant workplace or appropriate simulated environment where assessment can take place.</p> <p>2.5 Workshop checklists</p> |
| 3. Methods of Assessment | <p>Competency in this unit may be assessed through:</p> <p>3.1 Real work observation (checklist, projects, job aids, project teams)</p> <p>3.2 Simulated work</p> <p>3.3 Written tasks (multiple choice, short answers, assignments, projects, essays, true/false)</p> <p>3.4 Oral questions (role plays, interviews, presentation by learner, discussion groups)</p> |
| 4. Context of Assessment | <p>Competency may be assessed on the job, off the job or a combination of these or during Industrial Attachment. Off the job assessment must be undertaken in a closely simulated workplace environment.</p> |
| 5. Guidance information for assessment | <p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p> |

13. INSPECT AUTOMOTIVE BRAKE SYSTEMS

UNIT CODE: ENG/OS/AUT/CR/4/3/A

UNIT DESCRIPTION

This unit describes the competences required to inspect automotive brake systems. It involves performing visual brake inspections, brake booster and reservoir inspections, inspecting brake linings and pads, wheel cylinders, brake calipers, disks/drums and hand brakes in an automotive service environment.

ELEMENTS AND PERFORMANCE CRITERIA

| ELEMENT These describe the key outcomes which make up workplace function. | PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the Range</i> |
|---|--|
| 1. Perform visual brake inspection | 1.1 Checklist for <i>brake system</i> inspection is provided as per SOPs. 1.2 Brake pads/ brake shoes are <i>inspected</i> as per manufacturer's service manual. 1.3 Disc pads are inspected as per manufacturer's service manual. 1.4 Servo units are inspected as per manufacturer's service manual. 1.5 Master cylinders are inspected as per manufacturer's service manual. 1.6 Wheel cylinders are inspected as per manufacturer's service manual. 1.7 Brake lines/hydraulic lines are inspected as per manufacturer's service manual. 1.8 Brake pedal is inspected for damage as per manufacturer's service manual. 1.9 Brake lights are inspected for <i>normal operation</i> as per manufacturer's service manual. |
| 2. Perform visual brake booster and reservoir inspection | 2.1 Checklist for brake booster and reservoir inspection is provided as per SOPs. 2.2 Brake booster is inspected as per manufacturer's service manual. 2.3 Fluid level is inspected as per manufacturer's service manual. |

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| | <p>2.4 Leakage of fluid is inspected as per manufacturer's service manual.</p> <p>2.5 Color of fluid is inspected as per manufacturer's service manual.</p> |
| 3. Inspect brake linings and pads | <p>3.1 Checklist for brake lining and pad inspection is provided as per SOPs.</p> <p>3.2 Brake linings and pads are inspected as per manufacturer's service manual.</p> <p>3.3 Brake linings and pads are inspected for wear and damage as per manufacturer's service manual.</p> |
| 4. Inspect wheel cylinders | <p>4.1 Checklist for wheel cylinder inspection is provided as per SOPs.</p> <p>4.2 Wheel cylinders are inspected as per manufacturer's service manual.</p> <p>4.3 Wheel cylinders are inspected for leaks, tear and wear as per manufacture's service manual.</p> |
| 5. Inspect brake calipers | <p>5.1 Checklist for brake caliper inspection is provided as per SOPs.</p> <p>5.2 Brake calipers are visually inspected according to manufacturer's service manual.</p> <p>5.3 Brake calipers are inspected for wear and damage as per the manufacturer's service manual.</p> |
| 6. Inspect brake disk/drums | <p>6.1 Checklist for brake disk/drum inspection is provided as per SOPs.</p> <p>6.2 Brake drums are inspected for wear and damage as per manufacturer's service manual.</p> <p>6.3 Brake disks are inspected for wear as per manufacturer's service manual.</p> |
| 7. Inspect hand brake | <p>7.1 Checklist for hand brake inspection is provided as per SOPs.</p> <p>7.2 Handbrake is visually inspected for normal operation as per manufacturer's service manual.</p> <p>7.3 Handbrake is inspected for wear and damage as per manufacturer's service manual.</p> |

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

| VARIABLE | RANGE |
|---|---|
| 1. Brake system may include but are not limited to: | <ul style="list-style-type: none">● Brake caliper● Brake booster● Wheel cylinder● Master cylinder● Disc pads● Servo units● Hand brake● Brake drums● Brake lights● Brake linings/shoe |
| 2. Inspected may include but are not limited to: | <ul style="list-style-type: none">● Visual● Documentation |
| 3. Normal operation may include but are not limited to: | <ul style="list-style-type: none">● Pedal feel● Brake test● Illuminating |

Required Skills

The individual needs to demonstrate the following skills:

- Skills on preliminary identification of workplace hazards/risks
- Critical thinking
- Troubleshooting
- Visualizing objects and shapes
- Reading
- Observation
- Listening
- Communication
- Disposal of wastes
- Time management
- Cleaning grease/lubricants

Required Knowledge

The individual needs to demonstrate knowledge of:

- Work safely
- Select proper tools and equipment
- Enumerate required methods and procedures
- Interpret service manual
- Working principles of the brake system
- Brake fluid grades
- Workshop processes
- OS&H

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

| | |
|-----------------------------------|---|
| 1. Critical Aspects of Competency | <p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Performed visual brake inspection. 1.2 Performed visual brake booster and reservoir inspection. 1.3 Inspected brake linings and pads. 1.4 Inspected wheel cylinders. 1.5 Inspected brake calipers. 1.6 Inspected brake disk/drums. 1.7 Inspected hand brake. |
| 2. Resource Implications | <p>The following resources must be provided:</p> <ul style="list-style-type: none"> 2.1 Comprehensive set of tools for inspecting automotive brake systems (ABS). 2.2 Equipment relevant to activities or tasks including a vehicle with operational brake system (non ABS), brake booster, wheel cylinder system, hydraulic calipers, brake bleeder kit, air compressor, engine stand, stoppers, hydraulic jack, braking system model, complete vehicle unit, hydraulic press, brake pressure tester, brake system bleeder, brake drum gauge, brake lathe, caliper, brake drum system, disc brake system, master cylinder and wheel cylinder. 2.3 Materials and supplies relevant to activities or tasks including a master cylinder, brake fluid, hydraulic lines, proportional valve, disc brakes, brake pads, rotor, brake drum, brake shoes and sandpaper 2.4 Access to relevant workplace or appropriate simulated environment where assessment can take place. 2.5 Manufacturer's Service manual 2.6 Service Operational Manual 2.7 Workshop checklists |

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| 3. Methods of Assessment | Competency in this unit may be assessed through: 3.1 Real work observation (checklist, projects, job aids, project teams) 3.2 Simulated work 3.3 Written tasks (multiple choice, short answers, assignments, projects, essays, true/false) 3.4 Oral questions (role plays, interviews, presentation by learner, discussion groups) |
| 4. Context of Assessment | Competency may be assessed on the job, off the job or a combination of these and during Industrial Attachment . Off the job assessment must be undertaken in a closely simulated workplace environment. |
| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

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