



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND
CERTIFICATION COUNCIL (TVET CDACC)**

COMPETENCY BASED CURRICULUM

FOR

AUTOMOTIVE TECHNOLOGY



TVET CDACC
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NAIROBI

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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 to 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 programmes.

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 Occupational Standards were developed for the purpose of developing a Competency-Based Curriculum for Automotive Technology Level 3. These Occupational Standards will also be the bases for assessment of an individual for competence certification.

It is my conviction that this Curriculum 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 labour 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 Mechanic. These standards will be the bases for development of competency-based curriculum for automotive mechanic Level 3.

This curriculum has been developed following the CBET framework policy; the CBETA Standards and guidelines provided by the TVET Authority and the Kenya National Qualification framework designed by the Kenya National Qualification Authority.

This Curriculum is designed and organized with an outline of learning outcomes; suggested delivery methods, training/learning resources and methods of assessing the trainee’s achievement. The Curriculum is competency-based and allows multiple entry and exit to the course.

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

CHAIRPERSON, TVET CDACC

ACKNOWLEDGMENT

This Curriculum has been designed for competency-based training and has independent units of learning that allow the trainee flexibility in entry and exit. In developing the curriculum, significant involvement and support was received from various organizations.

I appreciate the funding of the Government of Canada and its implementing partner Colleges and Institutes Canada (CICan) which enabled the development of this curriculum 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 this curriculum.

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 the curriculum. I also thank all stakeholders in the sector for their valuable input and all those who participated in the process of developing this curriculum.

I am convinced that this Curriculum 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
CR	Core Competency
CDACC	Curriculum Development Assessment and Certification Council
PPE	Personal Protective Equipment
SOP	Standard Operational Plan
OEM	Original Equipment Manufacturer
OS	Occupational Standards
OSH	Occupation Safety and Health
TVET	Technical and Vocational Education and Training
BUS	Business
CU	Curriculum
OS	Occupational Standards
LIS	Library and information science
BC	Basic Competencies
A	Control version
TVETA	Technical and Vocational Education and Training Authority
KNQA	Kenya National Qualification Authority
CBET	Competency Based Education and Training
CBETA	Competency Based Education, Training and Assessment
SSAC	Sector Skills Advisory Committee

KEY TO UNIT CODE

ENG/ CU/ AUT / BC / 1/ 3/ A

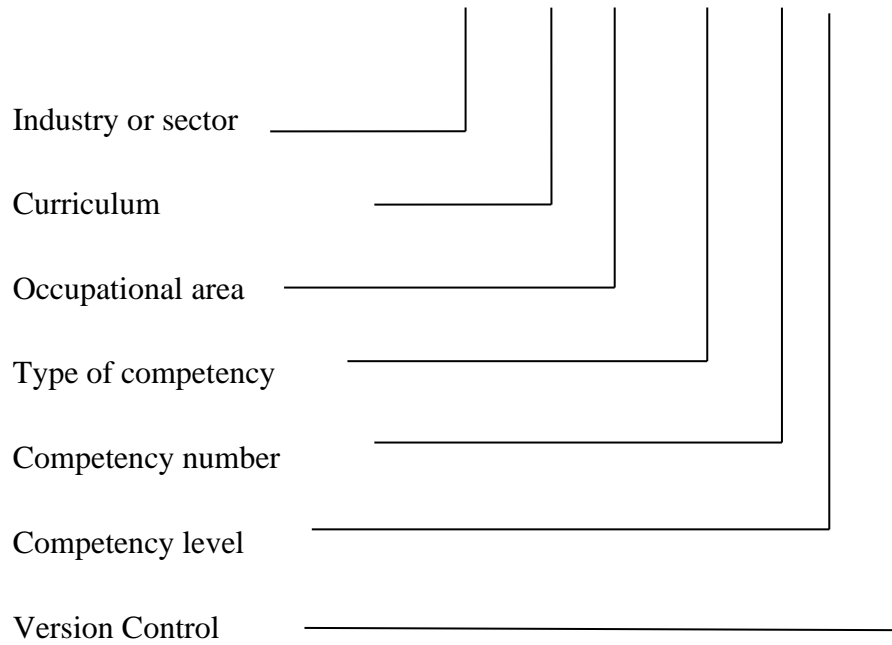


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COURSE OVERVIEW

Description of the course

This course is designed to equip an individual with competencies required to practice as an Automotive Mechanic Level 3. The competencies include; performing shop housekeeping, maintaining shop tools, equipment and measuring devices, performing vehicle preventive maintenance, inspecting steering and suspension, and braking systems in an automotive service environment.

Units of Learning

This course consists of basic, common and core units of learning as indicated below:

Basic Units of Learning

Unit Code	Unit Title	Duration in Hours	Credit Factor
ENG/CU/AUT/BC/1/3/A	Communication Skills	10	1
ENG/CU/AUT/BC/2/3/A	Numeracy Skills	15	1.5
ENG/CU/AUT/BC/3/3/A	Digital Literacy Skills	20	2
ENG/CU/AUT/BC/4/3/A	Entrepreneurial Skills	40	4
ENG/CU/AUT/BC/5/3/A	Employability Skills	20	2
ENG/CU/AUT/BC/6/3/A	Environmental Literacy	10	1
ENG/CU/AUT/BC/7/3/A	Occupational Safety and Health Practices	10	1
TOTAL		125	12

Common Units of Learning

Unit Code	Unit Title	Duration in Hours	Credit Factor
ENG/CU/AUT/CC/1/3/A	Performing Shop Housekeeping	20	2
ENG/CU/AUT/CC/2/3/A	Participating in Automotive Industry Attachment	300	300
TOTAL		320	32

Core Units of Learning

Unit Code	Unit Title	Duration in Hours	Credit Factor
ENG/CU/AUT/CR/1/3/A	Maintaining Shop Tools, Equipment and Measuring Devices	20	2
ENG/CU/AUT/CR/2/3/A	Performing Vehicle Preventive	90	9

	Maintenance		
ENG/CU/AUT/CR/3/3/A	Inspecting Automotive Steering and Suspension Systems	20	3
ENG/CU/AUT/CR/4/3/A	Inspecting Automotive Brake Systems	20	2
TOTAL		150	15
Grand Total		595	59

The total duration of the course is 595 hours.

Entry Requirements

An individual entering this course should have any of the following minimum requirements:

- a) Kenya Certificate of Primary Education (KCPE) or KCSE mean grade E

Or

- b) Equivalent qualifications as determined by Kenya National Qualifications Authority (KNQA)

Trainer qualification

A trainer for this course should have a higher qualification than the level of this course.

Assessment

The course will be assessed at two levels: internally and externally. Internal assessment is continuous and is conducted by the trainer who is monitored by an accredited internal verifier while external assessment is the responsibility of TVET CDACC.

Certification

A candidate will be issued with a Certificate of Competency for each unit of competency. To attain the qualification for National Certificate Level 3 in Automotive Technology, the candidate must demonstrate competence in all the units of competency as given in qualification pack. These certificates will be issued by TVET CDACC in conjunction with training provider.

BASIC UNITS OF LEARNING

COMMUNICATION SKILLS

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Demonstrate Communication Skills

Duration of Unit: 15 hours

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.

Summary of Learning Outcomes

1. Obtain and convey workplace information
2. Speak English at a basic operational level
3. Participate in workplace meetings and discussions
4. Complete relevant work-related documents

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Obtain and convey workplace information	<ul style="list-style-type: none">• Communication process• Modes of communication• Medium of communication• Effective communication• Barriers to communication• Flow of communication• Sources of information• Types of questions• Organizational policies• Workplace etiquette• Ethical work practices in handling communication	<ul style="list-style-type: none">• Written tests• Oral questioning
2. Speak English at a basic operational level	<ul style="list-style-type: none">• English grammar<ul style="list-style-type: none">○ Nouns, verbs, adjectives, adverbs, pronouns	<ul style="list-style-type: none">• Written tests• Oral• Role play

	<p>prepositions</p> <ul style="list-style-type: none"> • English speaking <ul style="list-style-type: none"> ○ Pronunciation ○ Simple conversations • Taking verbal instructions • Reading and writing in English • Forms of expression in English 	
3. Participate in workplace meetings and discussions	<ul style="list-style-type: none"> • Nature of workplace meetings • Meeting protocols • Workplace interactions 	<ul style="list-style-type: none"> • Oral questioning • Written tests
4. Complete relevant work-related documents	<ul style="list-style-type: none"> • Types and purposes of workplace documents and forms • Methods used in filling forms and documents • Recording workplace data • Process of distributing workplace forms and documents • Report writing • Types of workplace reports 	<ul style="list-style-type: none"> • Written tests • Oral questioning

Suggested Methods of Instructions

- Discussion
- Role play
- Brainstorming
- Viewing of related videos
- Role play

Recommended Resources

- Desktop computers/laptops
- Projectors
- Report writing templates
- Pens
- Notebooks

NUMERACY SKILLS

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Demonstrate Numeracy Skills

Duration of Unit: 15 hours

Unit Description

This unit covers the competencies required to identify and undertake simple numerical processes. The person who is competent in this unit shall be able to use / work with whole numbers and money up to one hundred thousand; Locate, compare and use highly familiar measurement; Use highly familiar maps and diagrams; Identify and use some common 2D shapes; and locate specific Information in highly familiar tables, graphs and charts for work.

Summary of Learning Outcomes

1. Use whole numbers for work
2. Locate, compare and use highly familiar measurement for work
3. Use highly familiar maps and diagrams for work
4. Identify and use some common 2D shapes for work
5. Locate specific Information in highly familiar tables, graphs and charts for work

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Use whole numbers for work	<ul style="list-style-type: none">• Whole numbers• Use of Zeros• Use of halves• Sizes• Grouping of numbers• Addition and subtraction of whole numbers• Numerical information,• Symbols	<ul style="list-style-type: none">• Written tests• Assignments• Supervised exercises
2. Locate, compare and use highly familiar	<ul style="list-style-type: none">• Measurements• Units of measurements and their use	<ul style="list-style-type: none">• Written tests• Assignments

measurement for work	<ul style="list-style-type: none"> • Digital time am and pm • Calendars 	<ul style="list-style-type: none"> • Supervised exercises
3. Use highly familiar maps and diagrams for work	<ul style="list-style-type: none"> • Use of Maps and • Diagrams simple • symbols and pictorial • Giving simple oral directions to locate objects 	<ul style="list-style-type: none"> • Oral • Assignments • Supervised exercises
4. Identify and use some common 2D shapes for work	<ul style="list-style-type: none"> • Two dimensional shapes • Describe common objects in terms of size and shape • Compare objects • Group common objects based on shape, size, color and features 	<ul style="list-style-type: none"> • Written tests • Assignments • Supervised exercises
5. Locate specific Information in highly familiar tables, graphs and charts for work	<ul style="list-style-type: none"> • Simple tables • Features of simple graphs and charts • Numerical information in tables, graphs & charts 	<ul style="list-style-type: none"> • Oral • Assignments • Supervised exercises

Suggested Methods of Instructions

- Instructor led facilitation of theory.
- Practical demonstration of tasks by trainer
- Role play
- Discussion
- Demonstration by trainees and comments and corrections by trainers

Recommended Resources

- Common 2D shapes objects
- Calculator
- Basic measuring instruments
- Mathematical tables

DIGITAL LITERACY SKILLS

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Demonstrate Digital Literacy

Duration of Unit: 20 hours

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.

Summary of Learning Outcomes

1. Identify computer hardware and software
2. Apply security measures to data, hardware and software
3. Apply computer software in solving tasks
4. Apply internet and email in communication at workplace

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Identify computer hardware and software	<ul style="list-style-type: none">• Definition of a computer• Functions of a computer• Components of a computer• Classification of computers• Computer software	<ul style="list-style-type: none">• Written tests• Practice assignments
2. Apply security measures to data, hardware and software	<ul style="list-style-type: none">• Data security and control• Security threats and control measures• Types of computer crimes• Detection and protection against computer crimes	<ul style="list-style-type: none">• Written tests• Oral presentation
3. Apply computer software in solving tasks	<ul style="list-style-type: none">• Operating systems• Word processing• Spread sheets• Data base	<ul style="list-style-type: none">• Oral questioning• Practical

4. Apply internet and email in communication at workplace	<ul style="list-style-type: none"> • Computer networks • Uses of internet • Electronic mail (e-mail) concept 	<ul style="list-style-type: none"> • Oral questioning • Oral presentation • Written test
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Suggested Methods of Instructions

- Instructor led facilitation of theory
- Demonstration by trainer
- Assignments
- Viewing of related videos
- Group discussions

Recommended Resources

- Desk top computers
- Laptop computers
- Other digital devices
- Printers
- Storage devices
- Internet access
- Computer software

ENTREPRENEURIAL SKILLS

UNIT CODE: ENG/CU/AUT/BC/4/3/A

Relationship to occupational standards

This unit addresses the Unit of Competency: Demonstrate Entrepreneurial Skills

Duration of unit: 40 hours

Unit description

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

Summary of Learning Outcomes

1. Develop entrepreneurial culture
2. Identify entrepreneurial opportunities
3. Start a small business
4. Operate a small business
5. Grow a small business

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Develop entrepreneurial culture	<ul style="list-style-type: none">• Definition of entrepreneur• Importance of entrepreneurship• Common terminologies in entrepreneurship• Entrepreneurship and employment creation• Formal and informal employment• Habits that promote entrepreneurial development• Cultural factors that inhibit entrepreneurship	<ul style="list-style-type: none">• Individual/group assignments• Written tests• Oral

2. Identify entrepreneurial opportunities	<ul style="list-style-type: none"> • Types, characteristics, qualities & role of entrepreneurs • SWOT analysis • Generating Business ideas • Business opportunities • Evaluation of business opportunities 	<ul style="list-style-type: none"> • Individual/group assignments • Written tests • Oral questioning • Oral presentation
3. Start a small business	<ul style="list-style-type: none"> • Factors to consider when starting a small business • Legal requirement for starting a small business • Procedure of starting a small business • The dos and don'ts of starting a small business • Challenges faced when starting a small business and mitigating factors • Launch of a small business 	<ul style="list-style-type: none"> • Oral questioning • Individual/group assignments • Written tests
4. Operate a small business	<ul style="list-style-type: none"> • Organizational structure of a small business • Managing small business finances • Book keeping • Business support services • Marketing for small businesses • Basic IT application in small business 	<ul style="list-style-type: none"> • Individual/group assignments • Written tests
5. Grow a small business	<ul style="list-style-type: none"> • Methods of growing/expanding a small business • Resources for growing small business • Small business growth plan • ICT and business growth 	<ul style="list-style-type: none"> • Individual/group assignments • Written tests

Suggested Methods of Instructions

- Instructor led facilitation of theory

- Demonstration by trainer
- assignments
- Role play
- Case study

Recommended Resources

- Case studies for small businesses
- Business plan template
- Laptop/ desktop computer
- Internet
- Telephone
- Writing materials

EMPLOYABILITY SKILLS

UNIT CODE: ENG/CU/AUT/BC/1/5/A

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Demonstrate employability skills

Duration of Unit: 20 hours

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.

Summary of Learning Outcomes

1. Conduct self-management
2. Demonstrate critical safe work habits
3. Demonstrate workplace learning
4. Demonstrate workplace ethics

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Conduct self-management	<ul style="list-style-type: none">• Self-awareness• Formulating personal vision, mission and goals• Strategies for overcoming life challenges• Emotional intelligence• Assertiveness• Developing and maintaining high self-esteem• Developing and maintaining positive self-image• Accountability and responsibility• Good work habits	<ul style="list-style-type: none">• Written tests• Oral questioning• Portfolio of evidence• Third party report

	<ul style="list-style-type: none"> • Self-awareness • Financial literacy • Healthy lifestyle practices 	
2. Demonstrate critical safe work habits	<ul style="list-style-type: none"> • Stress and stress management • Punctuality and time consciousness • Interpersonal communication • Sharing information • Resources utilization • HIV and AIDS • Drug and substance abuse • Handling emerging issues 	<ul style="list-style-type: none"> • Written tests • Oral questioning • Portfolio of evidence • Third party report
3. Demonstrate workplace learning	<ul style="list-style-type: none"> • Personal training needs identification and assessment • Cultural aspects of work • Application of learning • Safe use of technology • Identifying opportunities • Workplace innovation • Handling emerging issues • Future trends and concerns in learning 	<ul style="list-style-type: none"> • Written tests • Oral questioning • Portfolio of evidence • Third party report
4. Demonstrate workplace ethics	<ul style="list-style-type: none"> • Meaning of ethics • Ethical perspectives • Values and beliefs • Organization code of ethics • Common ethical dilemmas • Organization culture • Corruption, bribery and conflict of interest • Privacy and data protection • Harassment and mutual respect • Financial responsibility/accountability • Etiquette • Emerging issues in ethics 	<ul style="list-style-type: none"> • Written tests • Oral questioning • Portfolio of evidence • Third party report

Suggested Methods of Instructions

- Simulation/Role play
- Group Discussion

- Presentations
- Q&A
- Case studies
- Assignments

Recommended Resources

- Computers
- Stationery
- Charts
- Video clips
- Audio tapes
- Radio sets
- TV sets
- LCD projectors

ENVIRONMENTAL LITERACY

UNIT CODE: ENG/CU/AUT/BC/6/3/A

Relationship to Occupational Standards:

This unit addresses the Unit of Competency: Demonstrate Environmental Literacy

Duration of Unit: 15 hours

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.

Summary of Learning Outcomes

1. Control environmental hazard
2. Control environmental Pollution
3. Demonstrate sustainable resource use

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Control environmental hazard	<ul style="list-style-type: none">• Environmental Management and Coordination Act 1999• Solid Waste Act• Storage of environmentally hazardous materials• Disposal of hazardous wastes• Types and uses of PPEs in line with environmental regulations• Occupational Safety and Health Act 2007	<ul style="list-style-type: none">• Written tests• Oral questions• Observation of work procedures
2. Control environmental pollution	<ul style="list-style-type: none">• Types of pollution• Environmental pollution control and management• Procedures for waste management	<ul style="list-style-type: none">• Written tests• Oral questions• Observation of work procedures
3. Demonstrate sustainable use of resource	<ul style="list-style-type: none">• Types of resources• Sustainable resource use and management• Principles of 3Rs (Reduce,	<ul style="list-style-type: none">• Written tests• Oral questions• Observation of work procedures

	Reuse, Recycle)	
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Suggested Methods of Instructions

- Instructor led facilitation theory
- Discussion
- Demonstration by trainer
- Assignments
- Field trip

Recommended Resources

- Standard operating and/or other workplace procedures manuals
- Specific job procedures manuals
- Solid Waste Act
- Environmental Management and Coordination Act 1999
- Machine/equipment manufacturer's specifications and instructions
- Personal Protective Equipment (PPE)

OCCUPATIONAL SAFETY AND HEALTH PRACTICES

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

Relationship to Occupational Standards

This unit addresses the unit of competency: Demonstrate safety and health practices

Duration of Unit: 15 hours

Unit Description

This unit specifies the competencies required to practice and promote safety and health at work. It 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.

Summary of Learning Outcomes

1. Prepare to apply workplace safety and health practices
2. Compliance with occupational safety and health Act

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Prepare to apply workplace safety and health practices	<ul style="list-style-type: none">• Awareness of legislation that outlines the minimum standards for occupational safety and health requirements/ regulations• Benefits of implementing an occupational safety and health program• Safety requirements/ regulations of own work and of other workers• Workplace standards and procedures for incidents and emergencies• Prevention and Control Measures for accidents, injuries and sickness	<ul style="list-style-type: none">• Oral tests• Written questions• Observation of work procedures

2. Compliance with occupational safety and health Act	<ul style="list-style-type: none"> • Safety instructions and safety signs • Safe handling of tools, equipment and materials • Use of safe guards and safety devices • Reporting of hazards, incidents, injuries and sickness in the workplace 	<ul style="list-style-type: none"> • Written tests • Oral questions • Observation of work procedures
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Suggested Methods of Instructions

- Assignments
- Discussion
- Q&A
- Role play
- Viewing of related videos

Recommended Resources

- Occupational safety and health standards
- Standard operating and/or other workplace procedures manuals
- Specific job procedures manuals
- Client/supplier instructions
- Organizational or external personnel
- Machine/equipment manufacturer's specifications and instructions
- Quality standards

COMMON UNITS OF LEARNING

PERFORMING WORKSHOP HOUSEKEEPING

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

RELATIONSHIP TO OCCUPATIONAL STANDARDS:

This unit addresses the unit of competency: **Perform Workshop Housekeeping**

DURATION OF UNIT: 60 hours

UNIT DESCRIPTION

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

SUMMARY OF LEARNING OUTCOMES

1. Prepare to perform shop housekeeping
2. Prepare and organize work area
3. Handle materials mechanical
4. Handle materials physical
5. Handle automotive hazardous materials
6. Apply safety measures
7. Prepare periodical tools and equipment reports
8. Prepare safety violations and injuries reports

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Prepare to perform shop housekeeping	<ul style="list-style-type: none">• Types of PPE<ul style="list-style-type: none">• Eye protection• Body protection• Foot protection• Hearing protection• Respiratory• Fit and optimize protection• Maintenance procedures<ul style="list-style-type: none">• Cleaning	<ul style="list-style-type: none">• Oral Questioning• Written Tests• Project• Observation

	<ul style="list-style-type: none"> • Storing 	
2. Prepare and organize work area	<ul style="list-style-type: none"> • Site policies • Site procedures • Identify material and goods handling tools • Identify material and goods handling equipment 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
3. Handle material mechanical	<ul style="list-style-type: none"> • Types of automotive materials • Stacking, banding and stockpiling procedures • Movement procedures <ul style="list-style-type: none"> • Pallet trolley • Forklift • Hoist 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
4. Handle material physical	<ul style="list-style-type: none"> • Types of automotive materials • Stacking, banding and stockpiling procedures • Material characteristics • Handling techniques • Hazardous materials • Signs and barricade requirements 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
5. Handle automotive hazardous materials	<ul style="list-style-type: none"> • Hazardous material storage procedures 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests

	<ul style="list-style-type: none"> • Spoilage procedures • Disposal procedures 	<ul style="list-style-type: none"> • Project • Observation
6. Apply safety measures	<ul style="list-style-type: none"> • Hazardous assessments • Self-safety assessments • Types of fire extinguishers • Fire drill procedures 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
7. Prepare periodic damaged tools and equipment reports	<ul style="list-style-type: none"> • Identify appropriate template • Tools/equipment inventory • Damaged Tool/equipment inventory • Damage report procedures 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
8. Prepare safety violations and injuries reports	<ul style="list-style-type: none"> • Identify appropriate template • Identify safety violations • Communication procedures 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation

Suggested Methods of Delivery

- Practical demonstration trainer
- Practice by the trainees
- Trainer facilitation of theory
- View related videos
- Trainer from the automotive service and repair sector
- Guided learner activities to develop underpinning knowledge
- Industrial visits

Recommended Resources

Tools

- Comprehensive set of tools for performing shop housekeeping.

Equipment

- Forklift
- Hydraulic jack

- Hoist
- Chain block
- Trolley
- Pallets
- Industrial Brooms

Materials and supplies

- Tarp or covering
- Gasoline
- Propane
- Diesel fuel
- Cleaners
- Oils
- Gases
- Safety violation and damaged tool forms
- Grease
- Cotton Rags

Personal Protective Equipment

- Safety Shoes
- Gloves (pairs)
- Dust mask
- Ear muffs
- Ear plugs (sets)
- Dust Coat/Overall
- Safety glasses
- Hard hat

PARTICIPATING IN AN AUTOMOTIVE INDUSTRY ATTACHMENT

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

RELATIONSHIP TO OCCUPATIONAL STANDARDS:

This unit addresses the unit of competency: **Participate in an Automotive Industry Attachment**

DURATION OF UNIT: 300 hours

UNIT DESCRIPTION

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

SUMMARY OF LEARNING OUTCOMES

1. Prepare for Industry Attachment
2. Apply automotive mechanic level 3 competencies through industry attachment
3. Prepare an industry attachment report

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Prepare for industry attachment	<ul style="list-style-type: none">• Research techniques• Letters<ul style="list-style-type: none">• Letter of Introduction• Interview skills	<ul style="list-style-type: none">• Oral questioning• Written tests• Observation
2. Apply automotive mechanic level 3 competencies through industry attachment	<ul style="list-style-type: none">• Industry policies and procedures• Safety requirements• Logbook procedures	<ul style="list-style-type: none">• Oral questioning• Written tests• Project• Observation
3. Prepare an industry attachment report	<ul style="list-style-type: none">• Report writing format• Industry attachment report	<ul style="list-style-type: none">• Oral questioning• Written tests

Suggested Methods of Instructions:

- Practical demonstration trainer
- Practice by the trainees
- Trainer facilitation of theory
- View related videos
- Trainer from the automotive service and repair sector
- Industry guided learner activities to develop underpinning knowledge

Recommended Resources**Personal protective equipment (PPE)**

- Safety Shoes
- Gloves (pairs)
- Dust mask
- Ear muffs
- Ear plugs (sets)
- Dust Coat/Overall
- Respirator
- Safety glasses
- Hard hat

CORE UNITS OF LEARNING

MAINTAINING SHOP TOOLS, EQUIPMENT AND MEASURING DEVICES

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

RELATIONSHIP TO OCCUPATIONAL STANDARDS:

This unit addresses the unit of competency: **Maintain Shop Tools, Equipment and Measuring Devices**

DURATION OF UNIT: 20 hours

UNIT DESCRIPTION

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

SUMMARY OF LEARNING OUTCOMES

1. Maintain automotive hand tools
2. Maintain automotive power tools
3. Maintain automotive shop equipment
4. Apply automotive measuring devices
5. Maintain automotive measuring devices

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Maintain automotive hand tools	<ul style="list-style-type: none">• Identify hand tools• Use of hand tools• Identify hand tool safety requirements• Identify unsafe and faulty hand tools• Identify hand tool cleaning and storage procedures	<ul style="list-style-type: none">• Oral Questioning• Written Tests• Project• Observation
2. Maintain automotive power tools	<ul style="list-style-type: none">• Identify power tools• Use of power tools• Identify power tool safety requirements• Identify unsafe and faulty	<ul style="list-style-type: none">• Oral Questioning• Written Tests• Project• Observation

	<p>power tools</p> <ul style="list-style-type: none"> • Identify operational maintenance • Identify power tool cleaning and storage procedures 	
3. Maintain automotive shop equipment	<ul style="list-style-type: none"> • Identify shop equipment • Identify shop equipment operation • Identify shop equipment safety requirements • Identify unsafe and faulty shop equipment • Identify operational maintenance procedures • Identify shop equipment cleaning and storage procedures 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
4. Apply automotive measuring devices	<ul style="list-style-type: none"> • Identify types of measuring devices • Identify measuring device techniques • Use measuring devices 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
5. Maintain automotive measuring devices	<ul style="list-style-type: none"> • Identify operational maintenance procedures • Identify cleaning and storage procedures • Identify procedures for maintenance and adjustments 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation

Suggested Methods of Instructuions:

- Practical demonstration trainer
- Practice by the trainees
- Trainer facilitation of theory
- View related videos
- Trainer from the automotive service and repair sector
- Guided learner activities to develop underpinning knowledge
- Industrial visits

Recommended Resources

Tools

- Comprehensive set of tools for maintaining shop tools, equipment and measuring devices

Equipment

- Pedestal drills
- Pedestal grinders
- Car lift
- Brake lathe
- Varsol bath
- Tire changer
- Tire balancer
- Floor jacks
- Hydraulic press
- Service information centre
- Tool boxes
- Benches
- Tool crib

Materials and supplies

- Hacksaws blades
- Cotton towels
- Hand cleaner
- Jig saw blades
- Drill bits
- Varsol
- Cutting oil
- Wheel weights
- Brake lathe tips
- File brush
- Sand paper
- Grinding disc
- Floor Cleaners
- Oils (various viscosity)
- Engine coolant
- Soft brush

Personal Protective Equipment

- Safety Shoes
- Gloves (pairs)

- Dust mask
- Ear muffs
- Ear plugs (sets)
- Dust Coat/Overall
- Safety glasses
- Hard hat

PERFORMING VEHICLE PREVENTIVE MAINTENANCE

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

RELATIONSHIP TO OCCUPATIONAL STANDARDS:

This unit addresses the unit of competency: **Perform Vehicle Preventive Maintenance**

DURATION OF UNIT: 90 hours

UNIT DESCRIPTION

This unit describes the competencies required to perform vehicle preventive maintenance. It involves conducting vehicle familiarization, external inspections, under vehicle inspections, under hood inspections, following OEM instructions, changing engine oil, replacing oil filters, servicing and repairing oil filters, maintaining spark plugs, replacing drive belts, performing lubrication, inspecting and maintaining fluid levels, and inspecting tires and rim in an automotive service environment.

SUMMARY OF LEARNING OUTCOMES

1. Conduct vehicle familiarization
2. Conduct vehicle external inspection
3. Conduct under vehicle inspection
4. Conduct under hood inspection
5. Follow OEM instructions
6. Change engine oil
7. Replace oil filter
8. Service/repair air filter
9. Maintain spark plug
10. Replace drive belts
11. Perform lubrication
12. Inspect and maintain fluid levels
13. Inspect tires and rims

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Conduct vehicle familiarization	<ul style="list-style-type: none"> • Identify appropriate checklist • Identify visual inspection procedures • Identify normal operation • Identify physical body design • Identify features • Identify location of service points 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
2. Conduct vehicle external inspection	<ul style="list-style-type: none"> • Identify appropriate checklist • Identify exterior vehicle damages • Identify irregular tires/wheels • Windshield/wiper operation • Glass inspection procedures • Bumpers and grills condition 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
3. Conduct under vehicle inspection	<ul style="list-style-type: none"> • Identify appropriate checklist • Identify under vehicle integrity <ul style="list-style-type: none"> • Suspension • Frame • Fuel tanks • Linkages • Mounting • Shields • Silencer 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
4. Conduct under hood inspection	<ul style="list-style-type: none"> • Identify appropriate checklist • Service manual procedures • Owner manual procedures • Under hood components <ul style="list-style-type: none"> • Fluid levels • Belts • Leak points • Misrouted wiring • Modifications 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation

5. Follow OEM instructions	<ul style="list-style-type: none"> • Maintenance schedules • Identify stripe and decal 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
6. Change engine oil	<ul style="list-style-type: none"> • Types of oil • Drainage system • Drainage procedure • Oil level • Quantity • Environmental sustainable disposal procedures as per OS&H 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
7. Replace oil filter	<ul style="list-style-type: none"> • Identify location • Removal procedures • Types of filters • Replacement procedures • Environmental sustainable disposal procedures as per OS&H 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
8. Service/replace air filter	<ul style="list-style-type: none"> • Identify location • Removal procedures • Inspection procedures • Installation procedures • Cleaning procedures 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
9. Maintain spark plug	<ul style="list-style-type: none"> • Identification • Application • Removal procedures • Installation procedures • Inspection procedures 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
10. Replace drive belts	<ul style="list-style-type: none"> • Inspection procedures • Removal procedures • Cleaning procedures • Adjustment procedures • Replacement procedures 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
11. Perform lubrication	<ul style="list-style-type: none"> • Identify types • Lubrication process • Types of body lubrication locations • Types of chassis lubrication locations 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation

	<ul style="list-style-type: none"> • Cleaning procedures 	
12. Inspect and maintain fluid levels	<ul style="list-style-type: none"> • Identify appropriate checklist • Identify capacities • Fluid level procedures • Fluid replacement procedures • Environmental sustainable disposal procedures as per OS&H 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
13. Inspect tires and rims	<ul style="list-style-type: none"> • Identify appropriate checklist • Identify normal operation • Inspection procedures • Removal techniques • Installation procedures • Environmentally sustainable disposal procedures as per OS&H 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation

Suggested Methods of Instructions:

- Practical demonstration trainer
- Practice by the trainees
- Trainer facilitation of theory
- View related videos
- Trainer from the automotive service and repair sector.
- Guided learner activities to develop underpinning knowledge
- Industrial visits

Recommended Resources

Tools

- Comprehensive set of tools for performing vehicle preventive maintenance.

Equipment

- Air compressor
- Funnel
- Hydraulic jack
- Hoist
- Vehicle stands
- Battery tester
- Grease gun
- Oil disposal container

- Oil tray
- Oil drum

Materials and supplies

- Grease
- Oils
- Body lubrication sprays
- Transmission fluid
- Brake fluid
- Drive belt
- Washer fluid
- Power steering fluid
- Axles fluid
- Transfer case oil
- Engine oil
- Fuel
- Oil filter
- Air filter
- Spark plugs
- Antifreeze

Personal Protective Equipment

- Safety Shoes
- Gloves (pairs)
- Dust mask
- Ear muffs
- Ear plugs (sets)
- Dust Coat/Overall
- Safety glasses
- Hard hat

INSPECTING AUTOMOTIVE STEERING AND SUSPENSION SYSTEMS

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

RELATIONSHIP TO OCCUPATIONAL STANDARDS:

This unit addresses the unit of competency: **Inspect Steering and Suspension Systems**

DURATION OF UNIT: 20 hours

UNIT DESCRIPTION

This unit describes the competencies required to inspect steering and suspension systems. It involves conducting steering and suspension 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.

SUMMARY OF LEARNING OUTCOMES

1. Conduct steering and suspension familiarization
2. Inspect suspension bushes
3. Inspect steering system
4. Inspect coil springs, struts, control arms and linkages
5. Inspect shock absorbers
6. Inspect leaf springs
7. Inspect tires and rims

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Conduct steering and suspension familiarization	<ul style="list-style-type: none">• Identify appropriate checklist• Visual inspection procedures• Identify normal operation• Noise analysis• Measurements• Identify types of systems• Identify components<ul style="list-style-type: none">• Springs• Shocks• Struts• Links	<ul style="list-style-type: none">• Oral Questioning• Written Tests• Project• Observation

	<ul style="list-style-type: none"> • Control Arms • Ball Joints • Bushes • Steering Gears • Column • Pump 	
2. Inspect suspension bushes	<ul style="list-style-type: none"> • Identify appropriate checklist • Identify special tools • Diagnosis procedures • Use of Manufacture Procedures • Identify precautions • Measurements and Specifications 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
3. Inspect steering system	<ul style="list-style-type: none"> • Identify appropriate checklist • Identify special tools • Use of Manufacture Procedures • Identify precautions • Measurements and specifications 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
4. Inspect coil springs, struts, control arms and linkages	<ul style="list-style-type: none"> • Identify appropriate checklist • Identify special tools • Diagnosis procedures • Use of Manufacture Procedures • Identify precautions • Measurements and Specifications 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
5. Inspect shock absorbers	<ul style="list-style-type: none"> • Identify appropriate checklist • Identify special tools • Diagnosis procedures • Use of Manufacture Procedures • Identify precautions • Measurements and Specifications 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
6. Inspect leaf springs	<ul style="list-style-type: none"> • Identify appropriate checklist • Identify special tools • Diagnosis procedures 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project

	<ul style="list-style-type: none"> • Use of Manufacture Procedures • Identify precautions • Measurements and Specifications 	<ul style="list-style-type: none"> • Observation
7. Inspect tires and rims	<ul style="list-style-type: none"> • Identify appropriate checklist • Tire/Rim replacement procedures • Tire/Rim repair procedures • Diagnosis procedures • Use of Manufacture Procedures • Identify precautions • Measurements and Specifications 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation

Suggested Methods of Instructions:

- Practical demonstration trainer.
- Practice by the trainees.
- Trainer facilitation of theory
- View related videos
- Trainer from the automotive service and repair sector
- Guided learner activities to develop underpinning knowledge
- Industrial visits

Recommended Resources

Tools

- Comprehensive set of tools for inspecting steering and suspension systems
- Hoist/car lift
- Vehicle or trainer with Short Long Arm (SLA)
- Vehicle or trainer with Parallelogram Steering
- Vehicle or trainer with Struts
- Bearing remover
- Steering gear box

Materials and supplies

- Tire grease
- Tire plugs
- Tire patches
- Wheel weights
- Cotter pins

- Centre bolts
- Tires
- Rims
- Tire lube
- Grease
- Oil
- Power steering fluid
- Leaf spring
- Coil spring
- Steering pump
- Steering fluids
- Shock absorbers

Personal Protective Equipment

- Safety Shoes
- Gloves (pairs)
- Dust mask
- Ear muffs
- Ear plugs (sets)
- Dust Coat/Overall
- Safety glasses
- Hard hat

INSPECTING AUTOMOTIVE BRAKE SYSTEMS

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

RELATIONSHIP TO OCCUPATIONAL STANDARDS:

This unit addresses the unit of competency: **Inspect Automotive Brake Systems**

DURATION OF UNIT: 20 hours

UNIT DESCRIPTION

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

SUMMARY OF LEARNING OUTCOMES

1. Perform visual brake inspection
2. Perform visual brake booster and reservoir inspection
3. Inspect brake linings and pads
4. Inspect wheel cylinders
5. Inspect brake callipers
6. Inspect brake disk/drums
7. Inspect hand brake

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Perform visual brake inspection	<ul style="list-style-type: none">• Identify appropriate checklist• Identify location of:<ul style="list-style-type: none">• Brake pads• Disc pads• Booster units/design• Master cylinder• Brake lines/hydraulic lines• Brake pedestal• Brake lights	<ul style="list-style-type: none">• Oral Questioning• Written Tests• Project• Observation

2. Perform visual brake booster and reservoir inspection	<ul style="list-style-type: none"> • Identify appropriate checklist • Identify location of brake booster • Identify: <ul style="list-style-type: none"> • fluid levels • leakage points • colour of fluid 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
3. Inspect brake linings and pads	<ul style="list-style-type: none"> • Identify appropriate checklist • Manufacture procedures • Lining types • Common problems • Adjustments • Measurements • Tools 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
4. Inspect wheel cylinders	<ul style="list-style-type: none"> • Identify appropriate checklist • Manufacture procedures • Types • Common problems • Measurements • Tools 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
5. Inspect brake calipers	<ul style="list-style-type: none"> • Identify appropriate checklist • Manufacture replacement procedure • Types • Common problems • Common adjustments • Measurements • Tools 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
6. Inspect brake disk/drums	<ul style="list-style-type: none"> • Identify appropriate checklist • Manufacture replacement procedures • Types • Common problems • Measurements • Common adjustments • Machining procedures • Tools 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests • Project • Observation
7. Inspect hand brake	<ul style="list-style-type: none"> • Identify appropriate checklist • Manufacture replacement 	<ul style="list-style-type: none"> • Oral Questioning • Written Tests

	procedures <ul style="list-style-type: none"> • Types • Common problems • Common adjustments • Measurements • Tools 	<ul style="list-style-type: none"> • Project • Observation
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Suggested Methods of Instructions:

- Practical demonstration trainer
- Practice by the trainees
- Trainer facilitation of theory
- View related videos
- Trainer from the automotive service and repair sector
- Guided learner activities to develop underpinning knowledge
- Industrial visits

Recommended Resources

Tools

- Comprehensive set of tools for inspecting automotive brake systems (ABS).

Equipment

- Vehicle with operational brake system (non-ABS)
- Brake booster
- Wheel cylinder system
- Hydraulic callipers
- Brake bleeder kit
- Air compressor
- Engine stands
- Stoppers
- Hydraulic jack
- Braking system model
- Complete vehicle unit
- Hydraulic press
- Brake pressure tester
- Brake system bleeder
- Brake drum gauge
- Brake lathe
- Calliper
- Brake drum system
- Disc brake system
- Master cylinder

Materials and supplies

- Master cylinder
- Brake fluid
- Hydraulic lines
- Proportional valve
- Disc brakes
- Brake pads
- Rotor
- Brake Drums
- Brake shoes
- Sandpaper

Personal Protective Equipment

- Safety Shoes
- Gloves (pairs)
- Dust mask
- Ear muffs
- Ear plugs (sets)
- Dust Coat/Overall
- Safety glasses
- Hard hat