Tools

- Comprehensive set of hand tools for the service and repair of motor vehicle transmission systems.

Equipment

- Transmission Instructiona
- A fully equipped motor vehicle maintenance workshop;
- Fully functional light vehicle(s);
- Transmission units;
- Vehicle lift/inspection pit;
- Gearbox jack;
- Specialist tools and diagnostic equipment appropriate for the different makes and types of vehicle transmission systems that are being maintained;
- Automatic transmission test equipment;
- Internet access to manufacturers' technical information;
- Torque setting tools;
- Personal protective equipment (PPE) and suitable coverings to protect vehicles;
- Facilities for the disposal of waste oil and used parts;
- Customer database and systems for recording maintenance records

Materials and supplies

- Digital instructional material including DVDs and CDs
- Consumables for service and repair of vehicle transmission systems including:
- Transmission lubricants
- Oil seals and gaskets
- Cleaning materials
- Hand cleaner
- Dusters

Reference materials

- Manufacturers service manuals for the vehicles that are being serviced
- Appropriate automotive engineering text books available on numerous websites

SERVICING VEHICLE STEERING SYSTEMS

UNIT CODE: ENG/CU/AUT/CR/5/6

Relationship to Occupational Standards

This unit addresses the unit of competency and meets the requirements specified by the Occupational Standards: **Service vehicle steering system**.

Duration of Unit: 120 hours

Unit Description:

This unit specifies competencies required to service vehicle steering system. It involves assessment, removal, servicing and replacement of vehicle steering components. It also involves fitting and testing vehicle steering components and documenting vehicle steering service.

Summary of Learning Outcomes:

1. Assess vehicle steering system
2. Remove steering components
3. Assess serviceability of vehicle.
4. Replace/service vehicle steering.
5. Fit and test vehicle steering components.
6. Document vehicle steering system service

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Method
6. Assess vehicle steering system	The observance of Kenyan regulations concerned with health, safety and the environment; The use of personal protective equipment and clothing (PPE) used throughout work activities; The disposal of scrap components, waste oils and fluids in accordance with current legal requirements and company policy. Functions of steering system in the vehicle Types of steering systems Conventional Twin-axle	Practical exercises Oral questioning Written test Learner portfolio of evidence.

7. Remove steering components	Functions of steering system Components of steering system Layout of various steering	Practical exercises Oral questioning Written test

Learning Outcome	Content	Suggested Assessment Method
	systems Tools and equipment for servicing steering system Dismantling of the steering system Safety precautions in servicing steering system Disposal of faulty components	Learner portfolio of evidence.
8. Assess serviceability of vehicle.	Diagnosis and servicing of steering gearbox Worm and wheel Worm and sector Worm and nut Worm and roller Recirculating Rack and pinion Diagnosis, service and replacement of steering systems Conventional Power assisted Leakages Over steering Under steering	Practical exercises Oral questioning Written test Learner portfolio of evidence.

Learning Outcome	Content	Suggested Assessment Method
	Power	

	Components of four wheel steering system	
9. Replace/service vehicle steering.	The importance of using appropriate technical information as a guide for assessment; Correct methods and procedures for dismantling steering units; Cleaning of components to facilitate inspection and assessment of components; Using visual and measurement methods and procedures for inspecting and assessing components for: Damage; Wear; Corrosion; Fracture; Distortion. Evaluate components for: Serviceability; Unserviceability;	Practical exercises Oral questioning Written test Learner portfolio of evidence.

Learning Outcome	**Content**	**Suggested Assessment Method**
	Tolerances; Need for replacement; Need for adjustment. Importance of the use of manufactures' part numbers for replacement parts; Selection and use of gaskets, seals, shims, fittings and fasteners;	

	• Steering wheel centralisation; • Test and evaluate the performance of the steering units and components after reassembly.	
10. Fit and test vehicle steering components.	• The selection and use of appropriate tools and equipment for the replacement of suspension and steering units; • Replacement of steering units and components. • Securing and adjusting external linkages,	• Practical exercises Oral • questioning Written test • Learner portfolio of • evidence
Learning Outcome	**Content**	**Suggested Assessment Method**
	connections and operating mechanisms; • Replenish lubricants and fluids as prescribed; • Testing and components for satisfactory operation; • Setting steering geometry	
11. Document vehicle steering system service	• Importance of testing vehicle steering system. • Types of tests done on steering system. Data analyzation and report writing. The importance of completing all service and • repair activities within an agreed timescale and keeping others informed of progress	• Practical exercises • Oral questioning Written test • Learner • portfolio of evidence

Suggested Methods of Delivery

- Presentations and practical demonstrations by trainer;
- Guided learner activities and research to develop underpinning knowledge;
- Supervised activities and projects in a workshop;
- The delivery may also be supplemented and enhanced by the following, if the opportunity allows:
- Visiting lecturer/trainer from the motor vehicle service and repair sector;
- Industrial visits.

Recommended Resources

Tools

Comprehensive set of hand tools for the service and repair of motor vehicle suspension and steering systems.

Equipment

- Steering systems instructional models
- A fully equipped motor vehicle maintenance workshop
- Fully functional light vehicle(s)
- Steering units
- Vehicle lift/inspection pit,
- Specialist tools and diagnostic equipment appropriate for the different makes and types of vehicle that are being worked on;
- Steering geometry measurement equipment;
- Internet access to manufacturers' technical information
- Torque setting tools
- Personal protective equipment (PPE) and suitable coverings to protect vehicles.
- Facilities for the disposal of waste oil and used parts;
- Customer database and systems for recording maintenance records

Materials and supplies

Digital instructional material including DVDs and CDs

Consumables for service and repair of suspension and steering systems including:

- Steering and suspension lubricants including grease
- Power assisted steering fluid
- Oil seals and gaskets
- Cleaning materials
- Hand cleaner
- Dusters

Reference materials

- Manufacturers service manuals for the vehicles that are being serviced