

National Unit Specification: general information

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| UNIT | Automotive: Vehicle Construction and Periodic Maintenance (Intermediate 1) |
| NUMBER | DE43 10 |
| COURSE | Scottish Progression Award (SPA) in Vehicle Maintenance and Repair |

SUMMARY

This unit will be suitable for candidates who need to develop and apply skills and knowledge associated with the repair, servicing and maintenance of vehicles at Intermediate 1 level. The unit will enable the candidate to acquire essential skills in the identification of the different materials used in vehicles, the names of the main components e.g. engine; gearbox; differential, etc. It also includes the construction methods used within the frame design, the various safety features and identifies the recommended maintenance routines and information sources.

The unit is derived from Automotive Skills' National Occupational Standards Units:

Unit 10 – Remove and replace units and components

Unit 11 – Carry out routine vehicle maintenance

Unit 19 – Inspect vehicles

It also applies to the units relating to vehicle maintenance and repair S/NVQs and Modern Apprenticeships.

It is designed to meet the knowledge requirements of Automotive Skills' Technical Certificate Specification (Phase 1):

LV04 – Vehicle Construction

LV05 – Periodic Maintenance

and to provide progression towards the related S/NVQs and Modern Apprenticeships.

Administrative Information

Superclass: XS

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National Unit Specification: general information (cont)

OUTCOMES

1. Identify materials used in vehicles.
2. Identify the components used in vehicle construction.
3. Identify the types of vehicle chassis and construction methods.
4. Identify the safety features used in vehicle construction.
5. Identify the purposes of periodic vehicle maintenance and the need for vehicle protection.
6. Identify the types of maintenance routines and sources of information relating to vehicle maintenance.

RECOMMENDED ENTRY

Entry is at the discretion of the centre, but a good standard in communication skills would be desirable. It would also be beneficial for candidates to have a practical aptitude for vehicle maintenance and repair.

CREDIT VALUE

0.5 credits at Intermediate 1 (3 SCQF points at SCQF level 4*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

CORE SKILLS

Information on the automatic certification of any core skills in this unit is published in *Automatic Certification of Core Skills in National Qualifications* (SQA, publication code BA0906).

National Unit Specification: statement of standards

UNIT Automotive: Vehicle Construction and Periodic Maintenance (Intermediate 1)

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to the Scottish Qualifications Authority.

OUTCOME 1

Identify materials used in vehicles.

Performance criteria

- a) Correctly identify metallic materials used in vehicle construction.
- b) Correctly identify properties of the metallic materials used in vehicle construction.
- c) Correctly identify non-metallic materials used in vehicle construction.
- d) Correctly identify the types of non-metallic materials.

OUTCOME 2

Identify the components used in vehicle construction.

Performance criteria

- a) Correctly identify the main body panels used in vehicle construction.
- b) Correctly identify the chassis load bearing members used in vehicle construction.
- c) Correctly identify the main body fittings used in vehicle construction.

OUTCOME 3

Identify the types of vehicle chassis and construction methods.

Performance criteria

- a) Correctly identify the types of vehicle chassis.
- b) Correctly identify the chassis construction methods used.
- c) Correctly identify the types of chassis members used.

OUTCOME 4

Identify the safety features used in vehicle construction.

Performance criteria

- a) Correctly identify the safety features used in vehicle construction.
- b) Correctly identify the safety benefits to occupant safety.
- c) Correctly identify the controlling regulations covering the design and construction of vehicles.

National Unit Specification: statement of standards

UNIT Automotive: Vehicle Construction and Periodic Maintenance
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OUTCOME 5

Identify the purposes of periodic vehicle maintenance and the need for vehicle protection.

Performance criteria

- a) Correctly identify the purposes of periodic maintenance.
- b) Correctly identify the need for vehicle protection.

OUTCOME 6

Identify the types of maintenance routines and sources of information relating to vehicle maintenance.

Performance criteria

- a) Correctly identify the types of periodic maintenance.
- b) Correctly identify periodic maintenance requirements.
- c) Correctly identify other sources of information relating to maintenance routines.

EVIDENCE REQUIREMENTS FOR THE UNIT

Written evidence of the candidate's ability to show a clear understanding of the foundation skills and knowledge associated with the repair, servicing and maintenance of vehicles, including the identification of the:

- 1) materials used in vehicles
- 2) components used in vehicle construction
- 3) types of vehicle chassis and construction methods
- 4) safety features used in vehicle construction
- 5) purposes of periodic vehicle maintenance and the need for vehicle protection
- 6) types of maintenance routines and sources of information relating to vehicle maintenance

The candidate should produce sufficient correct responses to achieve an overall pass of 70% for the unit.

National Unit Specification: support notes

UNIT Automotive: Vehicle Construction and Periodic Maintenance (Intermediate 1)

This part of the unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this unit is at the discretion of the centre, the notional design length is 20 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

This unit is designed to develop the basic skills and knowledge associated with the repair, servicing and maintenance of vehicles at Intermediate 1.

The aim of this unit is to deliver the knowledge requirements of Automotive Skills' Technical Certificate – Foundation Skills (Phase 1). It would however be advantageous to deliver it in a practical setting.

Outcome 1

Identification of:

Ferrous metals:

- cast iron
- low carbon steel
- medium carbon steel
- high carbon steel
- alloy steel.

Non-ferrous metals:

- Aluminium
- Copper
- Brass
- Bronze
- Zinc
- Duralumin
- “Y” alloy
- copper alloy
- tin alloy
- bearing alloy
- zinc alloy.

Non-metallic materials:

- Polythene
- polyvinylchloride (PVC)
- polytetrafluorethylene (PTFE)
- nylon
- glass reinforced plastic (GRP)
- plastic (thermosetting and thermoplastic)
- rubber; safety glass.

National Unit Specification: support notes (cont)

UNIT Automotive: Vehicle Construction and Periodic Maintenance
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Properties:

- metals (ferrous non ferrous) – Elasticity
- strength
- hardness
- toughness
- malleability
- brittleness
- plasticity
- softness
- conductivity
- work hardening.

Outcome 2

Identification of:

Side, roof and floor panels:

- Floor
- roof;
- ‘A’, ‘B’ and ‘C’ posts
- sill
- door
- parcel tray.

Front and rear end panels:

- wing
- inner wing
- wheel arch
- bonnet
- bonnet landing panel
- boot lid / tailgate
- scuttle
- valance
- front bulkhead
- spoiler
- air dam.

Load bearing members:

- chassis leg
- sub frame
- cross member
- space frame.

National Unit Specification: support notes (cont)

UNIT Automotive: Vehicle Construction and Periodic Maintenance
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Fittings:

- hinge
- locks
- weather seal
- bonnet catch.

Outcome 3

Identification of:

Vehicle chassis types:

- ladder
- monologue/integral
- backbone.

Construction methods:

- side members
- cross members
- flitch plates;
- riveting
- bolting
- welding.

Chassis members:

- channel
- tubular
- box.

Outcome 4

Identification of:

Safety features:

- crumple zones
- side impact protection
- bumpers
- seat belts
- air bags
- supplementary restraint system ABS
- head restraint.

Benefits:

To reduce/remove the possibility of:

- discomfort
- injury
- death of vehicle occupants.

National Unit Specification: support notes (cont)

UNIT Automotive: Vehicle Construction and Periodic Maintenance
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Regulations:

- construction and use
- EU directives.

Outcome 5

Identification of:

Purposes of routine maintenance:

- environmental
- road worthiness
- efficiency.

Need for vehicle protection:

- duty of care
- damage to vehicle
- corporate image.

Outcome 6

Identification of:

Types of maintenance routines:

- mileage
- time
- usage
- seasonal.

Manufacturers' sources:

- service schedules
- owner's handbook.

Other sources:

- seasonal checklist
- usage checklist
- Department of Transport (MOT) test checklist
- vehicle sales checklist.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

The unit should be taught in a practical workshop / demonstration and technology room situation with access to a range of vehicles.

It is designed to support the delivery of other units within the Scottish Progression Award (SPA) and delivery could be integrated with other units.

For outcomes 1 to 4 candidates could be given the opportunity to examine vehicle materials, components, types of chassis, construction methods and safety features applicable to the content. Candidates should also be able to access sources of the regulations governing the Construction and Use of Vehicles including EU directives.

National Unit Specification: support notes (cont)

UNIT Automotive: Vehicle Construction and Periodic Maintenance (Intermediate 1)

For outcomes 5 and 6 candidates could be given the opportunity to become familiar with maintenance schedules, sources of information relating to vehicle maintenance, service checks and routines. The unit should be taught in a workshop/demonstration and technology facility with access to a range of vehicles and their maintenance schedules / checklists / owner handbooks / recommended inspection routines.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Assessment of the knowledge could take the form of a multiple - choice test to cover all outcomes

SPECIAL NEEDS

This unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering special alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment Arrangements* (SQA, publication code AA0645).