Qualification Specification:

OCN NI Level 2 Diploma in Motor Vehicle Skills

- **Qualification No: 610/2946/4**

Version: 2.0

1. Specification Updates

Key changes have been listed below:

Section	Detail of change	Version and date of Issue
Specification	New format and scope	v2.0 – May 2025

2. Contents

3. Introduction to Open College Network Northern Ireland (OCN NI)

The Open College Network Northern Ireland (OCN NI) is a UK recognised awarding organisation based in Northern Ireland. We are regulated by CCEA Regulation to develop and award regulated professional and technical (vocational) qualifications from Entry Level up to and including Level 5 across all sector areas. In addition, OCN NI is also regulated by Ofqual to award qualifications in England.

OCN NI is also an educational charity that advances education by developing nationally recognised qualifications and recognising the achievements of learners. We work with centres such as Further Education Colleges, Private Training Organisations, Voluntary & Community Organisations, Schools, SME's and Public Sector bodies to provide learners with opportunities to progress into further learning and/or employment. OCN NI's Strategic Plan can be found on the OCN NI website www.ocnni.org.uk.

For further information on OCN NI qualifications or to contact us, you can visit our website at www.ocnni.org.uk. The website should provide you with details about our qualifications, courses, contact information, and any other relevant information you may need.

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4. About this Specification

This specification details OCN NI's specific requirements for the delivery and assessment of the **OCN NI Level 2 Diploma in Motor Vehicle Skills.**

This specification will provide guidelines for centres to ensure the effective and correct delivery of this qualification. OCN NI qualification specifications are based on research and engagement with the practitioner community to ensure they provide appropriate skills and knowledge for learners.

The qualification specification will detail the following aspects of the **OCN NI Level 2 Diploma in Motor Vehicle Skills.**

- **Qualification Features**: this includes the key characteristics and features of this qualification, such as its intended audience, purpose, and credit value.

- **Centre Requirements:** this details the prerequisites and obligations that centres must fulfil to be eligible to deliver and assess this qualification. These includes guidelines on staff qualifications, resources, and required procedures.

- **Structure and Content:** this details the structure and content of the qualification including units, and any specific content that learners will be required to study.

- **Assessment Requirements:** this details assessment criteria and assessment methods for this qualification, ensuring that summative assessment approaches are clear.

- **Quality Assurance:** the quality and consistency of delivery and assessment of this qualification are of paramount importance to OCN NI. The mandatory quality assurance arrangements including processes for internal and external verification that all centres offering this qualification must adhere to are detailed.

- **Administration:** guidance on the administrative aspects of delivering this qualification, including registration, certification, and record-keeping.

- Reference to other handbooks and policies as appropriate to the qualification.

It is important to note that OCN NI will communicate any significant updates or changes to this specification in writing to our centres. Additionally, we will make these changes available on our official website at www.ocnni.org.uk.

To stay current, please refer to the online version of this specification as it is the most authoritative and up-to-date publication. Be aware that downloaded and printed copies may not reflect the latest revisions.

4.1 Additional Support

OCN NI offers a comprehensive range of support services designed to assist centres in meeting the delivery and quality assurance requirements of OCN NI qualifications. These services include:

- **Learner Assessment Booklets**: These booklets are created to assist learners in demonstrating the fulfilment of assessment criteria and organising the quality assurance prerequisites for each individual unit.

- **Qualification Support Pack**: A support pack has been developed to support centres in the delivery of this qualification. The pack includes planning and assessment templates, guides to best practice, etc.

- **Professional Development for Educators**: OCN NI provides opportunities for professional development tailored to meet the various needs of practitioners and quality assurance staff. Centres can join our training sessions, available in both face-to-face and online formats, or explore a wealth of training materials by visiting www.ocnni.org.uk

- **OCN NI Subject Advisors**: Our team of subject advisors offers vital information and support to centres. They provide guidance on specification details, non-exam assessment advice, updates on resource developments, and various training opportunities. They actively engage with subject communities through an array of networks to facilitate the exchange of ideas and expertise, to support practitioners to provide quality education programs to learners.

All centres can access information, support and guidance to support the delivery and quality assurance of this qualification by contacting their designated Business Development Advisor or by contacting us on Contact Us | OCN NI.

5. About this Qualification

5.1 Qualification Regulation Information

OCN NI Level OCN NI Level 2 Diploma in Motor Vehicle Skills
Qualification Number: 610/2946/4

Operational start date: 15 July 2023
Operational end date: 14 July 2028
Certification end date: 14 July 2030

The qualification's operational start and end dates define the regulated qualification's lifecycle. The operational end date is the final date for learner registration, while learners have until the certificate end date to complete the qualification and receive their certificates.

It is important to note that all OCN NI regulated qualifications are listed on the Register of Regulated Qualifications (RQF), which can be found at Ofqual Register. This register is maintained by Ofqual in England and CCEA Regulation in Northern Ireland. It contains information about qualifications that are regulated and accredited. It is a key resource for learners, employers, and educational institutions to verify the status and recognition of qualifications.

Centres must adhere to administrative guidelines diligently, with special attention to the fact that fees, registration, and certification end dates for the qualification may be subject to changes. It is a centre's responsibility to make itself aware of updates on any modifications to ensure compliance with the latest requirements. OCN NI provides centres with timely updates through various channels including website, newsletters and through this specification. Information on qualification fees can be found on the Centre Login section of the OCN NI website www.ocnni.org.uk .

5.2 Background

The NI Traineeship

The NI Traineeship is the newly reformed flagship level 2 vocational education programme that delivers the commitments set out within 'Generating our Success131' the Northern Ireland Strategy for Youth Training. It has been designed to offer breadth beyond the skills of specific job roles and to deliver a simpler qualifications' landscape. Key to its design is the delivery of a full outcome at level 2 that is equivalent to five GCSEs at grade C or above, including maths and English.

The Traineeship is available to young people over 16 who are not yet in employment, but who are ready and able to engage on a challenging programme in their preferred occupational area through a Further Education College. While the target age group is 16 to 24 years, the Traineeship is open to all age groups. The innovative delivery methodology for the Traineeship includes the integration of project based learning and transversal skills development aimed at developing employment ready young people, who are well prepared to take up key roles in the NI workforce132.

5.3 Sector Subject Area

A subject sector area is a specific category used to classify academic and vocational qualifications. Subject sector areas are part of the educational and qualifications framework to organise and categorise qualifications. The sector subject for this qualification is:

4.3 Transportation operations and maintenance

This qualification has been mapped to the following National Occupational Standards:

NOS:

IMICA02 Reduce risk(s) to health and safety in the motor vehicle environment
IMICY13 Safely carry out operations on, near or with light electric vehicles
IMICA04 Use of tools and equipment in motor vehicle environments
LANLEO14 Service and repair braking systems on land-based equipment
IMIVF12 Inspect and replace light vehicle braking systems and components
SEMAUT3008 Assembling braking systems to vehicles
LANLEOO15 Service and repair wheeled and tracked steering systems on land-based equipmen
IMIAEMEI01 Locate and correct motor vehicle electrical faults
IMIAEMEI06 Diagnose and rectify motor vehicle electrical unit and component faults
LANLEO11 Service and maintain engines on land—based equipment
SEMMME3111 Overhauling piston engines
LANLEO10 Apply core land-based engineering principles: cooling and lubrication
LANLEO26 Service and repair transmission systems on land-based equipment
IMILV13 Diagnose and rectify light vehicle transmission and driveline system faults - National Occupational Standards (ukstandards.org.uk)
IMILV06 Inspect light vehicles
LANLEO24 Service and repair hydraulic systems on land-based equipment
PPLREEP01 Carry out maintenance on electrification and plant equipment and components
IMIVBR13 Remove and replace motor vehicle body panels including permanently fixed panels
SEMAUT3055 Joining components for commercial and passenger carrying vehicles using a manual welding process
LANLEO09 Apply core land-based engineering principles: thermal joining processes
LANLEO17 Service and repair land-based cutting and mowing equipment
IMIVF11 Inspect and replace light vehicle suspension dampers and springs
IMIVF11.1 Inspect, test and replace light vehicle suspension components
IMIEV01 Carry out non high voltage operations on, near or with an electric vehicle
IMIEV02b Manage unstable high voltage systems in an electric vehicle
IMICY13 Safely carry out operations on, near or with light electric vehicles
LANLEO15 Service and repair wheeled and tracked steering systems on land-based equipment
LANLEO16 Service and repair wheels and tracks on land-based equipment

5.4 Grading

Grading for this qualification is pass/fail.

5.5 Qualification's Aim and Objectives

Qualification's Aim

The aim of the OCN NI Level 2 Diploma in Motor Vehicle Skills is to develop a broad base of motor vehicle skills and practical motor vehicle techniques.

Qualification's Objectives

The objectives of the OCN NI Level 2 Diploma in Motor Vehicle Skills will enable learners to gain a range of motor vehicle knowledge including health and safety, tools, equipment and materials used in motor vehicle maintenance. Learners will also develop skills associated with a range of motor vehicle operations and components.

5.6 Target Learners

The OCN NI Level 2 Diploma in Motor Vehicle Skills is targeted at learners who wish to gain employment within the motor vehicle industry.

5.7 Entry Requirements

Learners must be at least 16 years old.

5.8 Progression

The OCN NI Level 2 Diploma in Motor Vehicle Skills will enable learners to progress to higher level qualifications including a Level 3 Apprenticeship, Level 3 Further Education or into employment.

5.9 Delivery Language

This qualification is exclusively available in English. If there is a desire to offer this qualification in Welsh or Irish (Gaeilge), we encourage you to get in touch with OCN NI. They will assess the demand for such provisions and, if feasible, provide the qualification in the requested language as appropriate.

6. Centre Requirements for Delivering this Qualification

6.1 Centre Recognition

New and existing OCN NI recognised centres must apply for and be granted approval to deliver this qualification prior to the commencement of delivery.

6.2 Qualification Approval

Once a centre has successfully undergone the Centre Recognition process, it becomes eligible to apply for qualification approval. The centre's capability to meet and sustain the qualification criteria will be assessed. Throughout the qualification approval process, OCN NI will aim to ensure that:

- centres possess suitable physical resources (e.g., equipment, IT, learning materials, teaching rooms) to support qualification delivery and assessment
- centre staff involved in the assessment process have relevant expertise and/or occupational experience
- robust systems are in place for ensuring ongoing professional development for staff delivering the qualification
- centres have appropriate health and safety policies concerning learner equipment use
- qualification delivery by centres complies with current equality and diversity legislation and regulations
- as a part of the assessment process for this qualification it may be useful for learners to have access to a practical work setting

6.3 Centre Staffing

To offer this qualification centres are mandated to establish the following roles as a minimum, although a single staff member may serve in more than one capacity*:

- Centre contact
- Programme Co-ordinator
- Assessor
- Internal Quality Assurer

*Note: An individual cannot serve as an Internal Quality Assurer for their own assessments.

6.4 Tutor Requirements

Tutors responsible for delivering this qualification are expected to possess a high degree of occupational competency. They should meet the following criteria:

- **Occupational Competency:** Tutors should demonstrate a clear understanding of motor vehicles sector including mechanical theory and practice and up-to-date knowledge. This competence should enable them to effectively impart knowledge and practical skills to learners.

- **Qualifications:** Tutors should hold qualifications at a level that is at least one level higher than the qualification they are teaching. This ensures that they have the necessary academic foundation to provide in-depth guidance and support to learners.

- **Relevant Industry Experience:** In addition to academic qualifications, tutors must have a minimum of three years of relevant, hands-on experience working in the motor vehicle sector.

These requirements collectively ensure that learners receive instruction from highly qualified and experienced instructors, thereby enhancing the quality and effectiveness of their educational experience.

6.5 Assessor Requirements

The assessment of this qualification takes place within the centre and is subjected to OCN NI's rigorous quality assurance procedures. The achievement of individual units is based on the criteria defined in each unit.

Assessors play a pivotal role in ensuring the validity and fairness of assessments. They are required to meet the following criteria:

- **Occupational Competency:** Assessors should possess a high degree of occupational competency in the relevant subject matter. This expertise enables them to accurately evaluate and measure a learner's knowledge and skills. Additionally, they should hold qualifications at a level that is at least one level higher than the qualification they are assessing, ensuring their in-depth understanding of the subject matter.

- **Relevant Industry Experience:** A minimum of three years of practical experience in the motor vehicle sector and practical maintenance is a prerequisite. This practical background is essential for assessors to effectively evaluate a learner's capabilities in real-world contexts.

- **Assessment Expertise:** Assessors should have direct or related experience in the field of assessment. This includes knowledge of best practices in designing, conducting, and grading assessments. Their expertise ensures that assessments are both fair and valid.

- **Assessors Qualification:** Assessors should hold or be currently undertaking a recognised assessor's qualification; or must have attended the OCN NI Assessment Training.

- **Comprehensive Assessment Oversight:** Assessors are responsible for evaluating all assessment tasks and activities comprehensively. They must thoroughly review and assess each element to ensure a fair and accurate representation of a learner's skills and knowledge.

These rigorous requirements uphold the quality and integrity of the qualification's assessment process, ensuring that learners receive a fair and reliable evaluation of their competencies.

6.6 Internal Quality Assurer Requirements

The Internal Quality Assurer plays a crucial role in the centre's internal quality assurance processes. The centre must designate a skilled and trained Internal Quality Assurer who assumes the role of an internal quality monitor responsible for verifying the delivery and assessment of the qualifications.

The Internal Quality Assurer for this qualification must meet the following criteria:

- **Relevant Industry Experience:** A minimum of three years of practical experience motor vehicle sector and practical maintenance is a prerequisite. This practical background is essential for assessors to effectively evaluate a learner's capabilities in real-world contexts.
- **Internal Quality Assurance Expertise:** Internal Quality Assurers should have direct or related experience in the field of verification. This includes knowledge of best practices in designing, conducting, and grading assessments. Their expertise ensures that assessments are both fair and valid.
- **Internal Quality Assurers Qualification:** Internal Quality Assurers should hold or be currently undertaking a recognised Internal Quality Assurer's qualification; or must have attended the OCN NI Internal Quality Assurance Training.
- **Thorough Evaluation of Assessment Tasks and Activities:** Internal Quality Assurers are tasked with conducting in-depth reviews and assessments of all assessment tasks and activities. Their responsibility is to ensure a comprehensive and meticulous oversight of each element to guarantee a just and precise reflection of a learner's abilities and knowledge and to ensure that all assessment and quality assurance requirements are fulfilled.

7. Qualification Structure

7.1 Qualification Purpose

The OCN NI Level 2 Diploma in Motor Vehicle Skills is designed to provide learners with the technical knowledge and practical skills required to work in the motor vehicle industry. Learners will gain hands-on experience in areas such as vehicle servicing, electrical systems, engine components, and health and safety practices. The qualification also supports the development of essential employability skills and offers progression to higher-level study or apprenticeships in automotive engineering and related fields.

7.2 Qualification Level

In the context of the OCN NI Level 2 Diploma in Motor Vehicle Skills it is essential to understand the significance of qualification levels, as they play a pivotal role in assessing the depth and complexity of knowledge and skills required for successful attainment. This qualification aligns with Level 2 which signifies a moderate level of difficulty and intricacy. It's important to note that qualification levels in the educational framework range from Level 1 to Level 8, complemented by three 'entry' levels, namely Entry 1 to Entry 3.

7.3 Qualification Size

Total Qualification Time (TQT)

This represents the total amount of time a learner is expected to spend to complete the qualification successfully. It includes both guided learning hours (GLH) and independent study or additional learning time.

Guided Learning Hours (GLH)

These are the hours of guided instruction and teaching provided to learners. This may include classroom instruction, tutorials, or other forms of structured learning.

OCN NI Level 2 Diploma in Motor Vehicle Skills	
Total Qualification Time (TQT):	600 hours
Total Credits Required:	60 credits
Guided Learning Hours (GLH):	480 hours

7.4 How to Achieve the Qualification

To achieve the OCN NI Level 2 Diploma in Motor Vehicle Skills learners must successfully complete all mandatory units – 48 credits, **plus all units from one of the pathways ie, construction plant, land based, heavy vehicle, light vehicle or auto electrical – total of 60 credits.**

8. Assessment Structure

This qualification is assessed through internal assessment and each unit is accompanied by specific assessment criteria that define the requirements for achievement.

8.1 Assessment Guidance: Portfolio

The portfolio for this qualification is designed to provide a comprehensive view of a learner's skills and knowledge. It is an holistic collection of evidence that may include a single piece of evidence that satisfies multiple assessment criteria. There is no requirement for learners to maintain separate evidence for each assessment criterion.

When learners are creating their portfolio they should refer to the assessment criteria to understand the evidence required.

It is essential that the evidence in the portfolio reflects the application of skills in real-world situations. Learners should ensure that they provide multiple examples or references whenever the assessment criteria require it.

8.2 Understanding the Units

The units outlined in this specification establish clear assessment expectations. They serve as a valuable guide for conducting assessments and ensuring quality assurance efficiently. Each unit within this specification follows a consistent structure. This section explains the operational framework of these units. It is imperative that all educators, assessors, Internal Quality Assurers, and other personnel overseeing the qualification review and familiarise themselves with this section to ensure a comprehensive understanding of how these units function.

Explanation

- **Title:** The title will reflect the content of the unit and should be clear and concise.
- **Level:** A unit can have one of six RQF levels: Entry, One, Two, Three, Four or Five. All units within this qualification are level 2.
- **Credit Value:** This describes the number of credits ascribed to a unit. It identifies the number of credits a learner is awarded upon successful achievement of the unit. One credit is awarded for the learning outcomes which a learner, on average, might reasonably be expected to achieve in a notional 10 hours of learning.
- **Learning Outcome:** A coherent set of measurable achievements.
- **Assessment Criteria:** These enable a judgement to be made about whether or not, and how well, the students have achieved the learning outcomes.
- **Assessment Guidance and Methods:** These detail the different assessment methods within the unit that may be used.
- **Possible Content:** This provides indicative content to assist in teaching and learning.
- **Scope:** This provides possible teaching content.

9. Qualification Summary by Unit

OCN NI Level 2 Diploma in Motor Vehicle Skills
Total Qualification Time (TQT) for this qualification: 600 hours
Guided Learning Hours (GLH) for this qualification: 480 hours

To achieve the OCN NI Level 2 Diploma in Motor Vehicle Skills learners must successfully complete mandatory units – 48 credits, **plus all units from one of the pathways ie, construction plant, land based, heavy vehicle, light vehicle or auto electrical – total of 60 credits.**

Unit Reference Number	OCN NI Unit Code	Unit Title	Credit Value	GLH	Level
Group A – Mandatory units					
F/650/7623	CBG263	Health and Safety in the Motor Vehicle Industry	5	40	Two
H/650/7624	CBG264	Motor Vehicle Tools, Equipment and Consumable Materials	4	32	Two
J/650/7625	CBG265	Brake System Operation and Components	6	48	Two
K/650/7626	CBG266	Steering System Operation and Components	5	40	Two
L/650/7627	CBG267	Electrical Circuit Operation and Components	6	48	Two
M/650/7628	CBG268	Engine Operation and Components	8	64	Two
R/650/7629	CBG269	Engine Lubrication and Cooling Systems Operation and Components	5	40	Two
A/650/7630	CBG270	Transmissions System Operation and Components	5	40	Two
D/650/7631	CBG271	Practical Motor Vehicle Project	4	32	Two

Unit Reference Number	OCN NI Unit Code	Unit Title	Credit Value	GLH	Level
Group B – Construction Plant units					
F/650/7632	CBG272	Hydraulic System, Pneumatic Braking System Operation and Components	4	32	Two
J/650/7634	CBG273	Small Plant Equipment, Tracks Operation and Components	5	40	Two
K/650/7635	CBG274	Thermal Joining and Cutting Processes	3	24	Two
Group C – Land Based units					
F/650/7632	CBG272	Hydraulic System, Pneumatic Braking System Operation and Components	4	32	Two
K/650/7635	CBG274	Thermal Joining and Cutting Processes	3	24	Two
L/650/7636	CBG275	Servicing Cutting and Mowing Equipment	5	40	Two
Group D – Heavy Vehicle units					
F/650/7632	CBG272	Hydraulic System, Pneumatic Braking System Operation and Components	4	32	Two
H/650/7642	CBG276	Suspension System Components and Maintenance	6	48	Two
J/650/7643	CBG277	Electric and Hybrid Vehicle Safety and Awareness	2	16	Two
Group E – Light Vehicle units					
K/650/7644	CBG278	Wheel and Tyre Construction and Maintenance	4	32	Two
H/650/7642	CBG276	Suspension System Components and Maintenance	6	48	Two
J/650/7643	CBG277	Electric and Hybrid Vehicle Safety and Awareness	2	16	Two

Group F – Auto Electric units					
L/650/7645	CBG279	Locate and Correct Vehicle Electrical Faults	6	48	Two
M/650/7646	CBG280	Remove and Replace Vehicle Electrical Wiring and Components	6	48	Two

10. Unit Detail

Title	Health and Safety in the Motor Vehicle Industry
Level	Two
Credit Value	5
Guided Learning Hours (GLH)	40
OCN NI Unit Code	CBG263
Unit Reference No	F/650/7623
Learn Direct Code	XS1

Unit purpose and aim(s): This unit will enable the learner to understand relevant health and safety requirements and information when carrying out simple maintenance and repair activities in the motor vehicle trade.

Learning Outcomes	Assessment Criteria
1. Know health and safety requirements, information and legislation in motor vehicle industry.	1.1. Describe health and safety legislation relevant to the motor vehicle industry including: a) employer and employee responsibilities under the Health and Safety at Work (NI) Order 1978 b) roles and responsibilities of the Health and Safety Executive in Northern Ireland c) Control of Substances Hazardous to Health Regulations (COSHH) d) Reporting Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) e) Personal Protective Equipment regulations (PPE) f) correct method of disposing waste 1.2. Identify common hazards and risks when working in the motor vehicle industry. 1.3. Identify and locate different signs, safety information and warning notices used in the motor vehicle environment.
2. Recognise the appropriate manual handling techniques and the safe use of equipment.	2.1. Illustrate safe manual handling techniques and common manual handling equipment used in the motor vehicle industry.
3. Know about fire prevention and emergency procedures.	3.1. Identify three elements that produce a fire. 3.2. Identify different types of fire extinguisher, fire prevention equipment and their uses. 3.3. Describe the procedures to be followed in an emergency and the evacuation of the premises.

Assessment Guidance
NOS:
IMICA02 Reduce risk(s) to health and safety in the motor vehicle environment
IMICY13 Safely carry out operations on, near or with light electric vehicles

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes	Learner notes/written work Learner log/diary Peer notes Record of observation

	OR A collection of documents containing work that shows the learner's progression through the course	Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Health and Safety in the Motor Vehicle Industry
1. Know health and safety requirements, information and legislation in motor vehicle industry.	**Scope** **Teaching will cover:** 1. The purpose of a Health and Safety Policy. 2. The purpose of a Risk Assessment and how to complete one. 3. The relevance of the Health and Safety Executive in Northern Ireland. 4. The relevance of an initial induction to Health and Safety requirements at your workplace. 5. Employee responsibilities under the HASAWA and the consequences of non-compliance. 6. Employer responsibilities under the HASAWA and the consequences of non-compliance. 7. The limits of authority regarding Health and Safety within a personal job role. 8. Workplace procedure to be followed to report Health and Safety matters. 9. Health and safety policies and legislation to include and cover: a) Legislation relevant to Health and Safety b) HASAWA c) COSHH d) EPA e) Manual Handling Operations Regulations 1992 f) PPE Regulations 1992 g) RIDDOR h) PUWER 10. Precautions to be taken when working with vehicles, workshop materials, tools and equipment including electrical safety, pneumatics and hydraulics to include and cover: a) Accessing and interpreting safety information b) Seeking advice when needed c) Seeking assistance when required d) Reporting of unsafe equipment e) Storing tools, equipment and products safely and appropriately f) Using the correct PPE g) Following manufacturers recommendations h) Following application procedures e.g. hazardous substances 11. The correct selection and use of exhaust extraction equipment. 12. Typical workplace processes which would require the use of PPE to include and cover: a) Welding b) Sanding and grinding c) Filling d) Drilling e) Cutting f) Chiselling

	g) Servicing and repair activities h) Roadside recovery i) Working under a vehicle 13. PPE required for a range of motor vehicle repair activities to include and cover the protection of: a) Eyes b) Ears c) Head d) Skin e) Feet f) Hands g) Lungs 14. Placement of warning labels on containers used in the Motor Vehicle Industry. 15. Warning labels in common use, to include and cover: a) Toxic b) Corrosive c) Poisonous d) Harmful e) Irritant f) Flammable g) Explosive 15. Elements that produce a fire to include and cover: a) Oxygen b) Fuel c) Heat 16. Classification of fire types that may occur in a motor vehicle workshop. 17. Types of Extinguishers to include and cover: a) Foam b) Dry powder c) CO2 d) Water e) Fire blanket 18. Action to be taken in the event of a fire to include and cove: a) Raise the alarm b) Fight fire only if appropriate c) Evacuate building d) Call for assistance 19. The difference between a risk and a hazard. 20. Potential risks when working on motor vehicles to include and cover: a) The use and maintenance of machinery or equipment b) The use of materials or substances c) Accidental breakages and spillages d) Unsafe behaviour e) Working practices that do not conform to policies f) Environmental factors g) Personal presentation h) Unauthorised personal, customers, contractors entering your work premises

	i) Working by the roadside j) Vehicle recovery 21. Colours used for warning signs to include and cover: a) Red b) Blue c) Green 22. Shapes and meaning of warning signs to include and cover: a) Round b) Triangular c) Square 23. The meaning of prohibitive warning signs. 24. The meaning of mandatory warning signs. 25. The meaning of warning notices. 26. Warning labels in use to include and cover: a) Toxic b) Corrosive c) Poisonous d) Harmful e) Irritant f) Flammable g) Explosive 27. The purpose of workplace policies and procedures to include and cover: a) The use of safe working methods and equipment b) The safe use of hazardous substances c) Smoking, eating, drinking and drugs d) Emergency procedures e) Personal appearance 28. The difference between a risk and a hazard. 29. Potential risks to include and cover: a) The use and maintenance of machinery or equipment b) The use of materials or substances c) Accidental breakages and spillages d) Unsafe behaviour e) Working practices that do not conform to laid down policies f) Environmental factors g) Personal presentation h) Unauthorised personal, customers, contractors etc entering your work premises i) Working by the roadside j) Vehicle recovery 30. The employee's responsibilities in identifying and reporting risks within their working environment. 31. Potential accidents to include and cover: a) Fire b) Explosion c) Noise d) Harmful fumes e) Slips

	f) Trips g) Falling objects h) Accidents whilst dealing with broken down vehicles 32. Action to be taken in the event of accidents 33. The sequence of events following the discovery of an accident to include and cover: a) Make the area safe b) Remove hazards if appropriate i.e. switch off power c) Administer minor first aid d) Take appropriate action to re-assure the injured person e) Raise the alarm f) Get help g) Report the accident 34. Examples of bad practice which may result in further injury to include and cover: a) Moving the injured person b) Removing objects from wounds or eyes c) Inducing vomiting 35. Importance of recycling and the correct disposal of waste.
2. Recognise the appropriate manual handling techniques and the safe use of equipment.	**Scope** **Teaching will cover:** 1. Regulations covered in the Manual Handling Operations Regulations 1992. 2. Employers duty to include and cover: a) The need for hazardous manual handling, 'so far as is reasonably practicable. b) Assess the risk of injury from any hazardous manual handling that can't be avoided. c) Reduce the risk of injury from hazardous manual handling, 'so far as is reasonably practicable. 3. Employees duty to know the manual handling risks and offer practical solutions to controlling those risks to include and cover: a) The size, shape or weight of loads b) How often loads are handled c) The order in which the tasks are carried out d) The environment in which the handling operations are carried out 4. How to carry out a risk assessment before manual handling takes place. 5. Manual handling principles to include and cover: a) Plan- Plan your lift b) Position- Centre the body and feet correctly c) Pick- Lift item using correct posture d) Proceed- Move towards destination e) Place- Set object down safely 6. PUWER (Provision and Use of Work Equipment Regulations) 1998

	7. The work equipment covered to include and cover: a) General tools' such as hammers, spanners, ratchet, screwdrivers etc b) Single machines such as drilling machines, circular saws, bench grinders, etc c) Lifting equipment such as engine hoists, lift trucks, elevating work platforms, lifting slings etc d. Other equipment such as ladders, pressure water cleaners etc 8. PPE required for the safe use of equipment to include and cover: a) Overalls b) Safety boots c) Goggles d) Masks e) Gloves f) High visibility clothing g) Any other recommended by the manufacturer 9. Carrying out a risk assessment when using equipment. 10. Importance of correct training before using equipment. 11. Procedure for identifying risks and hazards before using tools and equipment. 12. What to do if equipment is defective and not fit for purpose. 13. What to do in the event of an emergency when using tools and equipment.
3. Know about fire prevention and emergency procedures.	**Scope** **Teaching will cover:** 1. Potential causes of fire and how to minimise the risk of fire. 2. Following workplace policies and rules to prevent the risk of fire. 3. The 3 elements that cause a fire to cover and include. a) Heat b) Fuel c) Oxygen 4. Different types of fire extinguishers used to extinguish a fire, their colour, and what type of fire they should and should not be used on to cover and include: a) Water (Red) b) CO2 (Black) c) Foam (Cream) d) Dry Powder (Blue) e) Fire Blanket 5. Procedures that need to be followed in an emergency to cover and include: a) Alert other members of staff b) Contact emergency services c) Correct evacuation of the premises d) Application of first aid

	e) Correct location of emergency equipment f) Correct planning of a safe route to evacuate a building if necessary g) Emergency shut down plan of equipment

Title	Motor Vehicle Tools, Equipment and Consumable Materials
Level	Two
Credit Value	4
Guided Learning Hours (GLH)	32
OCN NI Unit Code	CBG264
Unit Reference No	H/650/7624
Learn Direct Code	XS1

Unit purpose and aim(s): This unit will enable the learner to understand and develop skills when using motor vehicle tools, equipment and consumable materials.

Learning Outcomes	Assessment Criteria
1. Know different motor vehicle tools and equipment used in maintenance and repair.	1.1. Identify different motor vehicle tools and equipment used in maintenance and repair activities and the use of each.
2. Know different motor vehicle consumable materials used in maintenance and repair.	2.1. Identify different consumable materials used in motor vehicle maintenance and repair activities and the use of each. 2.2. Locate and interpret appropriate information relating to consumable materials used in motor vehicle maintenance and repair.
3. Be able to select, check and use motor vehicle tools and equipment for maintenance and repair.	3.1. Select, check and use motor vehicle tools and equipment for maintenance and repair activities.
4. Be able to select and use motor vehicle consumable materials for maintenance and repair.	4.1. Select and use motor vehicle consumable materials to maintain and repair vehicles.
5. Be able to interpret vehicle engineer drawings.	5.1. Interpret a given vehicle engineer drawing.
6. Be able to cut, file, tap, make external threads and drill materials for motor vehicle maintenance and repair.	6.1. Cut, file, tap, make external threads and drill materials for motor vehicle maintenance and repair activities.

Assessment Guidance
NOS:
IMICA04 Use of tools and equipment in motor vehicle environments

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary

E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Motor Vehicle Tools, Equipment and Consumable Materials
1. Know different motor vehicle tools and equipment used in maintenance and repair.	**Scope** **Teaching will cover:** 1. Identify the use of common types of hand tools used for fabricating and fitting in the automotive environment. 2. Identification, uses and risks of various tools and equipment to include: a) Hand tools b) Pneumatic tools c) Mechanical tools d) Electrical tools e) Hydraulic tools 3. How to store and maintain tools and equipment. 4. PPE that should be used when using tools and equipment. 5. Identify instructions when using tools and equipment 6. Use and maintenance of garage equipment to include: a) Lifts b) Jacks c) Axle Stands d) Part cleaners e) Drills f) Hydraulic press g) Wheel balancer h) Tyre machine i) Compressor/air lines
2. Know different motor vehicle consumable materials used in maintenance and repair.	**Scope** **Teaching will cover:** 1. The different types of consumable materials used in the repair and maintenance of motor vehicles to include: a) Lubricants b) Sealants c) Fluids d) Fastening devices e) Cleaning equipment f) Any other used in the repair and maintenance of motor vehicles 2. Follow manufacturer's specification when deciding where to use consumables. 3. Follow manufacturer's specification for the correct storage and disposal of consumable materials. 4. PPE to be used when using consumable materials that are recommended by the manufacturer and hazards associated with using them.

3. Be able to select, check and use motor vehicle tools and equipment for maintenance and repair.	**Scope** **Teaching will cover:** 1. How to use and check common types of tools and equipment used in the repair and maintenance of motor vehicles to include: a) Hand tools b) Pneumatic tools c) Mechanical tools d) Electrical tools e) Hydraulic tools 2. Correct use of PPE when using tools and equipment. 3. Carry out risk assessment when using tools and equipment for maintenance and repair activities. 4. Correct storage and maintenance of tools and equipment. 5. Correct reporting procedure when identifying faulty tools and equipment.
4. Be able to select and use motor vehicle consumable materials for maintenance and repair.	**Scope** **Teaching will cover:** 1. The correct use of consumable materials used in the maintenance and repair of motor vehicles and risks involved to include: a) Lubricants b) Fluids c) Fastening devices d) Cleaning equipment e) Sealants f) Any other used in the repair and maintenance of motor vehicles 2. Use correct consumables in the correct location. 3. Use correct PPE when using consumable materials. 4. How to store consumable materials in correct place. 5. Report when consumable materials are not available.

5. Be able to interpret vehicle engineer drawings.	**Scope** **Teaching will cover:** 1. How to interpret and read an engineer drawing. 2. How to read an engineer's drawing to produce a completed piece of work.
6. Be able to cut, file, tap, make external threads and drill materials for motor vehicle maintenance and repair.	**Scope** Teaching will cover: 1. Identify and use various tools used in engineering activities to include: a) Cutting equipment b) Tap c) Die d) Drill e) Square f) Ruler g) Dividers h) Scribe i) Any other used in engineering activities 2. Correct use of PPE when using tools and carrying out engineering activities. 3. Risks associated with using engineering tools. 4. How to produce an engineered object by reading and interpreting engineer drawings.

Title	Brake System Operation and Components
Level	Two
Credit Value	6
Guided Learning Hours (GLH)	48
OCN NI Unit Code	CBG265
Unit Reference No	J/650/7625
Learn Direct Code	XS1

Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with brake systems operations and components.

Learning Outcomes	Assessment Criteria
1. Know the construction, function and operation of motor vehicle braking systems and components.	1.1. Describe the construction and function of braking systems and components. 1.2. Describe how to remove, dismantle, repair and reinstate braking systems and components. 1.3. Describe the effects that heat can have on braking efficiency and components.
2. Be able to perform service and repair operations on motor vehicle braking systems and components.	2.1. Identify braking systems, types and associated components. 2.2. Perform tests, remove, dismantle, repair and reinstate braking systems to meet manufacturers, technical and legislative compliance. 2.3. Identify and report on braking system condition following tests performed in AC 2.2.

Assessment Guidance
NOS:
LANLEO14 Service and repair braking systems on land-based equipment
IMIVF12 Inspect and replace light vehicle braking systems and components
SEMAUT3008 Assembling braking systems to vehicles

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Brake System Operation and Components
1. Know the construction, function and operation of motor vehicle braking systems and components.	**Scope** **Teaching will cover:** 1. The construction and operation of drum brake systems to include: a) Leading and trailing shoe construction b) Self-servo action c) Automatic adjusters d) Backing plates e) Parking brake system 2. The construction and operation of disc brake systems to include: a) Disc pads b) Calliper c) Brake disc d) Ventilated disc e) Disc pad retraction f) Parking brake system g) Electrical and electronic components h) Wear indicators and warning lamps 3. The construction and operation of the hydraulic braking systems to include: a) Single and dual line layout b) Master cylinders c) Wheel cylinders d) Disc brake calliper & pistons e) Brake pipe f) Brake servo g) Warning lights h) Parking brakes i) Equalising valves 4. The principles and components of electronic ABS systems, electrical and electronic components. 5. The requirements and hazards of brake fluid to include: a) Boiling point of brake fluid b) Hygroscopic action c) Manufacturer's change periods d) Fluid classification and rating e) Potential to damage paint surfaces 6. Terms associated with mechanical and hydraulic braking systems to include: a) Braking efficiency b) Brake fade c) Brake balance d) ABS 7. The procedures used for inspecting the serviceability and condition of the braking system. 8. Braking system defects and problems to include: a) Worn shoes or pads b) Worn or scored brake surfaces c) Abnormal brake noises d) Brake judder e) Fluid contamination of brake surfaces

	f) Fluid leaks g) Pulling to one side h) Poor braking efficiency i) Lack of servo assistance j) Brake drag k) Brake grab l) Brake fade
2. Be able to perform service and repair operations on motor vehicle braking systems and components.	**Scope** **Teaching will cover:** 1. The procedures for dismantling, removal and replacement of braking system components and safety precautions to be taken to include: a) Testing and use of tools and equipment b) Electrical meters and equipment used for dismantling c) Removing and replacing braking systems and components 2. Safety precautions when working on the braking system to include: a) PPE required b) Vehicle protection when dismantling c) Removing and replacing braking systems and components 3. Importance of logical and systematic processes. 4. Inspection and testing of braking systems and components to include: a) Brake fluid moisture content level b) Master cylinder for leaks c) Brake pipes for corrosion/damage d) Brake hoses for security and damage e) Brake pads/shoes for wear and contamination f) Brake disc/drum for wear and damage g) Brake disc run out h) Brake calipers/cylinders for leaks/damage i) Parking brake operation 5. Preparation of replacement units for re-fitting or replacement of braking systems or components. 6. Reasons why replacement components and units must meet the original specifications (OES) to include: a) Warranty requirements b) Maintain performance c) Safety requirements d) Refitting procedures 7. Inspection and testing of units and systems to ensure compliance with manufacturer's, legal and performance requirements. 8. Inspection and re-instatement of the vehicle following repair to ensure customer satisfaction to include: a) Cleanliness of vehicle interior and exterior b) Security of components and fittings c) Re-instatement of components and fittings 9. How to complete a task sheet or Jobcard

Title	Steering System Operation and Components
Level	Two
Credit Value	5
Guided Learning Hours (GLH)	40
OCN NI Unit Code	CBG266
Unit Reference No	K/650/7626
Learn Direct Code	XS1
Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with steering system operations and components.	

Learning Outcomes	Assessment Criteria
1. Know the construction, function and operation of motor vehicle steering systems and components.	1.1. Describe the working principles of steering systems and their application. 1.2. Describe the types, construction and function of steering system components. 1.3. Describe the principles and geometry of steering systems. 1.4. Describe how to remove, dismantle, reassemble and replace steering system components. 1.5. Outline the methods of checking and adjusting steering geometry.
2. Be able to perform service operations on motor vehicle steering systems.	2.1. Remove, dismantle, reassemble, and reinstate steering systems to meet manufacturer's, technical and legislative compliance. 2.2. Using appropriate tools and equipment, check and set steering geometry. 2.3. Identify and rectify the cause of steering faults.

Assessment Guidance
NOS:
LANLEOO15 Service and repair wheeled and tracked steering systems on land-based equipment

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Steering System Operation and Components
1. Know the construction, function and operation of motor vehicle steering systems and components.	**Scope** **Teaching will cover:** 1. The action and purpose of steering geometry to include and cover: a) Castor angle b) Camber angle c) Kingpin or swivel pin inclination d) Wheel alignment (tracking) (toe in and toe out) e) Toe out on turns f) Steered wheel geometry 2. The following terms associated with steering to include and cover: a) Ackerman principle b) Slip angles c) Self-aligning, oversteer and understeer d) Neutral steer 3. The components and layout of hydraulic power steering systems: a) Piston and power cylinders b) Drive belts and pumps c) Hydraulic valve (rotary, spool and flapper type) d) Hydraulic fluid 4. The advantages of power assisted steering. 5. The operation of hydraulic power steering. 6. The principles of electronic power steering systems. 7. Advantages of electronic PAS. 8. Different types of steering mechanisms used, steering boxes, steering racks. 9. Variable pitch steering rack. 10. The components and layout of electronic power steering system to include and cover: a) Motor b) Torque/Angle sensor c) ECU
2. Be able to perform service operations on motor vehicle steering systems.	**Scope** **Teaching will cover:** 1. Correct use of necessary PPE and use of lifting equipment and tools. 2. The procedures used for inspecting the serviceability and condition of: a) Manual steering b) Power steering 3. Steering system and how to identify defects to include and cover: a) Uneven tyre wear b) Wear on outer edge of tyre c) Wear on inner edge of tyre d) Uneven wear

	e) Flat spots f) Steering vibrations g) Wear in linkage h) Damage linkage i) Incorrect wheel alignment j) Incorrect steering geometry 4. Steering system defects to include and cover: a) Excessive wear on track rod end/tie rod/ball joints b) Excessive wear on any links or bushes c) Defective PAS system 5. Correct procedures for removing and replacing steering components. 6. Checking and adjusting wheel alignment and reading technical data.

Title	Electrical Circuit Operation and Components
Level	Two
Credit Value	6
Guided Learning Hours (GLH)	48
OCN NI Unit Code	CBG267
Unit Reference No	L/650/7627
Learn Direct Code	XS1
Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with electrical circuit operations and components.	

Learning Outcomes	Assessment Criteria
1. Know the construction, function and operation of motor vehicle electrical systems, circuits and components.	1.1. Identify electrical circuits and components and their function from wiring diagrams and visual recognition. 1.2. Summarise Ohm's law, its application and principles. 1.3. Compare the specification, safe maintenance and charging of different types of batteries. 1.4. Describe the principles, construction and function of electrical circuits and components. 1.5. Describe how to remove, dismantle, test, verify, repair and reinstate electrical circuits and components. 1.6. Outline possible risks posed to electrical systems and components by other activities or incidents.
2. Be able to perform service and repair operations on motor vehicle electrical systems and components.	2.1. Perform tests using equipment and practices to measure and verify the correct operation of electrical systems and components. 2.2. Identify and rectify faults in electrical systems and components maintaining the integrity of electrical systems. 2.3. Remove, dismantle, repair and reinstate electrical components and circuits to manufacturer's specifications and standards.

Assessment Guidance
NOS:
IMIAEMEI01 Locate and correct motor vehicle electrical faults
IMIAEMEI06 Diagnose and rectify motor vehicle electrical unit and component faults

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/ assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log

Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Electrical Circuit Operation and Components
1. Know the construction, function and operation of motor vehicle electrical systems, circuits and components.	**Scope** **Teaching will cover:** 1. Electrical/Electronic Principles. 2. Electrical units to include and cover: a) Volt (electrical pressure) b) Ampere (electrical current) c) Ohm (electrical resistance) d) Watt (power) 3. The requirements for an electrical circuit in a motor vehicle to include and cover: a) Battery b) Cables c) Switch d) Current consuming device e) Continuity 4. Series and parallel circuits to include and cover: a) Current flow b) Voltage of components c) Volt drop d) Resistance e) The effect on circuit operation of open circuit components 5. Earth and insulated return systems. 6. Cable sizes and colour codes. 7. Different types of connectors, terminals and circuit protection devices. 8. Common electrical and electronic symbols. 9. The meaning of the following terms: a) Short circuit b) Open circuit c) Bad earth d) High resistance e) Electrical capacity 10. The principles of vehicle electronic systems and components. 11. Interpret vehicle wiring diagrams to include and cover: a) Vehicle lighting b) Auxiliary circuits c) Indicators d) Starting and charging systems 12. Function and construction of electrical components in a motor vehicle to include and cover: a) Circuit relays b) Bulb types c) Fan and heater d) Circuit protection

	13. The construction and operation of vehicle batteries to include and cover: a) Low maintenance and maintenance free b) Lead acid and nickel cadmium types c) Cells d) Separators e) Plates f) Electrolyte 14. The operation of the vehicle charging system to include and cover: a) Alternator b) Rotor c) Stator d) Slip ring e) Brush assembly f) Three phase output g) Diode rectification pack h) Voltage regulation i) Cooling fan j) Alternator drive system 15. The layout, construction and operation of engine starting systems: inertia and pre-engaged starters. 16. The function and operation of the following components to include and cover: a) Inertia and pre-engaged starter motor b) Starter ring gear c) Pinion d) Starter solenoid e) Ignition/starter switch f) Starter relay (if appropriate) g) One-way clutch (pre-engaged starter motor) 17. Function and construction of lighting electrical components to include and cover: a) Front and tail lamps b) Main and dip beam headlamps c) Fog and spot lamps d) Lighting and dip switch e) Directional indicators 18. The circuit diagram and operation of components to include and cover: a) Side and tail lamps b) Headlamps c) Interior lamps d) Fog and spot lamps e) Direction indicators 19. The legal requirements for vehicle lighting when using a vehicle on the road. 20. Headlamp adjustment and beam setting. 21. Function and construction of electrical components to include and cover: a) Central door locking b) Anti-theft devices c) Manual locking and dead lock systems

	d) Window winding e) Demisting systems f) Door mirror operation mechanisms g) Interior lights and switching
2. Be able to perform service and repair operations on motor vehicle electrical systems and components.	**Scope** **Teaching will cover:** 1. Preparing, testing and using equipment to include and cover: a) tools and equipment used for electrical equipment b) electrical meters and equipment used for dismantling, removal, replacement and testing electronic systems and components 2. Appropriate safety precautions when working on the electronic system to include and cover: a) PPE b) vehicle protection when dismantling c) removal and replacing electrical and electronic components and systems 3. The importance of logical processes. 4. Preparation of replacement units for re-fitting or replacement electrical and electronic components and systems. 5. The reasons why replacement components and units must meet the specification and warranty requirements to maintain performance and safety requirements. 6. The inspection and testing of electronic units and systems to ensure compliance with manufacturer's, legal and performance requirements. 7. Inspection and re-instatement of the vehicle following repair to include and cover: a) customer satisfaction b) cleanliness of vehicle interior and exterior c) security of components and fittings d) re-instatement of components and fittings 8. Motor vehicle electronic checks for electrical and electronic systems to include and cover: a) connections b) security of components and connections c) functionality d) performance to specifications e) continuity, open circuit f) short circuit g) high resistance h) volt drop i) current consumption j) output patterns (oscilloscope)

	9. Symptoms and faults associated with electrical and electronic systems to include and cover: a) high resistance b) loose and corroded connections c) short circuit d) excessive current consumption e) open circuit f) malfunction g) poor performance h) battery faults to include flat battery i) failure to hold charge j) low state of charge k) overheating l) poor starting 10. How to perform service checks on a battery to include and cover: a) Security b) Connections c) Electrolyte level d) State of charge 11. Correct procedure for removing and replacing a battery. 12. Correct procedure for charging a battery. 13. Correct procedure for removing and replacing an alternator 14. How to perform service checks on an alternator to include and cover: a) Output b) Connections c) Belt condition and tension d) Security

Title	Engine Operation and Components
Level	Two
Credit Value	8
Guided Learning Hours (GLH)	64
OCN NI Unit Code	CBG268
Unit Reference No	M/650/7628
Learn Direct Code	XS1

Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with engine operations and components.

Learning Outcomes	Assessment Criteria
1. Know the construction, function and operation of two stroke, four stroke spark and compression ignition engines and components.	1.1. Describe the types, construction and operating principles of two stroke, four stroke spark and compression ignition engines. 1.2. Describe the function and types of two stroke, four stroke spark and compression ignition engine components. 1.3. Describe engine features and purpose. 1.4. Describe how to remove, dismantle, repair and reinstate engines and components. 1.5. Describe engine starting and stopping procedures. 1.6. Identify fuel systems and components used in engines.
2. Be able to perform service and repair procedures on engines and their components.	2.1. Identify engine types and their components. 2.2. Remove, dismantle, repair and reinstate ancillary engine components and sub-assemblies to meet manufacturers' technical and legislative compliance.

Assessment Guidance
NOS:
LANLEO11 Service and maintain engines on land—based equipment
SEMMME3111 Overhauling piston engines

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Engine Operation and Components
1. Know the construction, function and operation of two stroke, four stroke spark and compression ignition engines and components.	**Scope** **Teaching will cover:** 1. Engine types and configurations used in motor vehicles to include and cover: a) inline b) flat c) vee 2. Four-stroke cycle and two-stroke cycle for spark ignition and compression ignition engines. 3. Difference between four and two-stroke engines. 4. Naturally aspirated and turbo-charged engines. 5. Hybrid fuel engines. 6. Relative advantages and disadvantages of different engine types and configurations. 7. Engine components and layouts to include and cover: a) single (OHC) and multi camshaft (DOHC) b) single and multi cylinder layouts 8. Cylinder head layout and design, combustion chamber and piston design. 9. Engine features and purpose. 10. SI Engine fuel and ignition components to include and cover: a) Coils b) Spark Plugs c) Plug leads d) Injectors (MPI/SPI) e) Common rail f) Fuel Pump g) Fuel Filter 11. CI Engine fuel and Ignition components to include and cover: a) Low pressure fuel pump b) Fuel filter c) High pressure fuel pump d) Common rail e) Injectors (Direct Injection/Indirect Injection) f) Heater Plugs g) Diesel cooler 12. The chemically correct air/fuel ratio for petrol engines as 14.7:1 (lambda 1, stoichiometric ratio). 13. Weak and rich air/fuel ratios for petrol engines. 14. Exhaust composition and by-products for chemically correct, rich and weak air/fuel ratios of petrol engines to include and cover: a) water vapour (H_2O) b) nitrogen (N)

	c) carbon monoxide (CO) d) carbon dioxide (CO_2) e) carbon (C) f) hydrocarbon (HC) g) oxides of nitrogen (NOx, NO_2, NO) and particulates 15. The advantages and disadvantages of diesel and petrol engines. 16. Air supply and exhaust systems to include and cover: a) The construction and purpose of air filtration systems b) The operating principles of air filtration systems c) The construction and purpose of the exhaust systems d) The operating principles of the systems e) Exhaust system design to include silencers and catalytic converters 17. The procedures used when inspecting induction, air filtration and exhaust systems. 18. Symptoms and faults associated with air and exhaust systems to include and cover: a) Exhaust gas leaks b) Air leaks 19. The preparation, testing and use of tools and equipment used for: a) Dismantling b) Removal and replacement of engine units and components 20. Appropriate safety precautions to include and cover: a) PPE b) Vehicle protection when dismantling c) Removal and replacing engine units and components 21. The important of logical and systematic processes. 22. The inspection and testing of engine units and components. 23. The preparation of replacement units for re-fitting or replacement. 24. The reasons why replacement components and units must meet the original specifications (OES) – warranty requirements, to maintain performance and safety requirements. 25. Refitting procedures. 26. The inspection and testing of units and system to ensure compliance with manufacturer's, legal and performance requirements. The inspection and re-instatement of the vehicle following repair to ensure customer satisfaction to include and cover: a) Cleanliness of vehicle interior and exterior b) Security of components and fittings c) re-instatement of components and fittings
2. Be able to perform service and repair procedures on engines and their components.	**Scope** **Teaching will cover:** 1. Use of personal protective equipment and vehicle coverings throughout all light vehicle engine unit and component removal and replacement activities.

	2. How to work in a way which minimises the risk of damage or injury to the vehicle, people and the environment. 3. How to select suitable sources of technical information to support light vehicle engine unit and component removal and replacement activities to include and cover: a) Vehicle technical data b) Removal and replacement procedures c) Legal requirements 4. How to use technical information to support light vehicle engine unit and component removal and replacement activities. 5. How to select the appropriate tools and equipment necessary for removal and replacement of light vehicle engine systems. 6. Ensure that equipment has been calibrated to meet manufacturers and legal requirements. 7. How to use the correct tools and equipment in the way specified by manufacturers to remove and replace light vehicle engine systems. 8. How to remove and replace the light vehicle's engine systems and components, adhering to the correct specifications and tolerances for the vehicle to include and cover: a) the manufacturer's approved removal and replacement methods b) recognised researched repair methods c) health and safety requirements 9. How to ensure that replacement light vehicle engine units and components conform to the vehicle operating specification and any legal requirements. 10. How to use suitable testing methods to evaluate the performance of the reassembled system. 11. How to ensure that the reassembled light vehicle engine systems perform to the vehicle operating specification and meets any legal requirements. 12. Production of work records that are accurate, complete and passed to the relevant person(s) promptly in the format required. 13. Make suitable and justifiable recommendations for cost effective repairs. 14. Record and report any additional faults noticed during the course of their work promptly in the format required.

Title	Engine Lubrication and Cooling Systems Operation and Components
Level	Two
Credit Value	5
Guided Learning Hours (GLH)	40
OCN NI Unit Code	CBG269
Unit Reference No	R/650/7629
Learn Direct Code	XS1
Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with engine lubrication and cooling system operations and components.	

Learning Outcomes	Assessment Criteria
1. Know the construction and function of motor vehicle cooling and lubrication systems and components.	1.1. Outline the reasons and methods for the control of temperature in vehicle applications. 1.2. Describe the causes and symptoms of insufficient cooling and lubrication. 1.3. Describe the fundamental operating principles of lubrication and cooling systems in engines. 1.4. Outline the reasons for lubrication and cooling systems in engines. 1.5. Describe how to drain, dismantle, repair, reinstate and test cooling and lubrication systems.
2. Be able to perform service and repair operations on motor vehicle cooling and lubrication systems.	2.1. Identify different types of cooling and lubrication systems and components. 2.2. Identify different types of coolants and lubricants and select the appropriate product to comply with manufacturers' specifications. 2.3. Perform tests, drain, dismantle, repair, and reinstate cooling and lubrication systems to meet manufacturers' technical and legislative compliance.

Assessment Guidance
NOS:
LANLEO10 Apply core land-based engineering principles: cooling and lubrication

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log

Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Engine Lubrication and Cooling Systems Operation and Components
1. Know the construction and function of motor vehicle cooling and lubrication systems and components.	**Scope** **Teaching will cover:** **Lubrication System** 1. The purpose of a lubrication system in an engine 2. The advantages and disadvantages of wet and dry systems 3. Engine lubrication system to include: a) Splash and pressurised systems b) Pumps c) Pressure relief valve d) Filters e) Oil ways f) Oil coolers 4. Terms associated with lubrication and engine oil and their meaning to include: a) Full-flow b) Hydrodynamic c) Boundary d) Viscosity e) Multi-grade f) Natural and synthetic oil g) Viscosity index h) Multi-grade 5. The requirements and features of engine oil to include: a) Operating temperatures b) Pressures c) Lubricant grades d) Viscosity e) Multi-grade oil f) Additives g) Detergents h) Anti-oxidants inhibitors i) Anti-foaming agents j) Anti-wear k) Synthetic oils l) Organic oils m) Mineral oils 6. Symptoms and faults associated with lubrication systems to include: a) Excessive oil consumption b) Oil leaks c) Oil in water/coolant d) low or excessive pressure e) Oil contamination 7. The procedures used when inspecting lubrication system to include: a) Visual Inspection b) Oil pressure test c) Oil level

	Cooling System 1. Components, operating principles, and functions of engine cooling systems 2. Procedures used to remove, replace and adjust cooling system components to include: a) Cooling fans and control devices b) Header tanks, radiators and pressure caps c) Heater matrix and temperature control systems d) Expansion tanks hoses, clips and pipes e) Thermostats impellers and coolant f) Ventilation systems 3. The preparation and method of use of appropriate specialist equipment used to evaluate system performance following component replacement to include: a) System pressure testers b) Pressure cap testers c) Hydrometer, or anti-freeze testing equipment d) Chemical tests for the detection of combustion gas 4. The layout and construction of internal heater systems. 5. The controls and connections within internal heater system. 6. Symptoms and faults associated with cooling systems to include: a) Water leaks b) Water/Coolant in oil c) Internal heating system: efficiency, operation, leaks, controls, air filtration, air leaks and contamination d) Excessively low or high coolant temperature 7. The procedures used when inspecting: a) Internal heating system b) Cooling system 8. The difference between Liquid cooled and Air cooled engines. 9. Advantages and disadvantages of both Liquid and Air cooled engines. 10. Air cooled engine operation and construction.
2. Be able to perform service and repair operations on motor vehicle cooling and lubrication systems.	**Scope** **Teaching will cover:** 1. Use of personal protective equipment and vehicle coverings throughout all light vehicle engine cooling and lubrication component removal and replacement activities. 2. How to work in a way which minimises the risk of damage or injury to the vehicle, people and the environment.

	3. How to select suitable sources of technical information to support light vehicle engine cooling and lubrication component removal and replacement activities to include: a) Vehicle technical data b) Removal and replacement procedures c) Legal requirements 4. How to use technical information to support light vehicle engine cooling and lubrication component removal and replacement activities. 5. How to select the appropriate tools and equipment necessary for removal, replacement and testing of light vehicle engine cooling and lubrication system components. 6. How to ensure that equipment has been calibrated to meet manufacturers and legal requirements. 7. How to use the correct tools and equipment in the way specified by manufacturers to remove, replace and test light vehicle engine cooling and lubrication components. 8. How to remove, replace and test the light vehicle's engine cooling and lubrication systems and components, adhering to the correct specifications and tolerances for the vehicle and following: a) The manufacturer's approved removal and replacement methods b) Recognised researched repair methods c) Health and safety requirements 9. How to ensure that replacement light vehicle engine units and components conform to the vehicle operating specification and any legal requirements. 10. How to use suitable testing methods to evaluate the performance of the reassembled system. 11. How to ensure that the reassembled light vehicle engine cooling and lubrication system performs to the vehicle operating specification and meets any legal requirements. 12. Production of work records that are accurate, complete and passed to the relevant person(s) promptly in the format required. 13. Make suitable and justifiable recommendations for cost effective repairs. 14. Record and report any additional faults noticed during the course of their work promptly in the format required.

Title	Transmissions System Operation and Components
Level	Two
Credit Value	5
Guided Learning Hours (GLH)	40
OCN NI Unit Code	CBG270
Unit Reference No	A/650/7630
Learn Direct Code	XS1

Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with transmissions system operations and components.

Learning Outcomes	Assessment Criteria
1. Know different transmissions and gearboxes.	1.1. Describe the types, construction, characteristics and operating principles of transmissions and gearboxes. 1.2. Describe the drive path through a mechanical transmission and components using manufacturer's schematic drawings.
2. Know how to remove, repair and reinstate transmissions.	2.1. Describe how to remove, dismantle, repair and reinstate transmissions and components.
3. Know how to identify mechanical transmission faults.	3.1. Illustrate how to identify mechanical transmission faults.
4. Be able to perform service and repair operations on mechanical transmissions.	4.1. Remove, dismantle, repair and reinstate transmission assemblies and components to manufacturers specifications and standards. 4.2. Identify and report faults in mechanical transmission assemblies and components.

Assessment Guidance0000
NOS:
LANLEO26 Service and repair transmission systems on land-based equipment
IMILV13 Diagnose and rectify light vehicle transmission and driveline system faults - National Occupational Standards (ukstandards.org.uk)

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Transmissions System Operation and Components
1. Know different transmissions and gearboxes.	**Scope** **Teaching will cover:** 1. Clutch operating mechanisms to include: a) Pedal and lever b) Hydraulic operated c) Mechanical d) Cable operated e) Hydraulic components f) Master cylinder g) Slave cylinder h) Hydraulic pipes i) Electrical and electronic components (fluid level indicators) 2. The function of a clutch. 3. The construction and operation of a clutch to include: a) Hydraulically and cable operated clutches b) Coil spring clutches c) Diaphragm spring clutches d) Single plate clutches e) Multi plate clutches 4. The reasons for fitting gearboxes, to provide neutral, reverse, torque multiplication. 5. Different gearbox types: transverse and inline layouts. 6. The layout and construction of gears and shafts for 4, 5 and 6 speed gearbox designs, sliding mesh, constant mesh and synchromesh gearboxes reverse gear. 7. The construction and operation of: a) Gear selection linkages b) Selector forks and rods c) Detents and interlock mechanisms 8. The construction and operation of synchromesh devices. 9. The arrangements for gearbox bearings to include: a) Bushes b) Oil seals c) Gaskets and gearbox lubrication d) Speedometer drive 10. The electrical and electronic components including reverse lamp switch. 11. Calculate gear ratios and driving torque for typical gearbox specifications. 12. The operation of driveline components. 13. The layout and construction of prop shafts and drive shafts used in front wheel, rear wheel and four-wheel drive systems. 14. The reasons for using flexible couplings and sliding joints in transmissions systems.

	15. The reason for using constant velocity joints in drive shafts incorporating steering mechanisms. 16. The construction and operation of shafts to include: a) Universal joints b) Sliding couplings c) Constant velocity joints 17. The construction and operation of differential to include: a) Final drive units b) Crown wheel & pinion c) Bevel d) Hypoid and helical gears e) Differential gears f) Lubricants g) Limited slip differential h) Bearings and seals i) Reasons for fitting a differential 18. Torque converters used on automatic transmission and their function to include: a) Impeller b) Turbine c) Stator d) Clutch 19. Epicyclic gear sets and gears a) Sun b) Planet c) Ring 20. Function of brake bands in an automatic transmission. 21. CVT (Constant Variable Transmission) operation and components: a) Primary Pulley b) Secondary Pulley c) Belt
2. Know how to remove, repair and reinstate transmissions.	**Scope** **Teaching will cover:** 1. Preparation, testing and use of tools and equipment, electrical meters and equipment used for dismantling, removing and replacing transmission systems and components. 2. Appropriate safety precautions to include: a) PPE b) vehicle protection when dismantling c) removing and replacing transmission systems and components d) The importance of logical and systematic processes 3. The inspection and testing of transmission systems and components to include: a) Visual Inspection b) Aural Inspection c) Functional Inspection d) Readings and measurements

	4. The preparation of replacement units for refitting or replacement of transmission systems or components. 5. The reasons why replacement components and units must meet the original specifications to include: a) Warranty requirements b) To maintain performance c) Safety requirements d) Refitting procedures 6. The inspection and testing of units and system to ensure compliance with manufacturer's, legal and performance requirements. 7. The inspection and re-instatement of the vehicle following repair to ensure customer satisfaction to include: a) Cleanliness of vehicle interior and exterior b) Security of components and fittings c) Instatement of components and fittings 8. Types of wheel bearing arrangements to include: a) Fully floating b) Three quarter floating c) Semi floating
3. Know how to identify mechanical transmission faults.	**Scope** **Teaching will cover:** 1. The techniques and procedures used for inspecting and testing clutches and clutch mechanisms to include: a) Clearances b) Pedal and lever settings c) Cables & linkages d) Hydraulic system e) Leaks f) Adjustments g) Travel 2. The techniques and procedures used for inspecting and testing gearboxes to include: a) Leaks b) Gear selection c) Synchromesh operation d) Abnormal noise 3. The techniques and procedures used for inspecting and testing drive line systems (prop & drive shafts, couplings) to include: a) Security b) Serviceability of rubber boots c) Leaks d) Alignment 4. The techniques used when inspecting and testing final drive systems to include: a) Fluid levels b) Leaks c) Noise

	5. The faults and symptoms associated with transmission systems to include: a) Clutch faults b) Gearbox faults c) Drive line faults (propshaft, drive shaft) d) Universal and constant velocity joints e) Universal joint alignment f) Final drive faults
4. Be able to perform service and repair operations on mechanical transmissions.	**Scope** **Teaching will cover:** 1. Preparation, testing and use of tools and equipment, electrical meters and equipment used for the service and repair of transmission systems and components. 2. Appropriate safety precautions to include: a) Use of PPE b) Vehicle protection when dismantling c) Removing and replacing transmission systems and components 3. The importance of logical and systematic processes when servicing and repairing transmission systems and components. 4. Use the correct tools and equipment recommended by the manufacturer. 5. The importance of using replacement parts, lubricants and quantities recommended by the manufacturer. 6. How to perform service and repair tasks on a transmission as recommended by the manufacturer. 7. The different types of testing methods used to check the operation of transmission and driveline systems when service and repair is carried out. 8. How to correctly dispose of waste, oil and used parts.

Title	Practical Motor Vehicle Project
Level	Two
Credit Value	4
Guided Learning Hours (GLH)	32
OCN NI Unit Code	CBG271
Unit Reference No	D/650/7631
Learn Direct Code	XS1
Unit purpose and aim(s): This unit will enable the learner to undertake a motor vehicle project demonstrating appropriate industry skills and knowledge.	

Learning Outcomes	Assessment Criteria
1. Be able to research, develop and present solutions for a motor vehicle project.	1.1. Research and develop a minimum of two solutions for a given motor vehicle project considering: a) suitable sources of technical information b) inspection procedures c) health and safety requirements d) legal requirements e) skills required 1.2. Present, evaluate and justify the solutions identified in AC 1.1 including costs, timeframe and resources required.
2. Be able to carry out a motor vehicle project.	2.1. Carry out the motor vehicle solution justified in AC1.2 to include the following: a) completion of a risk assessment ensuring conformity to operating specification and legal requirements b) completion of a project plan including timeframes c) appropriate use of tools and equipment required for testing d) Personal Protective Equipment (PPE) required
3. Be able to assess completed motor vehicle project.	3.1. Assess own motor vehicle project carried out in AC2.1 considering: a) possible areas for improvement b) accurately complete appropriate work records c) recommend suitable and justifiable cost effective repairs d) record and report any additional faults identified during inspection

Delivery Guidance
NOS:
IMILV06 Inspect light vehicles

This unit must be delivered last and will simulate or be an 'on the job activity'. Learners will be given an opportunity to research the appropriate materials, tools and layouts to be submitted through a pre-assessment report. You must be observed by your assessor successfully carrying out at least one of the tasks listed below:

a) Pre-MOT/PSV test inspection

b) Safety inspection on equipment/machinery

c) Post repair inspection

Assessment Guidance		
The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.		
Assessment Method	**Definition**	**Possible Content**
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Practical Motor Vehicle Project
1. Be able to research, develop and present solutions for a motor vehicle project.	**Scope** **Teaching will cover:** 1. Different types of Motor vehicle inspections to include and cover: a) Safety inspection b) Pre MOT/PSV inspection c) Post repair inspections 2. Suitable sources of technical information when carrying out inspections to include and cover: a) Internet b) Workshop manuals c) Colleagues 3. Inspection procedures to include: a) Aural b) Visual c) Functional d) Readings 4. How to interpret findings after carrying out inspection procedures 5. Different areas to be inspected to include and cover: a) Steering, suspension and brakes b) Wheels & Tyres c) Engine systems d) Transmission systems e) Electrical and electronic systems f) Exterior body g) Vehicle Interior 6. Different methods to repair vehicles to meet manufacturers specification to include the use of: a) New genuine parts b) New non genuine spurious parts c) second hand parts 7. Advantages/disadvantages of using the above parts to include: a) Cost b) Guarantee c) Reliability d) Quality e) Time to replace
2. Be able to carry out a motor vehicle project.	**Scope** **Teaching will cover:** 1. methods for carrying out inspections on vehicles for: damage, corrosion, fluid leaks, wear, security, mounting security and condition to include and cover: a) Engines systems b) Brakes c) Steering d) Suspension e) Wheels f) Tyres g) Electrical and electronic systems and components h) Vehicle interior

	2. PPE/VPE required when carrying out vehicle inspections. 3. Tools and equipment used to carry out inspections to motor vehicles. 4. Use of suitable sources of technical data to support vehicle inspection to include and cover: a) Vehicle technical information b) Inspection procedures c) Legal requirements 5. Correct reporting of inspection and additional faults found when carrying out inspections. 6. Different methods used to repair vehicles and factors considered when carrying out additional repairs to include and cover: a) Repairing damaged component b) Fit new genuine part c) Fit new spurious part d) Fit second hand used part 7. Consideration of which method to use to include and cover: a) Cost b) Guarantee c) Reliability d) Quality e) Time to replace 8. Completion of necessary documents during vehicle inspections. • Present inspection to customer.
3. Be able to assess completed motor vehicle project.	**Scope** **Teaching will cover:** 1. How to self-evaluate and identify possible areas for improvement. 2. Correct completion of inspection records. 3. How to correctly justify repairs taking into consideration: a) Cost b) Time c) Guarantee d) Safety 4. Correct methods used to report additional faults to customer.

Title	Hydraulic System, Pneumatic Braking System Operation and Components
Level	Two
Credit Value	4
Guided Learning Hours (GLH)	32
OCN NI Unit Code	CBG272
Unit Reference No	F/650/7632
Learn Direct Code	XS1
Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with hydraulic systems, pneumatic braking system operations and components.	

Learning Outcomes	Assessment Criteria
1. Know the construction, function and operation of pneumatic braking systems.	1.1. Describe the construction and function of pneumatic braking systems and components. 1.2. Describe how to remove, dismantle, repair, and reinstate pneumatic braking systems and components. 1.3. Describe the effects that heat may have on pneumatic braking system efficiency and brake components. 1.4. Describe how the pressure in the pneumatic braking system is produced, stored, controlled, and distributed. 1.5. Describe common faults found on a pneumatic braking system.
2. Be able to perform service and maintenance operations on pneumatic braking systems and components.	2.1. Identify and locate pneumatic braking systems and components. 2.2. Perform tests, remove, dismantle, repair, and reinstate pneumatic braking systems to meet manufacturers, technical and legislative compliance in a safe and controlled manner. 2.3. Identify and report on pneumatic braking systems condition.
3. Know the construction, function and operation of pneumatic suspension systems.	3.1. Describe the construction and function of pneumatic suspension systems and components. 3.2. Describe how to remove, dismantle, repair, and reinstate pneumatic suspension systems and components. 3.3. Describe the safety precautions that must be adhered to when working on a heavy vehicle that is fitted with pneumatic suspension. 3.4. Describe how the pressure in the pneumatic suspension system is produced, stored, controlled, and distributed. 3.5. Describe common faults found on a pneumatic suspension system.
4. Be able to perform service and maintenance operations on pneumatic suspension systems and components.	4.1. Identify and locate pneumatic suspension systems and components. 4.2. Perform tests, remove, dismantle, repair, and reinstate pneumatic suspension systems to meet manufacturers, technical and legislative compliance in a safe and controlled manner. 4.3. Identify and report on pneumatic suspension systems condition.

5. Be able to perform service and maintenance operations on hydraulic systems and components.	5.1. Identify and locate hydraulic systems and components. 5.2. Remove dismantle, repair and reinstate hydraulic systems and components to manufacturer's specifications and factory settings.

Assessment Guidance
NOS:
LANLEO24 Service and repair hydraulic systems on land-based equipment
LANLEO14 Service and repair braking systems on land-based equipment

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Hydraulic System, Pneumatic Braking System Operation and Components
1. Know the construction, function, and operation of pneumatic braking systems.	**Scope** **Teaching will cover:** 1. The construction, function and operation of pneumatic drum brake systems to include and cover: a) Leading and trailing shoe construction b) Slack adjusters c) Cam expanders d) Wedge expanders e) Self-servo action f) Automatic adjusters g) Backing plates h) Parking brake system i) Wear indicators and warning systems 2. The construction, function and operation of pneumatic disc brake systems: a) Pads b) Calliper c) Brake disc d) Ventilated disc e) Pad retraction f) Parking brake system g) Electrical and electronic components h) Wear indicators and warning systems 3. The construction, function and operation of pneumatic braking systems to include and cover: a) Compressors b) Air dryers c) Processing units d) Pressure regulating valves e) Air reservoirs f) Circuit protection valves g) Foot valves h) Mechanical and automatic load sensing valves i) Brake actuators j) Parking brake mechanisms k) Trailer control valves l) Warning light/buzzer m) Air lines 4. The construction, function and operation of air over hydraulic systems to include and cover: a) Hydraulic control valves b) Transition from pneumatic pressure to hydraulic pressure c) Pneumatic control valves d) Air supply and storage 5. The requirements of brake fluid to include and cover: a) Hygroscopic b) Boiling point c) Change intervals d) Rating

	6. The construction, function and operation of retarder brakes to include and cover: a) Exhaust brake b) Engine brake c) Hydraulic retarder d) Electro-magnetic retarder 7. The construction, function and operation of ABS systems to include and cover: a) Category one b) Category two c) Category 3 d) Speed sensors e) Modulators f) ECU
2. Be able to perform service and maintenance operations on pneumatic braking systems and components.	**Scope** **Teaching will cover:** 1. Procedures used for inspecting pneumatic braking systems. 2. Pneumatic braking system defects to include and cover: a) Worn pads, discs, shoes and drums b) Abnormal noises c) Brake judder d) Brake drag e) Loss of air pressure f) Poor efficiency g) Contaminated braking components h) Brake fade i) Pulling to one side when braking j) Air or fluid leaks k) Brake grab 3. Procedures for dismantling, removal and replacement of pneumatic braking system components and safety precautions to be taken to include and cover: a) testing and use of tools and equipment b) electrical meters and equipment used for dismantling c) removing and replacing pneumatic braking systems and components 4. Safety precautions when working on the braking system to include and cover: a) PPE required b) vehicle protection when dismantling c) removing and replacing pneumatic braking systems and components 5. Importance of logical and systematic processes. 6. Inspection and testing of pneumatic braking systems and components. 7. Preparation of replacement units for re-fitting or replacement of pneumatic braking systems or components.

	8. Reasons why replacement components and units must meet the original specifications (OES) to include and cover: a) warranty requirements b) to maintain performance c) safety requirements d) Refitting procedures 9. Inspection and testing of units and systems to ensure compliance with manufacturer's, legal and performance requirements. 10. Inspection and re-instatement of the vehicle following repair to ensure customer satisfaction to include and cover: a) cleanliness of vehicle interior and exterior b) security of components and fittings c) re-instatement of components and fittings
3. Know the construction, function, and operation of pneumatic suspension systems.	**Scope** **Teaching will cover:** 1. Types and layout of pneumatic suspension systems to include and cover: a) Non-independent suspensions b) Independent suspension c) Pneumatic suspension d) Electronically controlled suspension e) Lifting axles f) Tandem axle suspensions 2. The operation of pneumatic suspension systems and components to include and cover: a) Leaf and coil springs b) Torsion bar c) Air springs d) Air suspension levelling system e) Dampers f) Trailing arms g) Ball joints h) Bump stops i) Anti-roll bars j) Stabiliser bars k) Swinging arms l) Parallel link m) Transverse link n) A Frame axle location o) Suspension damping 3. Pneumatic suspension terms and their meaning to include and cover: a) Rebound b) Bump c) Yaw d) Dive e) Pitch f) Roll g) Compliance

4. Be able to perform service and maintenance operations on pneumatic suspension systems and components.	**Scope** **Teaching will cover:** 1. Procedures for inspecting dismantling, removal and replacement of pneumatic suspension components. 2. Preparation of tools and equipment used for inspecting, dismantling, pneumatic suspension systems and components. 3. Safety precautions, PPE, vehicle protection. 4. Importance of logical and systematic processes. 5. Inspection and testing of pneumatic suspension systems and components. 6. Preparation of replacement units for re-fitting. 7. Reasons why replacement components must meet the original specifications (OES). Refitting procedures. 8. Inspection and testing of units and system to ensure compliance with manufacturer's, legal and performance requirements. 9. Inspection and re-instatement of the vehicle following repair to ensure customer satisfaction; cleanliness of vehicle interior and exterior, security of components and fittings, re-instatement of components and fittings. 10. Safety Precautions and procedures. 11. Pneumatic suspension system defects to include and cover: a) Wheel hop b) Ride height (unequal and low) c) Wear d) Abnormal noises under operation e) Fluid leakage f) Excessive travel g) Excessive tyre wear h) Bounce i) Poor vehicle handling j) Worn dampers k) Worn joints l) Damaged linkages m) Air leaks n) Corroded/Damaged air lines
5. Be able to perform service and maintenance operations on hydraulic systems and components.	**Scope** **Teaching will cover:** 1. Identify Hydraulic systems and components used on heavy goods vehicles, construction plant or land based machinery. 2. Service intervals to include and cover: a) Milage/Kilometres b) Hours/Years

	3. Procedures for servicing hydraulic systems and components. 4. Preparation of tools and equipment used for maintaining hydraulic systems and components. 5. Safety precautions, PPE, machinery, equipment protection. 6. Importance of logical and systematic maintenance processes. 7. Preparation of replacement units for re-fitting. 8. Reasons why replacement components must meet the original specifications (OES). Refitting procedures. 9. Inspection and testing of units and system to ensure compliance with manufacturer's, legal and performance requirements. 10. Inspection and re-instatement of the vehicle following repair to ensure customer satisfaction; cleanliness equipment or machinery, security of components and fittings, re-instatement of components and fittings. 11. Maintenance of hydraulic components to include and cover: a) Pumps b) Valves c) Pipes/hoses d) Fittings e) Cylinders f) Belts/Chains g) Pulleys h) Controls i) Fluid j) Seals 12. Types of inspections on hydraulic systems to include and cover: a) Visual b) Aural c) Functional/Operation d) Readings 13. Types of hydraulic system defects to include and cover: a) Leaks b) Poor operation c) Pressure loss d) Judder e) Wear f) Abnormal noises g) Fluid contamination h) Leaking seals i) Incorrect operation j) Over pressurisation

Title	Small Plant Equipment, Tracks Operation and Components
Level	Two
Credit Value	5
Guided Learning Hours (GLH)	40
OCN NI Unit Code	CBG273
Unit Reference No	J/650/7634
Learn Direct Code	XS1
Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with small plant equipment and tracks operation and components.	

Learning Outcomes	Assessment Criteria
1. Know the construction, function and operation of small plant equipment and components.	1.1. Describe different layouts of small plant, tools and equipment. 1.2. Describe how different small plant, tools and equipment operate including: a) generators b) pneumatic and electric tools c) cleaning equipment 1.3. Outline the uses of different types of ancillary equipment including: a) connections b) extension leads c) transformers d) water pipes
2. Be able to perform service and maintenance operations on small plant equipment and components.	2.1. Identify and locate small plant equipment and components. 2.2. Remove dismantle, repair and reinstate small plant equipment and components to manufacturer's specifications and factory settings.
3. Know the types, construction and operating principles of tracks and components.	3.1. Outline the types, construction and operating principles of tracks and associated running gear and components. 3.2. Describe the types, construction and applications of tracks and tractive aids. 3.3. Outline the implications of weight distribution and transfer on tractive performance and stability. 3.4. Describe the methods of removing dismantling, repairing and reinstatement of tyres and wheel assemblies, tracks, and associated running gear and components.
4. Be able to perform service and repair operations on tracks and components.	4.1. Remove, dismantle, repair and reinstate tracks, associated running gear and components to manufacturer's specifications. 4.2. Attach, adjust and remove stability and tractive aids. 4.3. Identify and rectify faults relating to tracks and components.

Assessment Guidance NOS: PPLREEP01 Carry out maintenance on electrification and plant equipment and components		
The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.		
Assessment Method	**Definition**	**Possible Content**
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Small Plant Equipment, Tracks Operation and Components
1. Know the construction, function and operation of small plant equipment and components.	**Scope** **Teaching will cover:** 1. Different layouts of small plant equipment to include and cover: a) Generators b) Pneumatic tools c) Electronic tools d) Power cleaning equipment 2. Different sources of power to include used in small plant equipment to include: a) Petrol engine b) Petrol 2-Stroke engine c) Diesel engine d) Electric motor e) Compressed air 3. Different types and uses of ancillary equipment to include and cover: a) Connections (air/water/electronic) b) Electronic extension leads c) Transformers d) Water pipes and hoses e) Pumps 4. PPE required for the safe use of small plant equipment to include and cover: a) Overalls b) safety boots c) goggles d) masks e) gloves f) high visibility clothing g) any other recommended by the manufacturer 5. Carrying out a risk assessment when using equipment. 6. Correct training before using small plant equipment. 7. Procedure for identifying risks and hazards before using tools and equipment. 8. What to do if small plant equipment is defective and not fit for purpose. 9. What to do in the event of an emergency when using tools and equipment. 10. How to ensure small plant equipment is working correctly and compliant with manufacturers specification. 11. Dangers and hazards associated with servicing, repairing and using small plant equipment and ancillaries.
2. Be able to perform service and maintenance operations on small plant	**Scope** **Teaching will cover:** 1. PPE required when working on cutting and mowing equipment.

equipment and components.	2. Hazards associated with working on small plant equipment to include and cover: a) Fire or explosion from fuel b) Electric shock c) Burns d) Cuts e) Contact with hazardous substances f) Exposure to harmful fumes 3. Measures put in place to reduce the risk of injury to include and cover: a) Correct use of PPE b) Manufacturers specification when carrying out repairs and maintenance activities c) Correct procedures when carrying our repairs and maintenance activities. d) Use only parts recommended by the manufacturer e) Awareness of all safety procedures when carrying out repairs and maintenance activities. f) Awareness of all the dangers when carrying out repairs and maintenance activities 4. Different types of small plant equipment and methods of propulsion to include and cover: a) 2-Stroke Engine b) 4-Stroke Engine c) Electric d) Battery e) Diesel Engine f) Air 5. Service and maintenance requirements for different types of small plant equipment to include and cover: a) Checking and changing oil b) Checking and changing spark plug c) Checking and changing air filter d) Checking electric cables e) Checking fuel pipes and hoses
3. Know the types, construction and operating principles of tracks and components.	**Scope** **Teaching will cover:** 1. Working principles of a hydrostatic drive system. 2. Different types of tracks to include and cover: a) Rubber b) Metal c) Rubber pads 3. Reasons why different tracks are used in different terrain. 4. How track driven equipment steers. 5. Different type of track drive systems to include and cover: a) Positive drive b) Friction drive 6. Advantages and disadvantages track drive system has over wheeled drive systems.

	7. Different types of tractive aids that can be used and reason for use. 8. Components associated with track drive systems to include and cover: a) Tracks b) Idler c) Rollers d) Drive sprocket 9. Implications weight transfer has on track driven plant equipment to include and cover: a) Performance b) Stability 10. Correct and safe methods used to remove, inspect and replace wheel assemblies, tracks and associated components.
4. Be able to perform service and repair operations on tracks and components.	**Scope** **Teaching will cover:** 1. PPE required for the safe maintenance of track drive systems to include and cover: a) Overalls b) Safety boots c) Goggles d) Masks e) Gloves f) High visibility clothing g) Any other recommended by the manufacturer 2. Carrying out a risk assessment when using equipment associated with track drive systems. 3. Correct training before working on track drive systems. 4. Use of correct tools and equipment when servicing and repairing track drive systems. 5. Procedure for identifying risks and hazards before using tools and equipment. 6. What to do if track drive systems are defective and not fit for purpose. 7. What to do in the event of an emergency when working on track drive systems. 8. How to ensure track drive system is working correctly and compliant with manufacturers specification. 9. Dangers and hazards associated with servicing, repairing and replacing components associated with track drive systems. 10. How to correctly and safely remove and replace tracks and their associated components. 11. How to check and adjust track tension. 12. Implications of over/under tensioning a track drive system.

	13. How to safety remove and replace stability and tractive aids to meet manufacturers specification. 14. How to rectify faults in tracks and associated components to make sure they conform to manufacturers specification.

Title	Thermal Joining and Cutting Processes
Level	Two
Credit Value	3
Guided Learning Hours (GLH)	24
OCN NI Unit Code	CBG274
Unit Reference No	K/650/7635
Learn Direct Code	XS1
Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with thermal joining and cutting processes.	

Learning Outcomes	Assessment Criteria
1. Know how to perform thermal joining and cutting techniques.	1.1. Describe how to identify ferrous and non-ferrous materials and associated joining characteristics. 1.2. Describe material preparation and joining procedures. 1.3. Describe the techniques for joining ferrous and nonferrous materials using gas and electric welding and soldering methods. 1.4. Describe how to select, prepare and set the relevant equipment to carry out welding and joining tasks. 1.5. Describe how to detect and correctly identify faults and their causes in welded joints. 1.6. Describe the precautions required when engaging in a thermal joining and cutting process. 1.7. Describe how to safely set up equipment and use the correct techniques for oxy-acetylene gas heating, cutting and joining.
2. Be able to perform thermal joining and cutting.	2.1. Identify welding and thermal joining equipment. 2.2. Identify ferrous and non-ferrous materials and their suitability. 2.3. Prepare workplace, materials and equipment to safely carry out thermal joining processes. 2.4. Use the correct techniques to carry out the thermal joining tasks identified in AC 2.3. 2.5. Join ferrous or non-ferrous materials to the required quality and dimensions. 2.6. Identify faults in welded, bronze welded and soldered joints. 2.7. Inspect and maintain equipment and change consumables used in joining processes. 2.8. Safely set up and shut down equipment for oxy-acetylene gas heating, cutting and joining.

Assessment Guidance
NOS:
IMIVBR13 Remove and replace motor vehicle body panels including permanently fixed panels
SEMAUT3055 Joining components for commercial and passenger carrying vehicles using a manual welding process
LANLEO09 Apply core land-based engineering principles: thermal joining processes

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Thermal Joining and Cutting Processes
1. Know how to perform thermal joining and cutting techniques.	**Scope** **Teaching will cover:** 1. Different types of ferrous metals and their characteristics to include and cover: a) Steel b) Cast Iron c) Wrought Iron 2. Different types of non-ferrous metals and their characteristics to include and cover: a) Aluminium b) Copper c) Lead d) Tin 3. Methods used to identify ferrous and non-ferrous metals and their joining characteristics. 4. Methods used to join ferrous and non-ferrous metals to include and cover: a) Oxy-acetylene Gas b) Metal inert gas c) Tungsten inert gas d) Arc welding e) Soldering 5. PPE required when carrying out thermal joining and cutting activities to include and cover: a) Welding mask b) Fume extraction fan c) Heat proof gloves d) Flame/fire resistant apron/clothing e) Respirator f) Welding shield g) Safety boots h) Ear protection i) Goggles 6. Risks associated with carrying out thermal joining activities to include and cover: a) Burns b) Eye Damage c) Electric shock d) Lung damage e) Fire f) Cuts 7. Measures in place to minimise risks. 8. How to prepare metals for thermal joining and cutting processes.

	9. Different types of thermal joining joints to include and cover: a) Butt b) Lap c) Tee d) Corner e) Edge 10. How to set up thermal joining equipment taking into consideration: a) Type of metal to be joined (ferrous/Non-ferrous) b) Thickness of metal c) Type of joint 11. How to set up thermal joining equipment before thermal joining or cutting activities take place to include and cover: a) Connection of leads b) Connection of earth clamp c) Flow of shielding gas d) Prepare electrode e) Adjust currant f) Adjust gas cylinders (oxy-acetylene) g) Sufficient welding electrode wire h) Sufficient number of arc welding rods 12. How to identify faults in welded joints to include and cover: a) Visual inspection b) Destructive test c) Dye penetration d) Ultrasonic testing e) Magnetic particle testing 13. Types of thermal joining defects to include and cover: a) Cracks b) Poor penetration c) Overlap d) Splatter e) Lack of fusion f) Excess re enforcement 14. Causes of thermal joining defects to include and cover: a) Unclean welding surfaces b) Wrong electrode or welding rod selection c) Absent or insufficient shielding gas d) Welding currant too low or high e) Fast welding travel speed f) Unprepared welding surfaces g) Incorrect welding technique
2. Be able to perform thermal joining and cutting.	**Scope** **Teaching will cover:** 1. How to identify and set up thermal joining and cutting equipment to include and cover: a) Arc

	b) Metal inert gas c) Tungsten inert gas d) Oxy-acetylene gas 2. Different types of ferrous metals and their joining characteristics to include and cover: a) Steel b) Cast Iron c) Wrought Iron 3. Different types of non ferrous metals and their joining characteristics to include and cover: a) Aluminium b) Copper c) Lead d) Tin 4. How to prepare and inspect the work area, materials and equipment for thermal joining activities to include and cover: a) Correct use of PPE b) Shields in place c) Metals correctly prepared to join d) Welding equipment correctly connected and set up e) Any relevant consumables are available 5. How to safely join ferrous and non-ferrous using thermal joining techniques. 6. How to test and Identify faults in welded joint using correct techniques. 7. How to safely shut down thermal joining and cutting equipment according to manufacturer's specification.

Title	Servicing Cutting and Mowing Equipment
Level	Two
Credit Value	5
Guided Learning Hours (GLH)	40
OCN NI Unit Code	CBG275
Unit Reference No	L/650/7636
Learn Direct Code	XS1
Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with servicing cutting and mowing equipment.	

Learning Outcomes	Assessment Criteria
1. Know the construction, function and operation of cutting and mowing equipment.	1.1. Describe the working principles of cutting and mowing equipment and components. 1.2. Describe how to dismantle, repair and reinstate cutting and mowing equipment. 1.3. Describe the methods of sharpening and setting cutting mechanisms and components.
2. Know how the performance of cutting and mowing equipment is affected by crop or product type and conditions.	2.1. Describe the effect of crop or product type and conditions on the cutting and mowing process. 2.2. Outline how adjustments and settings effect the performance of cutting and mowing equipment.
3. Be able to service cutting and mowing equipment.	3.1. Identify different cutting and mowing equipment. 3.2. Dismantle, repair and reinstate cutting and mowing machinery and tools to manufacturers' specifications. 3.3. Sharpen and adjust cutting mechanisms to conform with manufacturers' specifications. 3.4. Identify faults effecting cutting performance and rectify to perform within the manufacturers' specification.

Assessment Guidance
NOS:
LANLEO17 Service and repair land-based cutting and mowing equipment

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log

Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Servicing Cutting and Mowing Equipment
1. Know the construction, function and operation of cutting and mowing equipment.	**Scope** **Teaching will cover:** 1. The working principals of cutting and mowing equipment to include and cover: a) How a lawn mower works b) How a chainsaw works c) How a strimmer works d) How a hedge trimmer works 2. How the following cutting instruments work to include and cover: a) Blades (Hedge Trimmer) b) Blade (Lawnmower) c) Chain (Chainsaw) d) Cutting String (Strimmer) 3. Different methods of propulsion to include and cover: a) 2-Stroke Engine b) 4-Stroke Engine c) Electric d) Battery e) Diesel Engine 4. Advantages and disadvantages of different methods of propulsion. 5. Purposes for servicing and maintaining cutting and mowing equipment. 6. Correct methods for servicing, repairing and reinstating cutting and mowing equipment. 7. Correct methods used to sharpen mowing and cutting equipment to manufacturers specification. 8. Correct methods used to calibrate and set cutting mechanisms and components. 9. What happens if cutting and mowing equipment mechanisms are not set according to manufacturer's specification.
2. Know how the performance of cutting and mowing equipment is affected by crop or product type and conditions.	**Scope** **Teaching will cover:** 1. How to decide which cutting equipment is suitable for different cutting and mowing tasks. 2. Factors that affect cutting equipment functioning correctly such as: a) Grass/Crop thickness and length b) Wet/Dry conditions c) Type of crop to be cut 3. Adjustments and settings that effect cutting and mowing equipment to include and cover: a) Engine Speed b) Blade settings (Twin Blade Lawnmower)

	c) Chain Tension (Chainsaw) d) String length and thickness (Strimmer)
3. Be able to service cutting and mowing equipment.	**Scope** **Teaching will cover:** 1. PPE required when working on cutting and mowing equipment. 2. Hazards associated with working on cutting and mowing equipment to include and cover: a) Fire or explosion from fuel b) Electric shock c) Burns d) Cuts e) Contact with hazardous substances f) Exposure to harmful fumes 3. Measures put in place to reduce the risk of injury to include and cover: a) Correct use of PPE b) Follow manufacturers specification when carrying out repairs and maintenance activities c) Follow correct procedures when carrying our repairs and maintenance activities. d) Use only parts recommended by the manufacturer e) Be aware of all safety procedures when carrying out repairs and maintenance activities. f) Be aware of all the dangers when carrying out repairs and maintenance activities. 4. Different types of cutting and mowing equipment and methods of propulsion to include and cover: a) 2-Stroke Engine b) 4-Stroke Engine c) Electric d) Battery e) Diesel Engine 5. Service and maintenance requirements for different types of cutting and mowing equipment to include and cover: a) Checking and changing oil b) Checking and changing spark plug c) Checking and changing air filter d) Checking electric cables e) Checking fuel pipes and hoses f) Sharpening blades and chains g) Setting blades h) Tensioning chains 6. How to correctly sharpen chains and blades according to manufacturer's specification.

	7. How to correctly identify and rectify faults in cutting and mowing equipment. 8. Importance of following manufacturers specification when repairing cutting and mowing equipment.

Title	Suspension System Components and Maintenance
Level	Two
Credit Value	6
Guided Learning Hours (GLH)	48
OCN NI Unit Code	CBG276
Unit Reference No	H/650/7642
Learn Direct Code	XS1

Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with suspension system components and maintenance.

Learning Outcomes	Assessment Criteria
1. Know suspension systems and components.	1.1. Identify and describe the purpose and function of the main components used in suspension systems. 1.2. Describe the operating principles of suspension systems.
2. Know how to carry out routine maintenance of suspension systems.	2.1. Describe how to remove, inspect, test, and replace suspension systems and components.
3. Be able to carry out routine maintenance on suspension systems.	3.1. Carry out routine maintenance on suspension systems to include: a) selection and use of the correct technical data, tools and equipment for suspension system maintenance b) safely inspect, remove and replace suspension system component

Assessment Guidance
NOS:
IMIVF11 Inspect and replace light vehicle suspension dampers and springs
IMIVF11.1 Inspect, test and replace light vehicle suspension components

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Suspension System Components and Maintenance
1. Know suspension systems and components.	**Scope** **Teaching will cover:** 1. The layout and components of suspension systems to include: a) Non-independent suspensions b) Independent front suspension (IFS) c) Independent rear suspension (IRS) d) Hydraulic e) Hydro-pneumatic f) Rigid axle types 2. The operation of suspension systems and components to include: a) Leaf and coil springs b) Torsion bar c) Rubber springs d) Macpherson strut system e) Hydraulic f) Hydro-pneumatic g) Hydraulic dampers h) Trailing arms i) Wish bones j) Ball joints k) Track control arms l) Bump stops m) Anti-roll bars n) Stabiliser bars o) Swinging arms p) Parallel link q) Swinging half-axles r) Transverse link s) Semi-swinging arms 3. The advantages and dis-advantages of different systems to include: a) Non-independent b) Independent suspension (IFS) c) Independent suspension (IRS) d) Hydraulic e) Hydro-pneumatic f) Rigid axle 4. The principles of electronic suspensions systems. 5. Forces acting on suspension systems during braking, driving and cornering. 6. The methods of locating the road wheels against braking, driving and cornering forces. 7. The methods of controlling cornering forces by fitting anti-roll torsion members 8. Meaning of suspension terms to include: a) Rebound b) Bump c) Float d) Dive e) Pitch

	f) Roll g) compliance
2. Know how to carry out routine maintenance of suspension systems.	**Scope** **Teaching will cover:** 1. The procedures used for inspecting the serviceability and condition of the suspension system. 2. Suspension system defects to include: a) Wheel hop b) Ride height (unequal and low) c) Wear d) Noises under operation e) Fluid leakage f) Excessive travel g) Excessive tyre wear h) Bounce i) Poor vehicle handling j) Worn dampers k) Worn joints l) Damaged linkages 3. How to check trim height.
3. Be able to carry out routine maintenance on suspension systems.	**Scope** **Teaching will cover:** 1. Procedures for dismantling, removal and replacement of Suspension components. 2. Preparation of tools and equipment used for dismantling, Suspension systems and components. 3. Safety precautions, PPE, vehicle protection. 4. Importance of logical and systematic processes. 5. Inspection and testing of Suspension systems and components. 6. Preparation of replacement units for re-fitting. 7. Reasons why replacement components must meet the original specifications (OES). Refitting procedures. 8. Inspection and testing of units and system to ensure compliance with manufacturer's, legal and performance requirements. 9. Inspection and re-instatement of the vehicle following repair to ensure customer satisfaction; cleanliness of vehicle interior and exterior, security of components and fittings, re-instatement of components and fittings. 10. Safety precautions and procedures.

Title	Electric and Hybrid Vehicle Safety and Awareness
Level	Two
Credit Value	2
Guided Learning Hours (GLH)	16
OCN NI Unit Code	CBG277
Unit Reference No	J/650/7643
Learn Direct Code	XS1

Unit purpose and aim(s): This unit will enable the learner to develop an awareness of electric and hybrid vehicles including safety precautions.

Learning Outcomes	Assessment Criteria
1. Know about the types of electric and hybrid vehicles available.	1.1. Outline how to identify electric and hybrid vehicles and give examples of current models. 1.2. Identify with examples alternative fuel source vehicles.
2. Be aware of the hazards around motor vehicle high energy electrical systems.	2.1. Describe the hazards associated with high energy electricity. 2.2. Identify hazards that may occur when connecting and charging electric and hybrid vehicles.
3. Know how to work safely around electric and hybrid vehicles.	3.1. Describe safety precautions to be taken before approaching and working with electric and hybrid vehicles. 3.2. Outline how to identify motor vehicles with high energy cabling and associated components. 3.3. Describe how an electric and hybrid vehicle may be safely charged using an external source.

Assessment Guidance
NOS:
IMIEV01 Carry out non high voltage operations on, near or with an electric vehicle
IMIEV02b Manage unstable high voltage systems in an electric vehicle
IMICY13 Safely carry out operations on, near or with light electric vehicles

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary

E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Electric and Hybrid Vehicle Safety and Awareness
1. Know about the types of electric and hybrid vehicles available.	**Scope** **Teaching will cover:** 1. Different types of fuel/power source used in motor vehicles to include and cover: a) Petrol b) Diesel c) Electric d) Hybrid e) Hydrogen Fuel Cell 2. How to Identify different types of vehicles that use alternative fuel sources to include and cover: a) External badging or markings b) Presence of an exhaust pipe c) Badging and labelling under bonnet d) High voltage cabling e) High voltage warning signs
2. Be aware of the hazards around motor vehicle high energy electrical systems.	**Scope** **Teaching will cover:** 1. Hazards associated with working on electric and hybrid vehicles to include and cover: a) Risk of electric shock b) Storage of electrical energy that has the potential to cause fire or explosion c) Components that may retain a dangerous voltage even when a vehicle is switched off d) Electric motors or the vehicle itself that may move unexpectedly due to magnetic forces within the motors e) Manual handling risks associated with battery replacement f) Potential for the release of explosive gases and harmful liquids if batteries are damaged g) Possibility of people being unaware of vehicles moving in the workshop as when driven they are silent in operation 2. Hazards associated with connecting and charging an electric or hybrid vehicle to include and cover: a) Damaged or frayed cables b) Tripping hazard c) Use only chargers and cables recommended by manufacturer 3. Correct procedure when plugging in and unplugging an electric vehicle.
3. Know how to work safely around electric and hybrid vehicles.	**Scope** **Teaching will cover:** 1. Specialist PPE required when working on a Hybrid or electric vehicle to include and cover: a) Insulated safety boots to protect against electric shock b) Class 0 insulated rubber gloves to protect against high voltage c) Face shield to protect against a flash over if an electrical spark is produced., d) Insulated rescue pole designed to remove victims of electric shock from danger e) Any other items of PPE recommended by manufacturer

	2. Safe use of tools and equipment recommended by manufacturer for the maintenance and repair of electric and hybrid vehicles. 3. Repair, maintenance and charging procedures recommended by manufacturer. 4. The different types of training required to work on a hybrid or electric vehicles. 5. Use and type of safety/precaution signs when working on an electric or hybrid vehicle. 6. Use of barrier chain around electric or hybrid vehicle when being maintained or repaired.

Title	Wheel and Tyre Construction and Maintenance
Level	Two
Credit Value	4
Guided Learning Hours (GLH)	32
OCN NI Unit Code	CBG278
Unit Reference No	K/650/7644
Learn Direct Code	XS1
Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with wheel and tyre construction and maintenance.	

Learning Outcomes	Assessment Criteria
1. Know how wheels and tyres are constructed.	1.1. Identify the types of tyres and wheels used on common vehicles. 1.2. Identify the construction of radial and cross ply tyres.
2. Know wheel and tyre terminology.	2.1. Describe with examples the different markings and terminology associated with vehicle wheels and tyres.
3. Know how to carry out routine maintenance and replacement of wheels and tyres.	3.1. Describe how to remove, inspect and replace wheel and tyre system components.
4. Be able to carry out routine maintenance on wheel and tyre systems.	4.1. Carry out routine maintenance on wheel and tyre systems to include: a) selection and use of the correct technical data, tools and equipment for wheel and tyre system maintenance b) safe removal and replacement of a wheel on a vehicle c) safe removal, inspection and replacement of a tyre d) balance of a wheel and tyre as appropriate e) safe removal and repair of a tyre

Assessment Guidance
NOS:
LANLEO15 Service and repair wheeled and tracked steering systems on land-based equipment
LANLEO16 Service and repair wheels and tracks on land-based equipment

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary

E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Wheel and Tyre Construction and Maintenance
1. Know how wheels and tyres are constructed.	**Scope** **Teaching will cover:** 1. How alloy and steel rims are constructed 2. construction of different types of tyres to include and cover: a) Radial Ply b) Cross Ply c) Bias-belted 3. Different types of rims to include and cover: a) Split rim b) Divided rim c) Well based rim 4. Main function of tyres 5. Interaction between tyres, other components and vehicle handling to include and cover: a) Steering, drive and suspension b) Passenger comfort 6. Types of standard and high-performance light vehicle wheel and rim construction to include and cover: a) Light alloy, pressed steel and wire wheels b) Standard and safety rims (run flat) c) Asymmetric rims d) Space saver rims
2. Know wheel and tyre terminology.	**Scope** **Teaching will cover:** 1. Different types of tread used on tyres to include and cover: a) Directional tread b) Asymmetric tread c) Composite tread d) Run flat capability 2. Markings on standard light vehicle tyres to include and cover: a) Speed rating b) Size Markings c) Aspect ratio d) Load handling e) Ply rating f) Tread wear indicators g) EC markings and specialist application markings
3. Know how to carry out routine maintenance and replacement of wheels and tyres.	**Scope** **Teaching will cover:** 1. Causes and different types of abnormal wear that can take place on a tyre. 2. Health and safety regarding working whit wheels and tyres. 3. Correct use of PPE and VPE when working on wheels and tyres.

	4. Tools and equipment required to carry out the repair and maintenance of wheels and tyres. 5. Inspection and fault identification methods and procedures to include and cover: a) on the rim visual (external) b) removed from wheel (internal) 6. Use of tread depth indicators, tyre probes and pressure gauges. 7. Information sources including tyre and vehicle manufacturers' technical data and the importance of accurate measurements to include and cover: a) The importance of accurate fault identification b) The importance of accurate adjustments 8. Limits of standard light vehicle tyre wear and serviceability to include and cover: a) Tread depth and tyre damage b) Tyre pressure and maintenance requirements c) Suitability for minor repairs 9. Common faults associated with standard light vehicle tyres and wheels to include and cover: a) Excessive tyre wear and abnormal tread wear patterns (centre, outer edges, worn patches) b) Damage to tread or side walls c) Bulging, separation of tread, carcass distortion d) Impact damage, wheels running out of true, buckled wheels e) Incorrect tyre pressure f) Wrong tyre for vehicle or run flat
4. Be able to carry out routine maintenance on wheel and tyre systems.	**Scope** **Teaching will cover:** 1. Methods and materials used in the repair of standard light vehicle tyres to include and cover: a) Tyre inspection b) Visual inspection c) Accurate measurement 2. Repair techniques and methods to include and cover: a) Preparation of tyre b) Buffing 3. Repair materials to include and cover: a) Plug patch b) Patch and filler c) Solutions and chemicals d) Economic use of materials e) Correct storage of materials

	4. Principles of interchanging tyres/wheels to include and cover: a) Over sizing tyre and wheel fitment b) Longitudinal and diagonal c) Mixing radial, cross-ply and bias-belted tyres on same axle or different axles 5. Tools and equipment used in the repair and replacement of wheels and tyres to include and cover: a) Lifting and supporting equipment, SWL b) Tyre fitting and removal tools and machinery c) Hand tools d) Tyre repair tools e) Measuring equipment f) Wheel balancing equipment g) Tyre inflation equipment 6. Dealing with waste materials to include and cover: a) Correct disposal of used/damaged rims and tyres b) Correct disposal of wheel weights c) Correct disposal of waste repair materials 7. Correct removal and fitting methods to include and cover: a) Tyre sidewall fitting instructions b) Vehicle protection c) Use of hand and impact tools d) Correct tyre inflation e) Final inspection 8. Legal requirements to include: a) Tread depth b) Tyre wall and casing damage c) Tyre pressure d) Mixing of tyre types e) Correct fitting

Title	Locate and Correct Vehicle Electrical Faults
Level	Two
Credit Value	6
Guided Learning Hours (GLH)	48
OCN NI Unit Code	CBG279
Unit Reference No	L/650/7645
Learn Direct Code	XS1
Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with locating and repairing vehicle electrical faults.	

Learning Outcomes	Assessment Criteria
1. Know different vehicle electrical testing equipment.	1.1. Identify commonly used vehicle electrical test equipment. 1.2. Describe how to use and operate vehicle electrical test equipment. 1.3. Outline the safety checks required on tools and equipment prior to use. 1.4. Outline how to measure voltage, resistance, current, and their correlation when diagnosing simple circuit faults. 1.5. Outline when and where you would use voltage, ohm, amps when diagnosing simple circuit faults. 1.6. Describe the operation of motors, capacitors, resistors, semi-conductors, transistors, actuators and sensors including active or self-generating and passive or modulating.
2. Know how to carry out testing methods on vehicle electrical components.	2.1. Describe common types of testing methods used to check the operation of vehicle electrical/electronic circuits and components. 2.2. Use readings and calculations to determine a component's condition. 2.3. Carry out tests following electrical safety operating procedures. 2.4. Interpret the test results carried out in AC 2.3 to diagnose simple electrical circuit faults against vehicle manufacturer specifications. 2.5. Make recommendations for rectification based upon the diagnosis of results gathered from testing procedures carried out in AC 2.4. 2.6. Illustrate how to identify common faults and causes found in electrical systems and components. 2.7. Explain the importance of evaluating the performance of an electrical component that has been replaced against vehicle specification. 2.8. Follow procedures for the disposal of electrical components.
3. Be able to use appropriate tools and equipment.	3.1. Select and use the appropriate tools and equipment necessary, according to manufacturers' requirements for carrying out vehicle electrical testing techniques and rectification activities. 3.2. Calibrate equipment to meet manufacturers and legal requirements.

4. Be able to carry out vehicle electrical testing techniques and rectification activities.	4.1. Carry out a functionality test for given electrical systems and components. 4.2. Use electrical testing methods for assessing the performance of the electrical system and components identified in AC4.1. 4.3. Carry out diagnostic and rectification activities following: a) manufacturers' instructions b) recognised researched repair methods c) workplace operating procedures d) health and safety requirements 4.4. Identify the cause of faults and seek appropriate assistance as required. Ensure all repaired and replaced electrical components are secure and functioning as specified by the manufacturer or relevant legal requirements.
5. Be able to record information and make suitable recommendations.	5.1. Produce work records that are accurate and complete. 5.2. Make justifiable recommendations for cost effective repairs. 5.3. Record and report any additional faults found during testing.

Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Locate and Correct Vehicle Electrical Faults
1. Know different vehicle electrical testing equipment.	**Scope** **Teaching will cover:** 1. The different types of electronic testers to include and cover: a) Multimeter b) Voltmeter c) Ammeter d) Ohmmeter e) Continuity tester f) Diagnostic Scanner g) Scope Meter h) Probe tester i) Heater plug tester j) Battery hydrometer k) Battery load tester 2. How to safely measure volts, ohms and currant using the correct equipment. 3. How to connect test equipment correctly according to manufacturer's specification. 4. When to use different test equipment to diagnose electrical faults. 5. The operation and uses of electronic devices to include and cover: a) Motors b) Capacitors c) Resistors d) Semi-conductors e) Transistors f) Actuators g) Sensors (active/passive/self-generating/modulating) 6. Correct PPE required when using electrical testing equipment. 7. Importance of following manufacturer's instructions when using electronic testing equipment.
2. Know how to carry out testing methods on vehicle electrical components.	**Scope** **Teaching will cover:** 1. Motor vehicle electronic checks on electrical and electronic systems to include and cover: a) Security of components and connections b) Functionality c) Performance to specifications d) Continuity, open circuit e) Short circuit f) High resistance g) Volt drop h) Current consumption i) Output patterns (oscilloscope) j) Voltage k) Amps 2. How to use readings and information to determine component serviceability.

	3. How to carry out various tests and compare results to manufacturers specification to determine component condition. 4. How to interpret test results to diagnose electrical faults. 5. How to make suitable recommendations for repair based on results. 6. How to identify causes of faults in an electrical system. 7. Symptoms and faults associated with electrical and electronic systems to include and cover: a) High resistance b) Loose and corroded connections c) Short circuit d) Excessive current consumption e) Open circuit f) Malfunction g) Poor performance h) Battery faults to include flat battery i) Failure to hold charge j) Low state of charge k) Overheating l) Poor starting 8. How to correctly dispose of electrical components correctly.
3. Be able to use appropriate tools and equipment.	**Scope** **Teaching will cover:** 1. The different types of electronic testers, how to use them safely and what safety checks must be carried out before and during use to include and cover: a) Multimeter b) Voltmeter c) Ammeter d) Ohmmeter e) Continuity tester f) Diagnostic Scanner g) Scope Meter h) Probe tester i) Heater plug tester j) Battery hydrometer k) Battery load tester 2. How to check and calibrate electrical test equipment according to manufacturer's specification. 3. How to safely measure volts, ohms and currant using the correct equipment. 4. How to connect test equipment correctly according to manufacturer's specification. 5. When to use different test equipment to diagnose electrical faults.

4. Be able to carry out vehicle electrical testing techniques and rectification activities.	**Scope** **Teaching will cover:** 1. Preparing, testing and using electrical testing equipment to include and cover: a) Tools and equipment used for electronic testing b) Electrical meters and equipment used for testing electronic systems and components 2. Appropriate safety precautions when working on the electronic system to include and cover: a) PPE b) Vehicle protection when dismantling c) Removal and replacing electrical and electronic components and systems when repairing faulty electrical components 3. The important of logical processes. 4. How to carry out electronic and rectification tasks to include and cover: a) Manufacturer's instructions b) Recognised researched repair methods c) Workplace operating procedures d) Health and safety requirements 5. How to correctly identify faults and how to make sure repaired/replaced electrical components are secure and function correctly as specified by manufacturer and any legal requirements. 6. Preparation of replacement units for re-fitting or replacement electrical and electronic components and systems. 7. Reasons why replacement components and units must meet the specification. 8. Warranty requirements to maintain performance and safety requirements. 9. The inspection and testing of electronic units and systems to ensure compliance with manufacturer's, legal and performance requirements. 10. Inspection and re-instatement of the vehicle following repair to include and cover: a) Customer satisfaction b) Cleanliness of vehicle interior and exterior c) Security of components and fittings d) Re-instatement of components and fittings
5. Be able to record information and make suitable recommendations.	**Scope** **Teaching will cover:** 1. How to produce and complete records that are accurate. 2. How to make justifiable recommendations for cost effective repairs to include and cover: a) Manufacturers recommendations for repair b) Repair or replace c) Use of genuine or non-genuine components d) Safety

	e) Legal requirements 3. How to record and report additional faults on a vehicle. 4. Who should be informed before additional faults are fixed or rectified to include and cover: a) Vehicle owner/company b) Service advisor

Title	Remove and Replace Vehicle Electrical Wiring and Components
Level	Two
Credit Value	6
Guided Learning Hours (GLH)	48
OCN NI Unit Code	CBG280
Unit Reference No	M/650/7646
Learn Direct Code	XS1

Unit purpose and aim(s): This unit will enable the learner to develop knowledge and skills associated with the removal and replacement of vehicle electrical wiring and components.

Learning Outcomes	Assessment Criteria
1. Know the components and their function within a vehicle electrical system.	1.1. Identify and describe the purpose and function of the main electrical components used in vehicle electrical systems.
2. Know how to locate and test components within a vehicle electrical system.	2.1. Identify the location of the electrical components to be repaired or replaced. 2.2. Describe how to construct and test various vehicle components. 2.3. Identify the wiring circuit for various vehicle electrical components.
3. Be able to carry out electrical tests on vehicle components.	3.1. Carry out electrical tests on vehicle components to include: a) selection and use of correct technical data, tools and equipment b) locate and safely test components using wiring diagrams c) safely repair or replace components as necessary

Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
Practical demonstration/assignment	A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge	Record of observation Learner notes/written work Learner log
Coursework	Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course	Record of observation Learner notes/written work Tutor notes/record Learner log/diary
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Learning Outcome	Unit: Remove and Replace Vehicle Electrical Wiring and Components
1. Know the components and their function within a vehicle electrical system.	**Scope** **Teaching will cover:** 1. Correct identification of electrical components from different systems to include and cover: a) Starting systems b) Charging systems c) Ignition systems d) Lighting systems e) Entertainment systems f) Security systems g) Comfort and convenience systems h) Electric Window systems i) Information systems j) Heating/air conditioning systems 2. Different components associated with electrical circuits and their purpose.
2. Know how to locate and test components within a vehicle electrical system.	**Scope** **Teaching will cover:** 1. The importance of logical processes. 2. Preparation of replacement units for re-fitting or replacement electrical and electronic components and systems. 3. Location of electrical components in a motor vehicle to include and cover: a) Switches b) Relays c) Motors d) Heating elements e) Fuses f) Bulbs g) Wiring 4. Different tests used to test electronic components on a motor vehicle to include and cover: k) Volts l) Amps m) Ohms n) Visual o) Aural p) Functional 5. How to interpret tests and compare with manufacturers specification. 6. What to do if results fall outside manufacturers specification.
3. Be able to carry out electrical tests on vehicle components.	**Scope** **Teaching will cover:** 1. Appropriate safety precautions when working on the electronic system: a) PPE b) Vehicle protection when dismantling

	c) Removal and replacing electrical and electronic components and systems 2. Tools and equipment used to test electrical wiring and components to include and cover: a) Multi meter b) Power test probe c) Voltmeter d) Ammeter e) Continuity tester 3. Motor vehicle checks for electronic components to include and cover: a) Security of components and connections b) Functionality c) Performance to specifications d) Continuity, open circuit e) Short circuit f) High resistance g) Volt drop h) Current consumption i) Output patterns (oscilloscope) 4. How to read circuit diagrams and identify components by their symbols. 5. Different colour codes used in wiring. 6. How to identify wiring by colour code. 7. Symptoms and faults associated with electrical and electronic systems to include and cover: a) High resistance b) Loose and corroded connections c) Short circuit d) Excessive current consumption e) Open circuit f) Malfunction g) Poor performance h) Battery faults to include flat battery i) Failure to hold charge j) Low state of charge k) Overheating l) Poor starting 8. Methods used to repair damaged wiring to include and cover: a) Soldering b) Use of electrical connections

11. Quality Assurance of Centre Performance

11.1 Internal Assessment

When delivering and assessing this qualification, centres must align with stakeholders' expectations and address learners' needs by implementing a practical and applied programme. Centres have the flexibility to customise programmes to meet local requirements and establish connections with local employers and the broader vocational sector.

The Assessor should work with the Internal Quality Assurer to ensure that the assessment is planned in line with OCN NI requirements. Assessment Plans must be developed and approved by the Internal Quality Assurer prior to the delivery of the qualification.

All units within this qualification must undergo internal assessment. Learners must provide evidence that they have appropriately met all assessment criteria required for that grade.

The assessment format for all units involves a task conducted after the delivery of the unit's content, or part of it, if multiple tasks are used. Tasks may exhibit in various forms, encompassing practical and written types. Please refer to 'OCN NI's Assessment Definitions Guide' for additional details.

A task constitutes a distinct activity completed independently by learners, separated from teaching, practice, exploration, and other activities guided by tutors. Tasks are assigned to learners with a specified start date, completion date, and explicit requirements for the evidence to be produced. Some tasks may include observed practical components and require diverse forms of evidence.

A valid assignment will enable a clear and formal assessment outcome, which meets the requirements of the assessment criteria. Assessment decisions are based on the specific assessment criteria given in each unit and set at each grade level. The way in which individual units are written provides a balance of assessment of understanding, practical skills and vocational attributes appropriate to the purpose of qualifications.

It is the Assessor's role to ensure that learners are appropriately prepared for assessment, this begins from induction onwards. Assessors should ensure that learners understand how assessment tasks are used to determine the award of credit, the importance of meeting assessment timelines, and that all learners work must be independently created, where source documents are used this should be appropriately referenced, learners should be aware of what would constitute plagiarism and the possible consequences.

When conducting the assessment, Assessors must ensure they do not provide direct input, instructions or specific feedback which may compromise the authenticity of the work submitted.

Once the Assessor has authenticated the learners work, they must transparently demonstrate the rationale behind their assessment decisions. Once a learner completes all assigned tasks for a unit, the Assessor will allocate a grade for the unit. Refer to the 'Unit Grading Matrix' for additional information on the grading process.

Once the Assessor has completed the assessment process for the task, the assessment decision is recorded formally, and feedback is provided to the learner. The feedback should show the learner the outcome of the assessment decision, how it was determined or where the criteria has been met, it may indicate to the learner why achievement of the assessment criteria has not been met. It must be clear to the learner that this Assessment outcome is subject to verification.

For further information on assessment practice, please see the 'OCN NI Centre Handbook'. Assessment Training is also available and can be booked through the OCN NI Website.

11.2 Internal Quality Assurance

The role of the Internal Quality Assurer is to ensure appropriate internal quality assurance processes are carried out. The Internal Quality Assurer must oversee that assessments are conducted in accordance with relevant OCN NI policies, regulations, and this specification.

The Internal Quality Assurer must ensure assessments are fair, reliable, and uniform, thereby providing a consistent standard for all learners.

Internal Quality Assurers are required to provide constructive feedback to Assessors, identifying areas of strength and those that may require improvement. This feedback contributes to the ongoing professional development of Assessors.

Contributing to the standardisation of assessment practices within the centre is an important function of this role. This entails aligning assessment methods, grading criteria, and decision-making processes to maintain fairness and equity.

Internal Quality Assurers will actively engage in the sampling and monitoring of assessments to ensure the consistency and accuracy of assessment decisions. This process helps identify trends, areas for improvement, and ensures the robustness of the overall assessment system.

For further information on Internal Quality Assurance practice, please see the 'OCN NI Centre Handbook'. Internal Quality Assurance Training is also available and can be booked through the OCN NI Website.

11.3 Documentation

For internal quality assurance processes to be effective, the internal assessment and Internal Quality Assurance team needs to keep effective records.

- The programme must have an assessment and Internal Quality Assurance plan. When producing a plan, they should consider:
    - the time required for training and standardisation activities
    - the time available to undertake teaching and carry out assessment,
    - consider when learners may complete assessments and when quality assurance will take place
    - the completion dates for different assessment tasks
    - the date by which the assignment needs to be internally verified
    - sampling strategies
    - how to manage the assessment and verification of learners' work so that they can be given formal decisions promptly
    - how resubmission opportunities can be scheduled

The following documents are available from OCN NI and document templates can be found in the Centre Login section of the OCN NI website www.ocnni.org.uk:

- A1 – Learner Assessment Record per Learner
- Learner authentication declarations
- Records of any reasonable adjustments applied for and the outcome – please see 'OCN NI's Reasonable Adjustments and Special Consideration Policy' for further information
- M1 Internal Quality Assurance Sample Record
- M2 Feedback to Assessor
- Records of any complaints or appeals

11.4 External Quality Assurance

All OCN NI recognised centres are subject to External Quality Assurance. External quality assurance activities will be conducted to confirm continued compliance with the CCEA Regulation General Conditions of Recognition, OCN NI terms and conditions and the requirements outlined within this qualification specification.

The External Quality Assurance is assigned by OCN NI. The External Quality Assurer will review the delivery and assessment of this qualification. This will include, but is not limited to, the review of a sample of assessment evidence and evidence of the Internal Quality Assurance of assessment and assessment decisions. This will form the basis of the External Quality Assurance report and will help OCN NI determine the centre's risk.

The role of the External Quality Assurer serves as an external overseer of assessment quality, working to uphold consistency, compliance, and continuous improvement within the assessment process. Their role is crucial in ensuring that assessments are valid, reliable, fair, and aligned with the required standards and regulations.

For further information on OCN NI Centre Assessments Standards Scrutiny (CASS) Strategy, please see the OCN NI Centre Handbook.

11.5 Standardisation

As a process, standardisation is designed to ensure consistency and promote good practice in understanding and the application of standards. Standardisation events:

- make qualified statements about the level of consistency in assessment across centres delivering a qualification
- make statements on the standard of evidence that is required to meet the assessment criteria for units in a qualification
- make recommendations on assessment practice
- produce advice and guidance for the assessment of units
- identify good practice in assessment and Internal Quality Assurance

Centres offering this qualification must carry out internal standardisation activities prior to the claim for certification.

Centres offering units of an OCN NI qualification must attend and contribute assessment materials and learner evidence for standardisation events if requested.

OCN NI will notify centres of the nature of sample evidence required for standardisation events (this will include assessment materials, learner evidence and relevant Assessor and Internal Quality Assurer documentation). OCN NI will make standardisation summary reports available and correspond directly with centres regarding event outcomes.

12. Administration

12.1 Registration

A centre must register learners for this qualification within 90 days of commencement of the delivery of the programme.

For further information on learner registration please see the OCN NI Centre Handbook and the QuartzWeb Manual, available through the Centre Login section of the OCN NI website. Administration training is also available and can be booked through www.ocnni.org.uk.

12.2 Certification

Once all internal quality assurance activities have been successfully completed, the centre can claim certification for the learner(s).

Certificates will be issued to centres within 20 working days from completion of a satisfactory external quality assurance activity, if appropriate, alternatively from the submission of an accurate and complete marksheet.

It is the responsibility of the centre to ensure that certificates received from OCN NI are held securely and distributed to learners promptly and securely.

For further information on the uploading of results please see the QuartzWeb Manual for guidance, administration training is also available and can be booked through OCN NI

12.3 Charges

OCN NI publishes all up-to-date qualification fees in its Fees and Invoicing Policy document. Further information can be found on the centre login area of the OCN NI website.

12.4 Equality, Fairness and Inclusion

OCN NI's are committed to ensuring all learners have an equal opportunity to access our qualifications and assessment, and that our qualifications are awarded in a way that is fair to every learner.

OCN NI is committed to making sure that:

- learners with a protected characteristic are not, when they are undertaking one of our qualifications, disadvantaged in comparison to learners who do not share that characteristic
- all learners achieve the recognition they deserve for undertaking a qualification and that this achievement can be compared fairly to the achievement of their peers

For information on reasonable adjustments and special considerations please see the OCN NI Centre Handbook and Reasonable Adjustments and Special Considerations Policy held in the back office of the OCN NI website.

12.5 Retention of Evidence

OCN NI has published guidance for centres on the retention of evidence. Details are provided in the OCN NI Centre Handbook and can be accessed via the OCN NI website.

OCN NI Level OCN NI Level 2 Diploma in Motor Vehicle Skills
Qualification Number: 610/2946/4

Operational start date: 15 July 2023
Operational end date: 14 July 2028
Certification end date: 14 July 2030

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12.6 Appendix 1 - Definition of OCN NI's Assessment Verbs

The following verbs are working definitions of those used in OCN NI assessments with examples of how they can be applied and used in different but equally valid contexts.

Verb	Definition	Example
Adjust		
Assess	The ability to locate, retrieve, and use information, items or equipment efficiently and accurately to perform tasks or solve problems.	The learner will be expected to identify information, items, or equipment needed requiring a clear understanding of the task or problem at hand, allowing them to determine the relevant resources required. The learner will be expected then to locate and obtain the necessary resources. This involves navigating various systems or environments, such as databases, physical storage, or digital platforms. After retrieval, the learner must effectively use the acquired information, items, or equipment to perform the given task or solve the problem.
Attach	To fasten, join, or connect something to another object. It can also mean to assign or link something in a figurative sense, like attaching a file to an email or attaching importance to an idea.	A learner would be expected to physically affix, fasten, or connect an item as part of their response. This could involve attaching documents, materials, models, or other tangible objects as required by the task. In all cases, the learner must ensure that what they attach is securely affixed, clearly presented, and properly referenced within their main response.
Calibrate	To adjust, set, and validate equipment to ensure accurate and precise measurements or performance, in order to produce high-quality items.	The learner will be expected to comprehend the specific calibration requirements for the equipment being used. This involves understanding the equipment specifications, preparing and adjusting equipment accurately making precise adjustments to settings, controls, or components to achieve accurate measurements, validating performance with tests, documenting the process, and regularly checking to maintain calibration.
Carry out	To effectively utilise information, items, or equipment to achieve specific objectives, produce tangible outcomes, or enhance understanding.	The learner will be expected to comprehend the information, items, or equipment they are required to use. This involves understanding the purpose, function, and relevance of the resources. The learner must carry

		out tasks using the information, items, or equipment to produce specific results. This involves following procedures accurately and demonstrating the ability to use resources effectively. The learner uses the resources to address challenges and find solutions. This involves planning, organising, and executing tasks in a streamlined manner.
Compare	To examine and evaluate the similarities and differences between information, items, or equipment in order to enhance understanding and make informed decisions.	The learner will be expected to identify the specific information, items, or equipment to be compared. This involves selecting relevant subjects for comparison based on the task or objective. The learner analyses the characteristics, features, and attributes of each subject. The learner identifies relevant items, analyses their features, evaluates similarities and differences, and draws conclusions to make informed decisions or solve problems.
Cut	To accurately and safely divide, shape, or trim materials or items using appropriate tools and techniques to produce specific items or enhance understanding.	The learner will be expected to understand the properties and characteristics of the material to be cut. This involves knowing how the material behaves under different cutting conditions. The learner selects the appropriate cutting tools and equipment for the task. This includes choosing tools that are suitable for the type and thickness of the material. The learner employs correct cutting techniques to achieve precise and clean cuts. The learner adheres to safety protocols to prevent injuries and accidents. This includes wearing personal protective equipment (PPE), using tools safely, and maintaining a clean and organized workspace. The learner performs the cutting tasks with accuracy and precision to ensure they meet the required standards and specifications. This involves checking for defects, smooth edges, and correct dimensions.
Describe	To paint a full picture of a concept, process or thing in words.	The learner will be expected to explore a concept, process, or object and provide a detailed verbal or written account that includes significant features, characteristics, and relevant details. The learner should be able to demonstrate the ability to convey a comprehensive understanding and include all key components, stages and/or features of concept, process, or object being described.

Develop	The process of creating, improving or expanding something over time.	The learner will be expected to create, enhance or expand something. This may involve creating new ideas, projects or solutions. Improving existing skill, knowledge or products. Expanding upon current understand or capabilities to achieve great depth or breath.
Dismantle	To take apart, disassemble, or remove the components of something, typically in an orderly or systematic way. It can refer to physical objects, such as machinery or structures, or abstract concepts, such as dismantling an argument or a system.	To dismantle a physical object, the learner would need to systematically take it apart while demonstrating understanding of its components and function. The approach would typically involve careful planning, execution, and documentation. In execution, the learner should follow logical steps to take apart the object without causing damage. They should use appropriate tools to loosen or remove parts efficiently. The components should be kept organised for potential reassembly. The learner should demonstrate both technical skill and understanding while completing the task.
Explain	Make clear a given subject matter and / or give reasons for and/or the procedure in a given situation or regarding a given subject matter / Setting out purposes or reasons.	The learner will be expected to provide clarity on the subject, outlining the procedure or procedures associated with it, and set out reasons for its importance and / or significance. The learner will be expected to demonstrate a detailed comprehension of the subject matter.
Evaluate	An evaluation is normally detailed and provides a solution or conclusion and/or recommendation (perhaps for further exploration). An evaluation could include a comparative element and will ascertain the usefulness or contribution of each part to the whole.	The learner will be expected to assess, analyse, and form judgments about a subject, considering its merits, shortcomings, and potential improvements based on evidence and reasoning.
Follow	Adhere to rules, procedures and/or conventions regarding an activity showing skills and knowledge in more than one area and/or contexts.	Adhere to a series of steps or stages in a specific order to achieve a particular goal or complete a task. This involves understanding and executing each step correctly, ensuring that the sequence is maintained to produce the desired outcome.

Identify	To select and list appropriate items from information that you have been given or collected.	The learner will be expected to review a set of data, information or items, and accurately select and list the required individual elements of data, information or items. The learner should be able demonstrate the ability to filter relevant information from a broader set, showing comprehension and attention to detail.
Illustrate	To visually or descriptively depict an item, activity, or process in a clear and detailed manner to enhance understanding and convey information effectively.	The learner will be expected to have a thorough understanding of the item, activity, or process being illustrated. This involves comprehending its components, functions, and overall purpose. The learner must ensure that the illustration is clear and detailed. This involves providing enough information to accurately represent the subject and using appropriate visual, role play or descriptive techniques to enhance clarity. The learner employs effective visual techniques, such as role play, diagrams, charts, sketches, or infographics, to depict the subject. This involves choosing the appropriate method to best convey the information. The learner uses descriptive language to complement the visual elements. This involves providing explanations, annotations, or labels to enhance the understanding of the illustration. The learner ensures that the illustration is accurate and free from errors.
Inspect	To direct someone to examine something closely, carefully, and systematically.	This typically involves looking for details, assessing quality, identifying issues, or verifying compliance with standards. The expected action would be for the learner to carefully examine each component, looking for signs of wear, damage, or malfunction. The learner should conduct a thorough visual and physical examination of the object or subject. Look for defects, irregularities, or signs of wear and tear. Use measurements, tests, or diagnostic tools if required. Compare findings against predefined standards or expected outcomes. This ensures that the learner demonstrates technical accuracy, observational skills, and critical thinking in their approach.

Interpret	To analyse, explain, and make sense of information to enhance understanding and inform decisions or actions.	The learner will be expected to comprehend the information being interpreted. This involves understanding the content, context, and relevance of the information. The learner analyzes the information to identify key points, patterns, and relationships. This involves breaking down complex information into manageable parts and examining it critically. The learner explains the information in a clear and coherent manner. This involves communicating the meaning, implications, and significance of the information to others. The learner places the information within the appropriate context. This involves understanding how the information relates to broader concepts, situations, or fields of study. The learner applies the interpreted information to inform decisions, actions, or further understanding. This involves using the insights gained from interpretation to solve problems, make informed choices, or deepen knowledge.
Join	To connect, unite, or bring together two or more things. This could refer to physically attaching objects, combining elements, or participating in a group or activity.	A learner would be expected to connect, unite, or bring together elements in a physical, conceptual, or social sense. The learner must ensure the connection is purposeful, effective, and relevant to the task.
Justify	To provide a valid reason or explanation for something. To defend actions, decisions, or beliefs by offering logical or rational reasons.	It is expected that a learner would provide reasoning or evidence to support and justify their answer. Similarly, a learner may need to **e**xplain why they took certain actions and provide valid reasons for them to justify those actions.
Locate	To identify or discover the exact position or place of something or someone.	The learner would be expected to demonstrate their ability to identify or discover the exact position of something. Pinpointing the specific location of an object, person, or place. A task may be to locate parts of a diagram in biology or anatomy, requiring a learner to locate specific parts of a plant, animal, or human body on a diagram. This shows their knowledge of the structure and function of living organisms.
Maintain	To keep information, items, or equipment in good condition, ensuring they remain functional, accurate, and up-to-date over time.	The learner will be expected to conduct routine checks and inspections to identify any signs of wear, damage, or inaccuracies. The learner takes

		preventive actions to avoid potential issues. This includes cleaning, calibrating, updating, or servicing the items, equipment or information as appropriate regularly to ensure they remain in optimal condition. The learner addresses any issues promptly by performing necessary repairs or updates. The learner keeps accurate records of maintenance activities. This includes documenting inspections, repairs, updates, and any changes made to the information, items, or equipment. The learner follows established guidelines, standards, or procedures for maintenance.
Make	To create, construct, or assemble items using appropriate materials, tools, and techniques to achieve a specific purpose or outcome.	The learner will be expected to plan and prepare for the making process. This involves understanding the requirements, gathering necessary materials and tools, and organising the workspace. The learner selects appropriate materials for the item being made. The learner demonstrates proficiency in using the required tools. This includes selecting the right tools, handling them correctly, and ensuring they are in good working condition. The learner carries out the making process accurately and systematically. The learner inspects the final product to ensure it meets the required standards and specifications. This involves checking for defects, ensuring functionality, and making any necessary adjustments. The learner adheres to safety protocols throughout the making process. This includes wearing personal protective equipment (PPE), using tools safely, and maintaining a clean and organised workspace.
Make recommendations	To suggest or advise a course of action, product, or idea based on knowledge, expertise, or evaluation. It implies endorsing something as beneficial, suitable, or effective.	The learner will be expected to provide suggestions, advice, or proposals based on analysis, evaluation, or knowledge of a subject. These recommendations should be clear, relevant, and backed by reasoning.
Outline	To give general idea and overview without going into detail.	The learner will be expected to review a topic or concept and provide a brief summary that highlights the main points or key elements, without delving into detailed explanations or analysis. The learner should be

		able to demonstrate the ability to understand and convey the essence of a subject clearly and concisely.
Perform	To execute and carry out a specific activity or process effectively and efficiently to achieve a desired outcome.	The learner will be expected to comprehend the instructions or guidelines related to the activity or process. This involves understanding the steps, objectives, and expected outcomes. The learner prepares for the activity or process by organizing necessary resources, materials, and tools. The learner carries out the activity or process according to the instructions or plan. The learner applies relevant skills and knowledge during the performance of the activity or process. This involves using techniques and methods appropriate to the task. The learner manages their time effectively to complete the activity or process within the given timeframe. The learner evaluates the results of the activity or process to ensure that the objectives are met. This involves assessing the quality of the produced items or the accuracy of the understanding gained.
Prepare	To gather necessary materials, plan steps, and organise resources in advance to ensure readiness for a task or activity, following specified procedures and guidelines	The learner will be expected to organise and arrange the necessary components or materials, create a step-by-step plan, and ensure all resources are available and ready for a specific task or activity. The learner will be able to demonstrate the ability to systematically plan ahead, coordinate elements effectively, and adhere to any required guidelines or protocols demonstrating readiness and a clear understanding of the preparation process required for successful task completion.
Present	To effectively communicate and display information or items in a clear, organized, and engaging manner to enhance understanding and convey key messages to an audience.	The learner will be expected to have a thorough understanding of the content being presented. This involves knowing the key points, data, or items and their significance. The learner organises the content logically and coherently. This involves structuring the presentation in a way that flows naturally and is easy for the audience to follow. The learner ensures that the presentation is clear and easy to understand. The learner engages the audience through effective communication

		techniques. The learner effectively uses visual aids, such as slides, charts, diagrams, or props, to enhance the presentation. The learner presents with confidence and delivers the content smoothly. The learner is able to respond to questions and engage in discussions with the audience.
Produce	To create, generate, or fabricate items or information through appropriate processes and techniques to meet specified objectives and quality standards.	The learner will be expected to comprehend the requirements and objectives for the production task. This involves understanding the specifications, desired outcomes, and quality standards. The learner plans and prepares for the production process. This includes organising necessary resources, materials, tools, and setting up the workspace. The learner selects the appropriate materials needed for production. The learner executes the production process accurately and systematically. The learner inspects the produced items or information to ensure they meet the required standards and specifications.
Reasemble	To put something back together or gather again after being separated. It is often used in instructions or directives, requiring someone to reconstruct or regroup elements that were previously assembled.	A learner responding to an assessment criterion that requires reassembling would be expected to demonstrate their ability to put something back together, either physically (like a mechanical structure) or conceptually (such as reorganizing ideas). The learner should demonstrate understanding and have the ability to identify the components that need to be reassembled, whether it's physical materials, a process, or an argument. By following logical steps they should ensure the correct order and method for reassembly, referencing any provided instructions or guidelines. On completion, the learner should make sure everything is reassembled correctly, efficiently, with attention to detail and work as intended.
Record	To document, capture, or store information systematically for future reference. It is often used in instructions or directives requiring someone to write down, log, or preserve details accurately.	A learner demonstrating the command verb record in response to an assessment criterion would need to show their ability to capture, document, or store information systematically and accurately. The learner should use the correct method of recording, such as written notes, audio logs, charts, tables, or digital records. They should record

		information precisely without omitting key details. Their response should be clear, structured, and follow best practices for documentation.
Rectify	To correct, fix, or adjust something that is incorrect, faulty, or problematic. It is often used in instructions or directives requiring someone to make necessary changes to restore accuracy, functionality, or fairness.	A learner responding to an assessment criterion that requires rectifying something would need to demonstrate their ability to identify, correct, and improve an error, issue, or deficiency. Their approach should be systematic, well-reasoned, and clearly documented. The learner should pinpoint what needs to be rectified, whether it's an error in a report, a flaw in a design, or a misunderstanding in a concept. They should implement the necessary changes, adjustments, or fixes with precision and show how the correction improves accuracy, functionality, or effectiveness.
Reinstate	To restore something to its original state, position, or condition after it has been removed, suspended, or altered. It is often used in instructions or directives requiring someone to bring back a previous status, rule, or object.	A learner responding to an assessment criterion that asks for something to be reinstated would need to demonstrate their ability to restore, reintroduce, or return an element to its original state or position. Their approach should be systematic, justified, and clear in execution. The learner should determine what has been removed, suspended, or altered and needs to be restored. The learner should be able to justify why the reinstatement is necessary, such as restoring functionality, overall performance and effectiveness, improving fairness, or correcting a previous decision.
Remove	To take away, eliminate, or detach something from its place or position. It is often used in instructions or directives, requiring someone to extract or discard an item, concept, or element.	A learner responding to an assessment criterion that asks for something to be removed would need to demonstrate their ability to take away, eliminate, or detach an element from a process, structure, or concept. Their approach should be methodical, precise, and justified. The learner should clearly determine what needs to be taken away, whether it’s a physical component, an unnecessary step in a process, or irrelevant information in an analysis. They should consider how removing the element affects the overall system, ensuring it enhances performance or clarity rather than causing unintended problems.

Research	To systematically investigate and study materials and sources in order to establish facts and reach new conclusions.	The learner will be expected to conduct a structured and methodical approach to defining objectives, gathering data from various sources, systematically investigating and analysing that data, establishing facts, and reaching new conclusions that can inform decision-making and program development.
Report	To provide a comprehensive and structured account of research, observations, or findings.	The learner should have the ability to collect relevant data, observations, or findings related to the topic in question. The information should be organized logically, using the appropriate format, to ensure clarity and accuracy in communication of the facts.
Select	To choose and identify the most appropriate items or information from a range of options based on specific criteria, relevance, and requirements.	The learner will be expected to comprehend the criteria and requirements for selection. This involves understanding the specific attributes, qualities, or characteristics that are important for the task. The learner conducts research and gathers a range of potential items or information. The learner evaluates the available options against the selection criteria. This involves comparing and contrasting different items or pieces of information to determine their suitability. The learner makes informed decisions based on their evaluation. The learner ensures that the selected items or information are accurate and relevant to the task. This involves verifying the validity and reliability of the chosen options.
Set up	To arrange, configure, and prepare equipment, items, or information for use, ensuring functionality, efficiency, and readiness for the intended purpose.	The learner will be expected to comprehend the specific requirements and objectives for the set-up task. This involves understanding the purpose, desired outcome, and any relevant instructions or guidelines. The learner prepares the equipment, items, or information for set-up. The learner configures the equipment, items, or information according to the specified requirements The learner calibrates and tests the set-up to ensure it functions correctly. The learner adheres to safety protocols during the set-up process. This includes following safety guidelines, using personal

		protective equipment (PPE), and ensuring a safe and organized workspace. The learner documents the set-up process and outcomes.
Sharpen	To make something sharper, more precise, or more effective. This can apply to physical objects, like knives or pencils, or abstract concepts, like skills or focus.	A learner would need to make something sharper, more precise, or more effective through an intentional process. For physical objects, the use of appropriate tools (e.g., sharpening stone for a blade, pencil sharpener for a writing tool). For skills or cognitive abilities, the learner should engage in focused practice, refinement techniques, or exercises. The learner should enhance precision and effectiveness through the process of sharpening.
Summarise	To provide a brief account giving the main points of a topic or range of topics.	The learner will be expected to examine a topic or set of information and condense it into a concise summary that captures the essential points, themes, or arguments, without including unnecessary details. The learner should be able to demonstrate the ability to distill complex or extensive information into its core components and present it in a clear and coherent manner focusing on the most significant aspects and omitting extraneous details.
Use	Operate a system or process showing skills and knowledge in more than one area and/or contexts and generally carried out on at least three occasions.	The learner will be expected to use a system, process or tool in a practical assessment activity requiring them to apply theoretical knowledge or skills in real-world scenarios to demonstrate competency and understanding.