

Motor Vehicle KS4 Scheme of Work Overview

Rationale: This is a Level 1 or 2 vocational qualification (dependent on individual tracking/targets) which provides individuals with an introduction to the knowledge, understanding and practical skills required to gain employment or further study towards a route within engineering industries. These qualifications have been developed for schools, colleges and training providers to deliver to Learners likely to be 14-16 years of age and looking to study a Technical Award alongside their GCSEs. These qualifications may also be suitable to those who have had no previous experience and looking for an entry route into an engineering occupation.

The qualifications have been designed to be practical, engaging and motivating to support Learners in gaining the basic knowledge and skills required by employers. These skills include working with electrical circuits and identifying and reporting of risks in the workplace. The knowledge and skills within these qualifications can be applied to maintaining and working with a range of vehicles but can also be applied to wider engineering applications such as the maintenance of machinery and fabrication.

These qualifications are assessed using a range of methods appropriate at this level of introduction to technical qualifications. Learners will gain their knowledge and skills mainly in a workshop based environment by carrying out tasks which their assessor will observe.

Learners will complete a written report of the practical task undertaken as part of the synoptic assessment. This report will be graded by their assessor; Refer, Pass, Merit or Distinction. Learners will also complete an online test that will be automatically externally marked and graded as Refer, Pass, Merit or Distinction. Achievement of this qualification is graded Refer, Pass, Merit, or Distinction. As a result of Learners successfully completing the qualification they will be well prepared for the next level of study and/or employment.

Once Learners have achieved this qualification they can progress to further study in automotive and engineering subjects or to a job role in automotive maintenance and repair as an apprentice technician.

Intent	Implementation	Impact
<ul style="list-style-type: none"> • To meet the needs of all learners. • To enable all students to progress and achieve their potential. • To inspire learners and encourage them to pursue careers in the automotive industry. • To participate in enrichment activities. • To encourage and promote independent activities on vehicles, building confidence in all learners. • To develop practical skills relevant to the automotive industry. • To work collaboratively with others, sharing ideas and reaching solutions and conclusions. • To support the development of writing skills and vocabulary relevant to the automotive industry. • To write with confidence, fluency and accuracy. • To use subject terms with accuracy and precision. 	<ul style="list-style-type: none"> • 2 hours per week – 1 hour theory, 1 hour practical. • Measure prior knowledge and build upon throughout the year. • Units are differentiated accordingly to meet the needs of all learners. • Assessments completed throughout each unit completion. • Literacy, Maths and ICT skills are embedded throughout the course. • Reading aloud and extended writing activities are embedded within course delivery. • The course consists of 2 full units; theory and practical content, sequenced to ensure key safety points are embedded before moving on following the logical path of progression. • PowerPoints structured to follow the course sequence but teachers are expected to differentiate according to the needs of each group. • Practical assessments are completed throughout the duration of the course, once practice attempts have been completed. This is to ensure learners are fully capable to work unaided before completing practical assessments. Written assessments are completed; these are essentially the write –ups for each practical task. • The use of an online learning platform is also used to embed content and assess understanding of the learners. <p>Multiple choice online tests (x2) must be completed to complete the course. 60% minimum pass grade, two attempts at each test.</p>	<ul style="list-style-type: none"> • Formative assessments/progress tests are completed throughout the course, then finally a synoptic final assessment. These results create a summative result (overall grade) at course completion. • Building learners’ long term memory. • Learner response to specific targets set by teacher. • Continuous review of teaching and assessment methods by staff and learners throughout the course when moderation takes place. <p>Teachers ensure that learning experiences are meaningful and relevant. Teachers understand the progression of learning in order to make effective decisions, bridge transitions and scaffold and support each student toward success.</p>

Autumn Term Yr1	Spring Term Yr1	Summer Term Yr1
<p align="center">Course introduction and Health and Safety Workshop tools and equipment</p> <p>Introduce learners to Health and Safety in the automotive environment. This unit is always first to be covered as it is crucial all learners understand the dangers of an automotive workshop and how to work safely.</p> <p>Topic covered will include PPE and VPE, typical workplace processes, regulations and legislation, good housekeeping and many more.</p> <p>Introduction to hand tools and equipment completed during theory and workshop sessions. All will be able to competently use tools and equipment in the workshop setting.</p> <p>Assessment of this unit will be completed by formatively assessing via an online content platform, as well as progress test completion.</p>	<p align="center">Engine operation, components and systems</p> <p>Learners to receive a comprehensive overview of all engine operation and supporting systems, moving on to symptoms and faults associated with mechanical engine operation.</p> <p>Other systems to include cooling, lubrication, air supply and exhaust. Terms associated with cooling and lubrication, requirements and features of each, components found within each system.</p> <p>Discuss symptoms and faults associated with cooling and lubrication systems, air supply and exhaust and turbocharged engines.</p> <p>Learners will complete assessment tasks within the workshop.</p> <p>Practical task completion required – see below.</p> <p>Progress test to be completed covering all content covered to date.</p>	<p align="center">Fuel and ignition systems</p> <p>The layout and operation of electronic ignition systems and advantages over conventional systems (points).</p> <p>Terms associated with ignition systems, moving on to symptoms and faults with electronic ignition systems.</p> <p>The construction, operation and components used for petrol and diesel fuel systems.</p> <p>Terms associated with hydrocarbon fuels.</p> <p>Procedures used to maintain fuel systems and specialist equipment used to evaluate system performance.</p> <p>Practical task completion required – see below.</p> <p>Progress test to be completed covering all content covered to date.</p>
Autumn Term Yr2	Spring Term Yr2	Summer Term Yr2
<p>Chassis systems – Brakes, steering and suspension</p> <p>The components, layout and operation of hydraulic power steering systems. The terms associated with steering and the purpose of steering geometry.</p> <p>The components, layout and operation of suspension systems. Learners will understand the advantages/disadvantages of each type and discuss the forces acting on suspension.</p> <p>The construction and operation of disc and drum brakes and the hydraulic braking system. The principles of ABS systems. The procedures for inspecting the condition of the braking system and components.</p> <p>Practical task completion required – see below.</p> <p>The construction of different types of wheel and tyre.</p> <p>Progress test to be completed covering all content covered to date.</p>	<p align="center">Electrical lighting systems</p> <p>Construction and operation of vehicle lighting systems.</p> <p>Testing of electrical voltage, resistance and current flow using electrical test equipment.</p> <p>Components including battery, wiring, terminals fuse, switch, relay and bulb must be available to test and use.</p> <p>Practical task completion required – see below.</p>	<p align="center">Preparation and completion of Awarding Body online tests and completion of practical assessments</p> <p align="center">Synoptic unit – plan, prepare, carry out and report on light vehicle maintenance</p> <p>Learners will have received a revision pack in preparation for online tests.</p> <p>Revision sessions will be completed throughout lessons, ensuring all learned content is revisited.</p> <p>All online tests (x2) are multiple choice and results are gained immediately after submitting.</p> <p>This unit enables the Learner to demonstrate the knowledge and skills required to prepare the work area and produce a report identifying vehicle defects and making recommendations to rectify faults upon the completion of the work activity.</p> <p>Upon successfully completion of both online tests and all practical assessments, learners will receive either: <i>Level 1 Certificate in Carrying out Periodic Maintenance and Inspection.</i> <i>Level 2 Certificate in Automotive Maintenance qualification.</i></p>

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Evidence Requirements:
You must produce evidence of completing all of the tasks below:
Task 1 – Engine <ol style="list-style-type: none"> 1. Carry out an engine compression test 2. Carry out a cylinder leakage test
Task 2 – Liquid cooling <ol style="list-style-type: none"> 1. Remove, test, and replace a thermostat 2. Check the cooling system for leaks
Task 3 – Fuel or Ignition system <ol style="list-style-type: none"> 1. Change a fuel filter and check fuel system pressure or 2. Change a set of spark plugs and check ignition timing
Task 4 – Air intake and exhaust system <ol style="list-style-type: none"> 1. Remove, inspect clean / replace an air filter 2. Remove and replace an exhaust system component
Task 5 – Steering system <ol style="list-style-type: none"> 1. Remove and replace a steering system component 2. Check and adjust front wheel alignment
Task 6 – Suspension system <ol style="list-style-type: none"> 1. Remove and replace a suspension coil or leaf spring 2. Remove and replace a suspension damper or airbag
Task 7 – Brakes <ol style="list-style-type: none"> 1. Remove, measure for serviceability and replace brake pads and discs
Task 8 – Wheels and tyres <ol style="list-style-type: none"> 1. Remove and replace a road wheel on a vehicle 2. Remove, balance and replace a tyre
Task 9 – Construct and test an operational electrical circuit <ol style="list-style-type: none"> 1. A risk assessment prior to carrying out the task 2. Construction and testing of the operational electrical circuit 3. Identification of any faults