

LTP – KS4 Mechanics

This is an Entry Level 3 & Level 1 Award, Certificate and Diploma qualification in vehicle systems maintenance, which will enable pupils to progress into further learning within the Motor vehicle sector. Students will learn practical skills that will enable them to gain sufficient knowledge, for further studies in construction at Level 2 or above. Students will learn to demonstrate their ability to complete tasks to given specifications and increasingly higher standards within the motor industry. Students will learn to work in teams and take personal responsibility for their own and others health and safety. This will include how to handle tools and equipment, follow rules and regulations specific to the construction industry. Students will also learn to use mathematical knowledge in practical will include, measurement, ratio and geometry. Students will also gain a technical vocabulary which they will use on a daily basis and in further studies. This will also prepare pupils to be able gain greater quality and understanding of the principles, rules and regulations within the industry.

Year 10

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p>Health and Safety</p> <p>In this mandatory unit learners will explore the responsibility of the employer and employee and the requirements of basic health and safety legislation.</p> <ul style="list-style-type: none"> • They will identify workshop hazards and basic safety procedures • Know health and safety procedures and the responsibilities of employers and employees. • Know health and safety procedures and the responsibilities of employers and employees • Know about COSHH. • Know about safe manual handling. • Know about fire prevention and emergency procedure 	<p>Wheels and Tyres</p> <p>In this unit the learner will learn how to identify modern types of road wheels and tyres, their construction and correct usage including the carrying out of practical activities regarding wheels and tyres</p> <ul style="list-style-type: none"> • Know how to remove and replace road wheels. • Know how to inspect road wheels. • Know about tyre maintenance. • Know how to replace tyres. • Know how to balance wheels • Be aware of environmental considerations 	<p>Exhaust System</p> <p>In this unit the learner will learn about modern vehicle exhaust systems their construction and correct usage including the carrying out of practical activities regarding inspection and replacement.</p> <ul style="list-style-type: none"> • Know the main components of a vehicle exhaust system • Know how to inspect a vehicle exhaust system • Know how to replace a vehicle exhaust component • Be aware of environmental considerations 	<p>Braking System</p> <p>In this unit the learner will explore the layout of basic braking systems and the performing of routine maintenance tasks for these systems, following all relevant safety precautions.</p> <ul style="list-style-type: none"> • Know how to remove and replace wheels • Know about braking systems • Be aware of environmental considerations. 	<p>Introduction to Ignition Systems</p> <ul style="list-style-type: none"> • Use safe working practices when working on compression ignition power units. • Identify the major components of the compression ignition engine • Using methodical procedures, dismantle and reassemble the main components of a four stroke compression ignition engine • Identify the most common sealing devices used on compression ignition engines to seal: <ul style="list-style-type: none"> - Oil - Water - Gas - fuel • Identify from samples the main types of locking devices used on compression ignition engines • Give examples of specialist engine tools used with compression ignition engines • Select and use specialist workshop tools for appropriate purpose, to include <ul style="list-style-type: none"> - torque wrench - piston ring clamp 	<p>Cooling System</p> <p>In this unit learners will investigate the main components of liquid cooling and lubrication systems and the reasons for each. They will learn about maintenance procedures and the precautions to be taken when working on each system.</p> <ul style="list-style-type: none"> • Know about cooling systems • Know how to use antifreeze • Be able to pressure test a cooling system • Know about engine lubrication systems • Be aware of environmental considerations

Year 11

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p align="center">Health and Safety</p> <p>In this mandatory unit learners will revise the responsibility of the employer and employee and the requirements of basic health and safety legislation.</p> <ul style="list-style-type: none"> • They will identify workshop hazards and basic safety procedures • Know health and safety procedures and the responsibilities of employers and employees. • Know health and safety procedures and the responsibilities of employers and employees • Know about COSHH. • Know about safe manual handling. • Know about fire prevention and emergency procedure 	<p align="center">Spark and Ignition System</p> <p>In this unit the learner will find out about the main components and the operating principles of vehicle fuel systems including routine maintenance procedures required for effective engine operation.</p> <ul style="list-style-type: none"> • Know the components of fuel systems • Be able to change fuel and air filters • Be aware of environmental considerations 	<p align="center">Introduction to Vehicle Valeting</p> <ul style="list-style-type: none"> • Use safe working practices when valeting vehicles • Valet vehicle exterior to include: • Selection and use of appropriate cleaning tools, materials and products for: <ul style="list-style-type: none"> - washing and drying vehicle exterior ensuring removal of dirt, detergent and water - restoring surface finish to bodywork, bright work, exterior trim and glass - protecting surface finish including bodywork, bright work and exterior trim • Valet vehicle interior to include the selection and use of appropriate cleaning tools, materials and products for: <ul style="list-style-type: none"> - Carpets - Upholstery - plastic trim - glass • Demonstrate how to protect sensitive electronic components and the air intake prior and during an engine bay valet • Select and use appropriate cleaning tools, materials, methods and products to clean engine bay • Perform visual inspection of a valeted vehicle for cleaning residues and surface finish • Identify key findings of inspection and rectify any imperfections • Demonstrate appropriate ways to dispose of waste 	<p align="center">Introduction to Battery and Lighting Systems</p> <ul style="list-style-type: none"> • Identify the correct battery for a specified vehicle e.g. diesel, petrol • Locate and remove a vehicle battery • Refit a vehicle battery observing polarity connections • Test vehicle battery voltage at <ul style="list-style-type: none"> - engine off no load - engine cranking - engine running at 3000 revs • Identify key findings from vehicle battery voltage tests • Locate the components of a vehicle external lighting system to include <ul style="list-style-type: none"> - side lights - head lamps - direction indicators - hazard warning lights - stop lights - reverse lights - fog lights - number plate lamps • Perform a vehicle external lighting check • Identify key findings from vehicle lighting check • Replace the bulbs/lamps for at least one of the following <ul style="list-style-type: none"> - side lamps - rear lamps - direction indicator lamps • Locate the components of a vehicle internal lighting system to include <ul style="list-style-type: none"> - courtesy lights - dashboard illumination lights - driver information lights • Locate and check the operation of at least six driver 	<p align="center">Introduction to Engineering Equipment and Materials</p> <ul style="list-style-type: none"> • Identify vehicle components manufactured from <ul style="list-style-type: none"> - Steel - alloy steel - non-ferrous metals - thermo setting plastic materials - thermo plastic materials • Identify on a vehicle where the following are used <ul style="list-style-type: none"> - sealing compounds - adhesives • Identify and use appropriate engineering hand and power tools for <ul style="list-style-type: none"> - measuring and marking out - metal cutting and forming - drilling - thread forming • Use these tools safely to produce a vehicle accessory or hand tool 	

		products in accordance with environmental guidance	information warning lights to include <ul style="list-style-type: none">- oil pressure warning light- no charge warning light- brake warning light• Identify lighting circuit fuse location and value• Locate, remove, test and replace a lighting circuit fuse• Demonstrate appropriate ways to dispose of waste products in accordance with environmental guidance		
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