

# LTP – KS5 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 12

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p><b>Health and Safety</b></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. They will identify workshop hazards and basic safety procedures</p> <ul style="list-style-type: none"> <li>• Know health and safety procedures and the responsibilities of employers and employees.</li> <li>• Know health and safety procedures and the responsibilities of employers and employees</li> <li>• Know about COSHH.</li> <li>• Know about safe manual handling.</li> <li>• Know about fire prevention and emergency procedure</li> </ul>	<p><b>Introduction to Vehicle Transmission Systems</b></p> <ul style="list-style-type: none"> <li>• Use safe working practices when working on vehicle transmission systems</li> <li>• Identify vehicle transmission layouts as: <ul style="list-style-type: none"> <li>- front engine front wheel drive</li> <li>- front engine rear wheel drive</li> <li>- mid-engine rear wheel drive</li> <li>- front engine four-wheel drive</li> </ul> </li> <li>• Identify the location of the clutch, gearbox and final drive on a vehicle</li> <li>• Identify the location of the torque converter, gear box and final drive on a vehicle</li> <li>• Identify, from samples, the main components of a manual clutch assembly as: <ul style="list-style-type: none"> <li>- clutch plate</li> <li>- cover assembly</li> <li>- thrust bearing</li> </ul> </li> <li>• Correctly assemble and align a manual clutch assembly onto an engine flywheel</li> <li>• Identify from appropriate data the lubricants used in manual transmission systems</li> <li>• Identify from appropriate data the lubricant used in automatic transmission systems</li> <li>• Perform a check and top up lubricant level/s in a manual transmission system</li> <li>• Demonstrate appropriate ways to dispose of waste products in accordance with environmental guidance</li> </ul>	<p><b>Introduction to steering and suspension</b></p> <ul style="list-style-type: none"> <li>• Use safe working practices when working on vehicle steering and suspension systems</li> <li>• Remove and replace road wheels with special attention to <ul style="list-style-type: none"> <li>- safe jacking procedure</li> <li>- use of correct jacking points</li> <li>- use of axle stands</li> <li>- use of torque wrench</li> </ul> </li> <li>• Identify and locate main components of a non-power-assisted vehicle steering system</li> <li>• Identify and locate main components of a power assisted vehicle steering system</li> <li>• Check steering systems for excessive wear and identify key findings</li> <li>• Remove and replace track rod end.</li> <li>• Check and adjust front wheel alignment</li> <li>• Check power assisted steering systems for leaks</li> <li>• Follow correct procedure to check and top-up power assisted steering fluid level</li> <li>• Identify and locate the main components of a vehicle suspension system</li> <li>• Check suspension system for excessive wear and identify key findings</li> <li>• Remove and refit front or rear suspension damper</li> </ul>	<p><b>Introduction to Vehicle Inspection</b></p> <ul style="list-style-type: none"> <li>• Use safe working practices when undertaking routine vehicle inspection.</li> <li>• Identify key periodic inspections that should be performed on a vehicle and the main reasons for carrying them out</li> <li>• Perform straightforward periodic maintenance to include checking and reporting on <ul style="list-style-type: none"> <li>- engine oil level</li> <li>- coolant level</li> <li>- tyre condition, pressure and tread depth</li> <li>- operation of all external lights</li> <li>- screen washer fluid level</li> <li>- brake/clutch fluid reservoir level</li> <li>- condition of seatbelts</li> <li>- foot pedal and handbrake lever travel</li> <li>- driver information warning lights</li> </ul> </li> <li>• Identify key pre delivery inspections that would be undertaken by a professional vehicle retailer on a new vehicle and the main reasons for carrying them out</li> <li>• Identify key pre delivery inspections that would be undertaken by a professional vehicle retailer on a used vehicle and the main reasons for carrying them out</li> <li>• Perform straightforward pre-sale inspection on a used</li> </ul>	<p><b>Introduction to Vehicle Body Repair</b></p> <ul style="list-style-type: none"> <li>• Use safe working practices when undertaking vehicle body repairs.</li> <li>• Identify vehicle body components manufactured from: <ul style="list-style-type: none"> <li>- Steel</li> <li>- alloy steel</li> <li>- non-ferrous metals</li> <li>- thermo setting plastic materials</li> <li>- thermo plastic materials</li> <li>- glass</li> </ul> </li> <li>• Identify anti-corrosive materials</li> <li>• Give examples of body damage to vehicle panels</li> <li>• Identify body damage that requires professional repair</li> <li>• Give examples of body damage that can be rectified by non-professionals</li> <li>• Select and use panel beating tools to repair minor vehicle body damage (hammers, dollies etc.)</li> <li>• Repair a damaged vehicle panel using plastic filler to achieve the correct contour</li> <li>• Remove and refit a vehicle door and one of the following body components: <ul style="list-style-type: none"> <li>- bonnet</li> <li>- boot</li> <li>- hatch lid</li> </ul> </li> <li>• Remove and refit front and rear plastic bumpers</li> <li>• Produce a spot weld lap joint</li> </ul>	<p><b>Introduction to Customer Care</b></p> <ul style="list-style-type: none"> <li>• Give an example of a positive customer experience</li> <li>• Give an example of a negative customer experience</li> <li>• Indicate how positive and negative customer experience could affect a business</li> <li>• Identify and demonstrate behaviours that would contribute to a positive customer experience when <ul style="list-style-type: none"> <li>- greeting a customer</li> <li>- answering customer questions</li> <li>- relaying customer information or requests to the correct workplace person</li> </ul> </li> <li>• Identify and demonstrate behaviours that would contribute to a negative customer experience when <ul style="list-style-type: none"> <li>- greeting a customer</li> <li>- answering customer questions</li> <li>- relaying customer information or requests to the correct workplace person</li> </ul> </li> <li>• Identify and demonstrate customer safety procedures</li> </ul>

- Demonstrate appropriate ways to dispose of waste products in accordance with environmental guidance

- vehicle to include checking and reporting on
  - engine oil level
  - coolant level
  - tyre condition, pressure and tread depth
  - operation of all external lights
  - screen washer fluid level
  - brake/clutch fluid reservoir level
  - condition of seatbelts
  - foot pedal and handbrake lever travel
  - driver information warning lights
  - condition of interior and exterior body, paint and trim
  - operation and condition of in car entertainment
  - vehicle and passenger comfort systems
  - vehicle security system
  - vehicle documentation
- Employ industry standard documentation to identify findings of vehicle inspections

- Perform a destructive test on a spot weld
- Remove a spot weld with an appropriate tool or drill bit
- Replace a spot weld with a MIG plug

**Year 13**

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Health and Safety</b>	<b>Wheels and Tyres</b>	<b>Exhaust System</b>	<b>Braking System</b>	<b>Spark and Ignition System</b>	<b>Cooling System</b>
<p>In this mandatory unit learners will revise the responsibility of the employer and employee and the requirements of basic health and safety legislation. They will identify workshop hazards and basic safety procedures</p> <ul style="list-style-type: none"> <li>• Know health and safety procedures and the responsibilities of employers and employees.</li> <li>• Know health and safety procedures and the responsibilities of employers and employees</li> <li>• Know about COSHH.</li> <li>• Know about safe manual handling.</li> <li>• Know about fire prevention and emergency procedure</li> </ul>	<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"> <li>• Work safely</li> <li>• Know how to remove and replace road wheels.</li> <li>• Know how to inspect road wheels.</li> <li>• Know about tyre maintenance.</li> <li>• Know how to replace tyres.</li> <li>• Know how to balance wheels</li> <li>• Be aware of environmental considerations</li> </ul>	<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"> <li>• Work safely</li> <li>• Know the main components of a vehicle exhaust system</li> <li>• Know how to inspect a vehicle exhaust system</li> <li>• Know how to replace a vehicle exhaust component</li> <li>• Be aware of environmental considerations</li> </ul>	<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"> <li>• Work safely</li> <li>• Know how to remove and replace wheels</li> <li>• Know about braking systems</li> <li>• Be aware of environmental considerations.</li> </ul>	<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"> <li>• Work safely</li> <li>• Know the components of fuel systems</li> <li>• Be able to change fuel and air filters</li> <li>• Be aware of environmental considerations</li> </ul>	<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"> <li>• Work safely</li> <li>• Know about cooling systems</li> <li>• Know how to use antifreeze</li> <li>• Be able to pressure test a cooling system</li> <li>• Know about engine lubrication systems</li> <li>• Be aware of environmental considerations</li> </ul>