

# Long Term Plan Year 13 Motor Vehicle Engineering



| Half term | Unit title          | Key knowledge/<br>Content to learn and retain   | Essential skills to acquire (subject & generic)                              | Link to subject ethos and driver (rename)             | Anticipated misconceptions  | Links to previous KS                                | Links to future KS                       | Opportunity for stretch for high prior attainers | SMSC & British Values  | Cultural Capital  | Career Link   |
|-----------|---------------------|---|--|---|---|---|--|--|--|---|---|
| HT1       | Automotive industry | Vehicle repair business, body shop, vehicle repair workshop, paint shop, valeting, vehicle parts store, main office, vehicle sales, reception | Reading regulations & legislation, measuring data, reading charts and graphs | Real Life, Real Skills<br><br>Driving into the Future | Knowing regulations and legislations, identification of fires, ergonomic load, consumable materials | Health & Safety<br><br>Tools, Equipment & Materials | Unit ref:<br>GA102<br>GA3<br>GA4<br>LVMS | Produce a hierarchy of business                  | *beliefs, religious or otherwise, which inform their perspective on life and their interest in and respect for different people's feelings and values<br>*sense of enjoyment and fascination in learning about themselves, others and the world around them, including | *Links to local & national dealerships<br>*Career links to various pathways<br>*Encourage girls into the industry | <a href="https://wow.autocity.carmart.co.uk/world-of-work">https://wow.autocity.carmart.co.uk/world-of-work</a> |

|     |                |  |   |   |   |   |  |  |  |  |   |
|-----|----------------|--|---|---|---|---|--|--|--|--|---|
|     |                |  |   |   |   |   |  |  | the intangible   |  |   |
| HT2 | Transmission   | Clutch operating systems, pedal and lever, hydraulic operated, mechanical, cable operated, master cylinder, slave cylinder, hydraulic pipes, electrical and electronic components (fluid level indicators) | Reading manual data, measuring clutch slip and drag, measuring volume                     | Real Life, Real Skills<br><br>Driving into the Future | Use of clutch kit, use of vernier & micrometer gauges,                                    | Health & Safety<br><br>Tools, Equipment & Materials | Unit ref:<br>GA102<br>GA3<br>GA4<br>LVM02.1<br>LVM02.3 | Examine and adjust centrifugal clutch                          | *use of a range of social skills in different contexts, including working and socialising with pupils from different religious, ethnic and socio-economic backgrounds<br>*willingness to participate in a variety of social settings, cooperating well with others and being able to resolve conflicts effectively | *Discussions on car ownership and the importance of regular servicing                                    | <a href="https://wow.autocity.ca/mart.co.uk/world-of-work">https://wow.autocity.ca/mart.co.uk/world-of-work</a> |
| HT3 | Cooling & Fuel | Cooling fans and control devices, header tanks, radiators and pressure caps, heater matrix and temperature   | Measuring devices, reading data, checking volume, reading manufacturers settings, testing | Real Life, Real Skills<br><br>Driving into the Future | Use of compression leakage kits, reading hydrometer data, inspecting thermostats, cooling | Health & Safety<br><br>Tools, Equipment & Materials | Unit ref:<br>GA102<br>GA3<br>GA4<br>LVMS<br>LVM04      | Calculating antifreeze ratios, measuring volume and capacities | *interest in investigating and offering reasoned views about, moral and  | *Opportunities to examine MOT certificates, service schedules and parts ordered for vehicles, which link | <a href="https://wow.autocity.ca/mart.co.uk/world-of-work">https://wow.autocity.ca/mart.co.uk/world-of-work</a> |

|     |                           |  |  |   |  |   |  |                                 |  |   |   |
|-----|---------------------------|--|--|---|--|---|--|---------------------------------|--|---|---|
|     |                           | control, water leaks, water in oil, internal heating system: efficiency, excessively low or high coolant temperature. Direct and indirect injection, injectors and injector types, fuel filters injectors, fuel pumps, fuel lines and clips  | compression, testing compression (wet & dry)                                     |   | system components  |   |  |                                 | ethical issues   | directly into the curriculum  |   |
| HT4 | Electronic and electrical | Electronic ignition circuits and components and engine management systems, LT Circuit – battery, ignition switch, electronic trigger devices, capacitors, HT Circuit - spark plugs (reach, heat range, electrode features and electrode polarity), rotor arm, distributor and distributor cap, ignition leads, ignition coil | Measuring devices, reading data, checking levels, reading manufacturers settings | Real Life, Real Skills<br>Driving into the Future | Use of multimeters, measuring data from scan tools, electronic system components | Health & Safety<br>Tools, Equipment & Materials | Unit ref:<br>GA102<br>GA3<br>GA4<br>LVM02.3<br>LVM04 | Measuring inductive wavelengths | *willingness to participate in, and respond to, for example, artistic, musical, sporting, mathematical, technological, scientific and cultural opportunities | *New technologies and hybrid vehicles that are on the market<br>*Environmental impact of Teslas and electric vehicles | <a href="https://wow.autocity.ca/mart.co.uk/world-of-work">https://wow.autocity.ca/mart.co.uk/world-of-work</a> |

|     |                                  |  |  |   |  |   |  |                                  |  |   |   |
|-----|----------------------------------|--|--|---|--|---|--|----------------------------------|--|---|---|
| HT5 | Lighting systems                 | Vehicle lighting systems, battery, wiring, wiring terminals, fuse, switch, relay, lighting bulb, terminals and fuses<br>Construction of lighting circuits.<br>Testing of electrical voltage, resistance and current flow using appropriate testing equipment | Measuring devices, reading data, checking levels, reading manufacturers settings, testing batteries and alternators under load | Real Life, Real Skills<br><br>Driving into the Future | Use of multimeters, headlight beam aligners, identification of bulb types, fuse ratings, cable sizes | Health & Safety<br><br>Tools, Equipment & Materials | Unit ref:<br>GA102<br>GA3<br>GA4<br>LVM03                        | Adjusting headlight beam aligner | *willingness to participate in, and respond to, for example, artistic, musical, sporting, mathematical, technological, scientific and cultural opportunities   | *Choices when buying vehicles that are equipped with LEDs or different headlight arrangements | <a href="https://wow.autocity.ca/mart.co.uk/world-of-work">https://wow.autocity.ca/mart.co.uk/world-of-work</a> |
| HT6 | Synoptic reporting and servicing | Synoptic report and vehicle servicing inspection to include: interim service, full service, time based/mileage based service, service manual, MOT testers handbook, inspection service sheets<br>VOSA regulations, SMMT                                      | Reading indexes, measuring levels, reading manufacturers specifications, checking volumes and capacities                       | Real Life, Real Skills<br><br>Driving into the Future | Differences between interval and full service, pre and post inspections                              | Health & Safety<br><br>Tools, Equipment & Materials | Unit ref:<br>GA102<br>GA3<br>GA4<br>L2LVMS<br>LVM02.1<br>LVM02.2 |                                  | *interest in exploring, understanding of, and respect for cultural diversity and the extent to which they understand, accept, respect and celebrate diversity, as shown by their attitudes towards different religious, ethnic and | *Benefits of regular servicing of a vehicle that improves longevity and value                 | <a href="https://wow.autocity.ca/mart.co.uk/world-of-work">https://wow.autocity.ca/mart.co.uk/world-of-work</a> |

|  |  |  |  |  |  |  |  |  |   |  |  |
|--|--|--|--|--|--|--|--|--|---|--|--|
|  |  |  |  |  |  |  |  |  | socio-economic groups in the local, national and global communities |  |  |
|--|--|--|--|--|--|--|--|--|---|--|--|