

MCAST PROGRAMMES - PUBLIC INFORMATION TEMPLATE (FULL TIME)

Institute	Institute of Engineering and Transport
Department	Land Transport Department

Programme Title	Advanced Diploma in Light Vehicle Maintenance				
Course Code <i>To be filled in by Admissions Dept.</i>	MV4-A07-23	If the programme includes a WBL element, How is it accredited?		Apprenticeship	
MQF/ EQF Level	Level 4	Type <i>(refer to Appendix 1 for Parameters)</i>	Qualification	Awarding Body	MCAST – Malta College of Arts, Science and Technology
Accreditation Status	Accredited via MCAST’s Self Accreditation Process (MCAST holds Self-Accrediting Status as per 1st schedule of Legal Notice 296/2012)				
Mode of Delivery	Face to Face	Duration <i>(Academic Years or Semesters)</i>	3 Years	Mode of Attendance	Full-time
Total Number of Credits	120 credits	Total Learning Hours <i>(25 Total Learning Hours for each ECTS)</i>		3000 hours	
Target Audience	Ages 16 - 65	Target Group <i>(the type of learners that the educational institution anticipates joining this programme)</i>		Students exiting compulsory education	
Programme Fees	<p>There are no fees applicable to Maltese and other EU Nationals (as will be evidenced by their Identity Document)</p> <p>Fees apply for other International Applicants... for fee information and any related updates it is best to communicate with MG2i International through applyinternational@mcast.edu.mt</p> <p>One may consider checking about possible eligibility or otherwise for any exemption from fees by contacting the relevant section within MEYR (Floriana) – or visit the servizz.gov.mt website here</p>				
Date of Next Student Intake	For further information regarding upcoming student intake and applications time windows for same kindly click here				
Language of Instruction	The official language of instruction at MCAST is English. All notes and textbooks are in English (except for language courses, which will be in the respective language being instructed). International candidates will be requested to meet English language certification requirements for access to the course.				
Application Method	<p>Applications to full-time courses are received online via the College Management Information System. Applicants can log-in using Maltese Electronic ID (eID) in order to access the MCAST Admissions Portal directly and create one’s own student account with the identity being verified electronically via this secure service.</p> <p>Non-EID applicants need to request account creation through an online form after that they confirm that their local Identification Document does not come with an EID entitlement. . Once the identity is verified and the account is created on behalf of the applicant, one may proceed with the online application according to the same</p>				



	<p>instructions applicable to all other applicants.</p> <p>For more information about how to apply online for a course at MCAST, please visit: https://mcast.edu.mt/how-to-apply-online-2/</p>
<p>Information for Non-EU Citizens</p>	<p>Non-EU candidates require a study visa in order to travel to Malta and join the course applied for (on a Full Time delivery mode). For further information re study-visa please access https://www.identitymalta.com/unit/central-visa-unit/.</p> <p>Further information International / TCN applicants should take note of before requesting to being considered for a programme of studies at MCAST, can be obtained through the respective FAQ found on https://mcast.edu.mt/important-information/</p>
<p>IMPORTANT note to Non-EU Nationals / TCNs</p>	<p>In instances where a TCN is applying for an MCAST programme of studies which includes Apprenticeship / Placement / Internship, it is the applicant's responsibility to check with the relevant Maltese Authority whether one would be eligible to have the necessary permits to be able to carry out the accredited Apprenticeship / Placement / Internship, success from which is expected in order to be able to successfully complete the selected programme of studies. Further information can also be obtained through the respective FAQ found on:</p> <p>https://mcast.edu.mt/important-information/</p>
<p>Address where the Programme will be Delivered</p>	<p><i>MCAST has four campuses as follows:</i></p> <p>MCAST Main Campus Triq Kordin, Paola, Malta</p> <p><i>All courses except for courses delivered by the Institute for the Creative Arts, the Centre of Agriculture, Aquatics and Animal Sciences and the Gozo Campus are offered at the Main Campus address (above).</i></p> <p><i>Courses delivered by the Institute for the Creative Arts, the Centre of Agriculture, Aquatics and Animal Sciences, or the Gozo Campus, are offered in one of the following addresses as applicable:</i></p> <p>Institute for the Creative Arts Mosta Campus Misraħ Għonoq Tarġa Gap, Mosta</p> <p>Institute of Applied Sciences Centre of Agriculture, Aquatics and Animal Sciences, Luqa Road, Qormi</p> <p>Gozo Campus J.F. De Chambray Street MCAST, Għajnsielem Gozo</p> <p><i>In the case of courses delivered via Online Learning, students will be following the programme from their preferred location/address.</i></p> <p><i>Programmes delivered via Blended Learning, and which therefore contain both an online and a face to face component shall be delivered as follows:</i></p>

	<ul style="list-style-type: none"> ○ Face to Face components – as per above address instructions ○ Online components – from the student's preferred address.
Course Description <i>(Refer to Programme Specification)</i>	<p>This qualification is for candidates wanting to develop some of the essential skills and understanding in motor vehicle systems. Learners will be able to identify hazards and risks in the automotive environment and work safely with equipment, materials and products. Learners should also gain a good knowledge of tools and measuring devices as well as of routine light vehicle maintenance. Learners will be expected to develop an understanding of the construction and operation of common steering, suspension, engines and many important systems (including mechanical and electrical) as well as procedures involved in the inspection, serviceability, adjustments, removal and replacement of components and the evaluation of their performance.</p>
Deskrizzjoni tal-Kors <i>(Refer to Programme Specification)</i>	<p>Din il-kwalifika hija għal kandidati li jixtiequ jiżviluppaw xi wħud mill-ħiliet essenzjali u jitgħallmu dwar is-sistemi ta' vetturi bil-mutur. L-istudenti jkunu jistgħu jidentifikaw perikli u riskji fl-ambjent ta' karozzi u jaħdmu b'mod sikur bit-tagħmir, il-materjali u l-prodotti. L-istudenti għandhom jiksbu wkoll għarfien tajjeb tal-ghodod u apparat ta' kejl, kif ukoll dwar il-manutenzjoni ta' rutina ta' vetturi żgħar. L-istudenti jkunu mistennija jifhemu kif inhuma mibnija u kif jaħdmu l-istearing, is-sistema tas-suspension u ħafna sistemi oħra importanti (inklużi dawk mekkaniċi u elettriċi). Huma jitgħallmu wkoll il-proċeduri involuti fl-ispezzjoni, is-servisjar, l-aġġustamenti, it-tneħħija u t-tibdil ta' komponenti u l-evalwazzjoni tal-prestazzjoni tagħhom.</p>
Career Opportunities:	<p>Motor Vehicle Technician</p>
Entry Requirements <i>(Refer to Prospectus / Course Page on MCAST website)</i>	<p>Internal Progression Route... Any MCAST MQF Level 3 Diploma</p> <p>OR</p> <p>4 SEC / SSC&P or equivalent with a Pass Grade / Level 3 <u>Compulsory:</u> One subject from Engineering Technology OR Design and Technology OR Chemistry OR Mathematics OR Physics.</p>
Other Notes related to this Programme, and which are to be taken note of	<p>-</p>
Programme Learning Outcomes <i>(Refer to Programme Specification)</i>	<p>At the end of the programme the learner will be able to:</p> <ol style="list-style-type: none"> 1. Work effectively within the organisational structure of the automotive work environment. 2. Work safely when carrying out light vehicle engine diagnostic and rectification activities. 3. Understand how light vehicle transmission and driveline systems operate. 4. Understand how light vehicle auxiliary electrical systems operate.
Teaching, Learning and Assessment Procedures	<p>The programmes offered are vocational in nature and entail both theoretical lectures delivered in classes as well as practical elements that are delivered in laboratories, workshops, salons, simulators as the module requirements dictate.</p> <p>Each module or unit entails a number of in person and/or online contact learning hours that are delivered by the lecturer or tutor directly (See also section 'Total Learning Hours').</p> <p>Access to all resources is provided to all registered students. These include study resources in paper or electronic format through the Library and Resource Centre as well as tools, software, equipment and machinery that are provided by the respective institutes depending on the requirements of the course or module.</p>



	<p>Students may however be required to provide consumable material for use during practical sessions and projects unless these are explicitly provided by the College.</p> <p>All Units of study are assessed throughout the academic year through continuous assessment using a variety of assessment tools. Coursework tasks are exclusively based on the Learning Outcomes and Grading Criteria as prescribed in the course specification. The Learning Outcomes and Grading Criteria are communicated to the Student via the coursework documentation.</p> <p>The method of assessment shall reflect the Level, credit points (ECTS) and the schedule of time-tabled/non-timetabled hours of learning of each study unit. A variety of assessment instruments, not solely Time Constrained Assignments/Exams, are used to gather and interpret evidence of Student competence toward pre-established grading criteria that are aligned to the learning outcomes of each unit of the programme of study.</p> <p>Grading criteria are assessed through a number of tasks, each task being assigned a number of marks. The number of grading criteria is included in the respective Programme Specification. The distribution of marks and assessment mode depends on the nature and objectives of the unit in question.</p> <p>Coursework shall normally be completed during the semester in which the Unit is delivered.</p> <p>Time-constrained assignments may be held between 8 am and 8 pm during the delivery period of a Unit, or at the end of the semester in which the Unit is completed. The dates are notified and published on the Institute notice boards or through other means of communication.</p> <p>Certain circumstances (such as but not limited to the COVID-19 pandemic) may lead Institutes and Centres to hold teaching and assessment remotely (online) as per MCAST QA Policy and Standard for Online Teaching, Learning and Assessment (Doc 020) available via link https://www.mcast.edu.mt/college-documents/</p> <p>The Programme Regulations pertaining to this Programme’s MQF/EQF level available at: link https://www.mcast.edu.mt/college-documents/, apply.</p>
Grading System	<p>All MCAST programmes adopt a Learner-centred approach through the focus on Learning Outcomes. The assessment of MCAST programmes is criterion-referenced and thus assessors are required to assess learners’ evidence against a pre-determined set of Learning Outcomes and Assessment Criteria.</p> <p>For a student to be deemed to have successfully passed a unit, a minimum of 50% (grade D) must be achieved.</p> <p>All full time units are individually graded as follows: A* (90-100) A (80-89) B (70-79) C (60-69) D (50-59) Unsatisfactory work is graded as ‘U’.</p> <p>Work-based learning units (where applicable) are graded on a Pass/Fail basis only.</p> <p>Some units which follow industry standards and regulations may also be graded on a</p>

	<p>Pass/Fail basis as per programme regulations referred below.</p> <p>Detailed information regarding the grading system may be found in the Programme Regulations pertaining to this programme's MQF/EQF Level available at: https://www.mcast.edu.mt/college-documents/ (Refer to DOC 003, 004 and 005)</p>
Exit Point (where and as applicable)	<p>Where a student will not make it to the Final Certification achievable from this Programme of Studies (as per Programme Regulations), one might wish to look into Exit Point possibilities as may be applicable to this programme for studies. Further information, is available at https://www.mcast.edu.mt/college-documents/, kindly refer to <i>DOC 077 Procedure for the processing of Claims for Certificates at Interim Exit Points</i>.</p>
Contact details for Further Learning Opportunities	<p>The MCAST Career Guidance Team, offers the service of qualified and experienced Career Advisers who will be very willing to discuss with potential applicants the course which best achieves one's career ambitions, as well as exploring one's education route, or similar.</p> <p>MCAST Career Guidance Tel: 2398 7135/6 Email: career.guidance@mcast.edu.mt</p>
Regulatory Body/ Competent Authority Contact Details <i>(where applicable - in the case of a programme leading to Regulated Profession)</i>	Not Applicable

Programme Structure	Unit Code	Unit Title	ECTS	Year	Semester
	ETAUT-402-2311	Contribute to Housekeeping in a Motor Vehicle Environment	2	1	Year
	ETAUT-402-2312	Reduce the Risks in Health and Safety in Motor Vehicle Environments	2	1	Year
	ETAUT-402-2313	Maintain Working Relationships in Motor Vehicle Environments	2	1	Year
	ETAUT-402-2314	Use of Tools and Equipment in Motor Vehicle Engineering	2	1	Year
	ETAUT-406-1505	Inspect Light Vehicles	6	1	Year
	ETAUT-406-1506	Carry Out Routine Vehicle Maintenance	6	1	Year
	ETAUT-406-1511	Remove and Fit basic MET components and Non Permanently Fixed Motor Vehicle Body Panels	6	1	Year
	CDKSK-406-2320	Mathematics	6	1	Year
	CDKSK-406-2319	English	6	1	Year



	ETAUT-406-1504	Vehicle Technology-Mechanical Systems	6	2	Year
	ETAUT-406-1512	Vehicle Technology-Electrical and Electronic Systems	6	2	Year
	ETAUT-406-1513	Overhaul Light Vehicle Mechanical Units	6	2	Year
	ETAUT-406-1514	Overhaul Light Vehicle Electrical and Auxiliary Systems	6	2	Year
	ETAUT-404-2315	Workshop Practice	4	2	Year
	ETAUT-406-1507	Diagnose and Rectify Light Vehicle Engine and Component Faults	6	3	Year
	ETAUT-406-1508	Diagnose and Rectify Faults on the Systems found on Light Vehicles	6	3	Year
	ETAUT-406-1509	Diagnose and Rectify Light Vehicle Electrical Unit Engine and Component Faults	6	3	Year
	ETAUT-406-1510	Overhaul Light Vehicle Engine Units	6	3	Year
	ETAUT-406-1801	Vehicle Technology-Engine Management Systems	6	3	Year
	ETAUT-406-1516	Diagnose and Rectify Transmission and Drive line System Faults	6	3	Year
	CDKSK-404-2325	Entrepreneurship Essentials	4	3	1
	CDKSK-402-2324	Community Social Responsibility	2	3	1
	ETAPP-412-2308	Vocational Competences in Light Vehicle Maintenance	12	2 & 3	Year

Allocation of Total Learning Hours (per Unit)	The total learning hours required for each unit or module are determined as follows:			
	Credits (ECTS)	Indicative contact hours¹	Self-Learning and Assessment Hours³	Total Student workload (hrs)²
	1	5 – 10 hrs	20 - 15 hrs*	25 hrs
	2	10 – 20 hrs	40 - 30 hrs*	50 hrs
	3	15 – 30 hrs	60 - 45 hrs*	75 hrs
	4	20 – 40 hrs	80 - 60 hrs*	100 hrs
	6	30 – 60 hrs	120 - 90 hrs*	150 Hrs
	9	45 – 90 hrs	180 - 135 hrs*	225 hrs
	12	60 – 120 hrs	240 - 180 hrs*	300 hrs
<i>Note: The 'Self-Learning and Assessment Hours³' amount to the difference between the 'Indicative Contact Hours¹' and the 'Total Student Workload²'</i>				

APPENDIX 1**MINIMUM CREDITS FOR QUALIFICATIONS AT DIFFERENT LEVELS**

MQF Level	Minimum ECTS Required for a Qualification*
8	
7	30
6	180
5	30
4	30
3	60
2	60
1	40

* Programmes assigned fewer ECTS than indicated will be classified as Awards.

Reference: Fig. 1: p48, Malta Further and Higher Education Authority (MFHEA) (October 2024). Referencing Report, 5th Revised Edition.

APPENDIX 2
EXAMPLES OF QUALIFICATION TYPES AT A SPECIFIC MQF LEVEL

MQF Level	Examples of qualification types at a specific MQF level (The list in this column is not exhaustive)	Number of ECTS *
8	Doctoral Programmes:	
	PhD	N/A
	Professional Doctorate	180
7	Master's Degree	90
	Postgraduate Diploma	60
	Postgraduate Certificate	30
6	Bachelor's Degree	180
	Bachelor's Honours	240
5	Undergraduate Higher Diploma	90
	Undergraduate Diploma	60
	Undergraduate Certificate	30
	VET Level 5	60
4	Advanced Diploma	120
	Pre-Tertiary Certificate	30 - 60
	MATSEC Matriculation Certificate (Advanced and Intermediate)	N/A
	VET Level 4	120
3	Certificate	60
	MATSEC Secondary Education Certificate	N/A
	VET Level 3	60
2	Foundation Certificate	60
	MATSEC Secondary Education Certificate	N/A
	VET Level 2	60
1	Introductory Certificate	40
	VET Level 1	40

* Programmes assigned fewer ECTS than indicated will be classified as Awards.

Reference: Fig.2: p48, Malta Further and Higher Education Authority (MFHEA) (October 2024).
Referencing Report, 5th Revised Edition.

ETAUT-402-2311: Contribute to Housekeeping in Motor Vehicle Environment

Unit level (MQF): 4

Credits: 2

Delivery Mode: Face to Face

Total Learning Hours: 50

Unit Description

This unit will provide the required underpinning knowledge to carry out and maintain housekeeping within a motor vehicle environment.

The learner will know how to interpret legislation pertaining to health and safety within the workplace and know their own and their employers' responsibilities. They will also know the procedure of reporting errors or defects in order to maintain a safe environment.

Learners will understand the hazards in the workplace, such as slips, trips and falls and will be able to determine what is required of them so that they can develop a plan of operation in order to maintain the working environment to the required safety standard

Furthermore they will be able to understand Care of Substances legislation and be able to identify what is a hazardous substance.

This unit will also give the underpinning knowledge on the use, protection and storage of materials including those hazardous to health and establish confidence in using these materials.

The learner will be able to assess and use skills in manual handling and give the underpinning knowledge for the delegate to assess the risks in manual handling. The learner will be able to assess a situation whether lifting, pulling or pushing and take the action required to complete the task.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Explain the legislation and the duties of everyone within a motor vehicle repair environment.*
2. *Perform routine maintenance of a work area within a Motor Vehicle repair environment.*
3. *Explain the legislation of the Care of Substances Hazardous to Health (COSHH)*
4. *Perform a manual handling assessment and operation.*

ETAUT-402-2312: Reduce the Risks in Health and Safety in Motor Vehicle Environment

Unit level (MQF): 4

Credits: 2

Delivery Mode: Face to Face

Total Learning Hours: 50

Unit Description

This unit will provide the underpinning knowledge to understand and apply when required, risk assessments in a motor vehicle environment.

Learners will be able to assess conditions and carry out individual risk assessments before commencing any unfamiliar work. It is therefore intended to provide the underpinning knowledge on all the health and safety issues that may arise in the work area.

It explains safety regulations relating to noise in the workplace so that the learner can follow guidelines already in place or assess their own situation when carrying out an operation when Personal Protective Equipment (PPE) and warning others may be a consideration.

It provides guidance on accident prevention, alarms and evacuation procedures and highlights the risks associated with fire, explosion and other risks that may occur in a motor vehicle environment.

Vehicle movement is explained and how it must be controlled in a motor vehicle environment highlighting the importance to follow guidelines already in place. This will give the learners the required skills to determine what is required of them and they can develop a plan of operation in order to maintain best working practices in their working. It will furthermore give the underpinning knowledge to enable the learner to assess and, if required, plan or suggest vehicle movement reviews.

It presents the underpinning knowledge for the delegate to assess PPE so that the risks in this area can be assessed and controlled. Where required the learner will be able to select, assess, use and review any PPE required for a particular task.

Learning Outcomes

On completion of this unit the learner will be able to:

- 1. Contribute to the safe running of the motor vehicle environment.*
- 2. Perform individual risk assessment in a motor vehicle environment.*
- 3. Explain how to prevent accidents in the motor vehicle environment.*
- 4. Use Personal Protective Equipment when required to do so.*

ETAUT-402-2313: Maintain Working Relationships in Motor Vehicle Environments

Unit level (MQF): 4

Credits: 2

Delivery Mode: Face to Face

Total Learning Hours: 50

Unit Description

This unit will provide the required underpinning knowledge for the learner to establish their role in the organisation. They will identify the organisational structure and define clear roles within the organisation and the departments within it.

It will allow the learner to establish a positive working relations with their colleagues, between departments and set up clear lines of communication. This will work toward good customer care by defining operating standards for general operations and reporting additional work or delays.

It will allow the learner to communicate directly with customers, highlight the importance of first impressions and portraying a good personal and company image. It will furthermore underpin why good customer handling is important when dealing with customer requests. It will also provide instruction and confirm the learners understanding of documentation used in the different departments. It will explain the correct recording methods when working with warranty, retail and internal repair orders. It will also provide guidance in finding and correctly using manufacturer information such as safety and service bulletins, manuals and specification information.

Together it will give an understanding of customer needs and expectations so that servicing and repairs can be carried out effectively. It will also highlight the need for everyone within an organisation to play a positive role in retaining customer loyalty.

Explain their company structure and know why their position in the company is important.

Learning Outcomes

On completion of this unit the learner will be able to:

- 1. Describe why effective communication between departments, colleagues and others is important.*
- 2. Describe how effective customer communication will lead to fulfilling customer expectations.*
- 3. Use documentation available in the working environment to support your job role and promote effective communication.*

ETAUT-402-2314: Use of Tools and Equipment in Motor Vehicle Engineering

Unit level (MQF): 4

Credits: 2

Delivery Mode: Face to Face

Total Learning Hours: 50

Unit Description

This unit will provide the required underpinning knowledge required to understand and apply when required, the use of tools and equipment in vehicle engineering.

It will provide underpinning knowledge for the use of personal protective equipment required with certain tools and equipment. Where required the learner will be able to select, assess, use and review any PPE required for a particular task.

Learners will be able to assess hand tool condition and be aware of the common misuse in using these tools. They will be able to select the correct tool for the correct application and use them correctly.

The unit will provide guidance on the use of gasket material and sealer and its correct application. The learner will know what to use and the limitations of products used in vehicle engineering.

The use of electrical equipment will be a part of the unit providing guidance and practice in the use of electrical equipment commonly used in vehicle engineering. Furthermore air tools and their use will also be provided.

In some instances special tools will have to be used along with normal tools and equipment used in vehicle repair and rectification. The learner will be able to establish when to use such tools in order to complete the task.

Electrical diagnosis will be introduced with the underpinning knowledge of multi meters, amps clamps and battery and charging system equipment being provided. Measuring equipment will be used and skills already gained in reading micrometres, Vernier gauges and dial gauges will be confirmed.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Use hand tools and equipment safely in vehicle engineering.*
2. *Select, use and maintain common hand tools used in motor vehicle engineering.*
3. *Select, use and maintain equipment and materials used in motor vehicle engineering.*
4. *Select, use and maintain different measuring devices used in motor vehicle engineering.*

ETAUT-406-1505: Inspect Light Vehicles

Unit level (MQF): 4

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit will provide the underpinning knowledge required to perform light vehicle inspections and explain where to find and use the specifications required in order to evaluate systems and components.

The unit will explain the different types of inspections that can be carried out and how vehicles and systems should be inspected.

The correct routine to inspect vehicles will be discussed and practiced in order to make inspections efficient, furthermore work identified should be followed up by the correct means. Ensuring vehicles stay safe and service related items are identified prior to failure.

Air conditioning basics and systems will be explained to provide underpinning knowledge in order to inspect them.

Braking systems, steering and suspension system inspections will be explained including damage inspections. Exterior checks on bodywork and paint and how they should be recorded will also be a part of this unit.

The unit will explain the documentation used and how check sheets and repair orders should be completed to record findings.

The unit will also cover specifications and means of measuring or estimating wear on system components. How to find the specifications for torque, oils, fluids and lubricants. How we can check performance related issues, such as exhaust emissions, engine idle and performance, start stop system, transmissions both manual and automatic.

Inspections on clutches and torque convertors as well as semi-automatic transmission inspections.

The learner will have the underpinning knowledge to carry out a variety of vehicle inspections in their workplace where this knowledge can be assessed and understanding confirmed.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Work safely while carrying out light vehicle inspections.*
2. *Use different types of inspections to inspect a light vehicle.*
3. *Use documentation to support inspections on light vehicles.*
4. *Use the correct process and procedures when inspecting light vehicles.*

ETAUT-406-1506: Carry Out Routine Vehicle Maintenance

Unit level (MQF): 4

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit will provide the underpinning knowledge for the technician to carry out routine maintenance on vehicles, vehicle systems and components.

It will provide information on the various types of routine maintenance and guidance on the tools and equipment required.

This unit should run sequentially from unit Inspect Light Vehicles as knowledge of inspections prior to routing maintenance is essential.

The unit will explain the preparation required before conducting routine maintenance and its influence in efficiency and cost. Knowledge of using tools and equipment will be assessed and guidance given on any equipment not covered in previous units.

The learner will know the properties of oils and fluids used in a light vehicle in order to diagnose degradation of these properties during replenishment. Furthermore knowledge already gained on the correct disposal procedures will be confirmed.

Filters and other systems used to maintain light vehicle systems will be explained so that the learner will understand the reasons for changing or upgrading these systems. They will be able to replace components during routine maintenance and carry out adjustments whenever necessary.

The learner will understand the customers' expectations and whenever possible exceed these.

They will understand the instructions on repair orders and react to ID codes used by some manufacturers. Diagnostic equipment will be used to obtain system information and if required provide updates in software as part of routine maintenance.

Service schedules and check lists will be followed and completed before, during and after routine maintenance in compliance with manufacturer recommendations.

The learner will have an understanding of the reporting procedures to report any other work required, other than routine or any delays they may have encountered. They will understand the need for time scales and relation to profit.

The tie between warranty and routine maintenance will be explained and the learner will understand the need for record keeping in the form of service records for maintenance and bodywork.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Work safely while carrying out routine maintenance.*
2. *Use processes and procedures when carrying out routine maintenance.*
3. *Maintain vehicle systems and components routinely.*
4. *Use information sources and documentation used for routine maintenance.*

ETAUT-406-1511: Remove and Fit Basic Electrical and Trim (MET) Components and Non-Permanently Fixed Motor Vehicle Body Panels

Unit level (MQF): 4

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit provides the underpinning knowledge for the technician to carry out removing, refitting and testing mechanical, electrical and body related equipment to support bodywork repairs.

The unit will explain the preparation required before conducting any work on the vehicle and its influence in efficiency and cost.

It will provide guidance on the removal of exterior and interior trim, including assemblies such as heating and ventilation systems, electric windows and door mirrors.

Lighting systems and components will be removed, refitted and rectified where necessary and guidance will be provided for systems such as Xenon HD lighting.

The unit will confirm understanding of mechanical and electrical components already gained; diagnostic methods and equipment will be explained and demonstrated, then practiced by the learner.

They will understand the instructions on repair orders and react to ID codes used by some manufacturers.

Knowledge of using hand tools and equipment will be assessed and guidance given on any equipment not covered in previous units.

The learner will already have an understanding of the reporting procedures to report any work required, or any delays they may have encountered this underpinning knowledge can confirmed.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Work safely when working on light vehicles.*
2. *Carry out quality checks when working on light vehicles.*
3. *Carry out electrical maintenance on light vehicles.*
4. *Carry out interior and exterior body repair work on light vehicles.*

CDKSK-406-2320: Mathematics

Unit Level (MQF/EQF): 4

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

Unit Description

This unit provides a framework for students to develop mathematical thinking skills further to the level 3 unit specification to solve problems related to real-life situations. Students also develop skills, attributes and knowledge that contribute to their personal growth and effectiveness within their training and work environment and within the community.

The unit is designed to adapt for the needs of a particular field of study (business & finance or engineering & transport and others). To reach this goal the unit was divided into eight learning outcomes from which four learning outcomes are chosen and taught, which are related to statistics, algebra and graphical representation, geometry, areas and volumes, game theory and finance. Through these different areas students will be able to develop the effective skills for information processing, reasoning, evaluation creative thinking and enquiry, all fundamental skills for the problem-solving process. This will prepare students in applying and evaluating a range of strategies to solve real-life problems. Through this unit the learner will also learn to present and communicate results and conclusions effectively.

On successful completion of the unit the learner will be equipped with mathematical thinking skills which make them aware of and understand their thought process, to reassess and identify areas for development. Students learn to evaluate, reflect on their strategies, understand, and verify results to solve problems. These skills will equip students with managerial skills, to further their studies and for work employability.

Learning Outcomes

Learning Outcomes are electives out of which 4 are to be chosen

On completion of this unit the learner will be able to:

1. *Use algebraic techniques to simplify expressions and solve equations.*
2. *Identify how to simplify more complex expressions and solve harder equations.*
3. *Demonstrate visual and logical techniques in evaluating graphical representations and communication skills in presenting the results effectively.*
4. *Demonstrate skill in calculating angles, sides, areas, and volumes for any given situation.*
5. *Apply information processing skills to solve problems in a relevant statistical context.*
6. *Apply thinking skills and demonstrate evaluation skills to solve problems in a relevant game theory context.*
7. *Demonstrate evaluation and communication skills in solving and presenting problems applied to costing methods and techniques.*

CDKSK-406-2319: English

Unit Level (MQF/EQF): 4

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

Unit Description

This unit typically refers to English language skills needed for specific careers or vocational training programmes. The main objective of this unit is to prepare learners to understand and respond to spoken English on a variety of topics, including abstract or unfamiliar topics, to read and comprehend a variety of texts, including more extended and more complex texts, and to write in a more precise and structured way. Particular focus is given to summarising and paraphrasing.

At this level, learners should have a good understanding of English grammar, vocabulary and usage. They should be able to communicate effectively in written and spoken English, express opinions, and understand complex texts and conversations as required by various but often specific technical contexts within their selected field of study. Learners should also start acquainting themselves with researching reliable and authoritative sources of information. Moreover, they should also be able to cite this information and follow the conventions of the referencing style stipulated by their respective institute.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Read and understand written English effectively to improve knowledge of the subject area.*
2. *Understand extended speech and follow an argument provided the topic is related to one's own subject area.*
3. *Speak with a degree of fluency and spontaneity on topics related to one's own subject area.*
4. *Produce a research-based report or essay with appropriate choice of linguistic style and structure.*

ETAUT-406-1504: Vehicle Technology Mechanical Systems

Unit level (MQF): 4

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit will provide the required underpinning knowledge for the technician to examine new technology being developed for different systems in a modern vehicle and will give support for further training where required.

It will provide information on new configurations in engine design to include cylinder configurations and the pros and cons of new designs. It will examine new cylinder head design and how the drive mechanisms for the valve assembly have changed.

Variable valve timing developments will be explored and how they are changing the power output and the emissions in our small engines. Furthermore, it will explain how multi lift and multi air valve systems are now being used.

The means of fuel mixture is changing and this unit will provide underpinning knowledge of the new systems, in petrol and diesel technology. It will give an understanding of how fuel systems and alternatives to petrol have developed and their application in the modern dealership.

This unit will identify different steering systems now used and how they have revolutionised options and accessories now available. Such as self-parking, lane departure warnings and stability controls.

It will explain the development in suspension and braking systems and how this has changed the safety features now available on a vehicle.

It will allow the technician to recognise and operate different systems in a variety of manufacturers' vehicles and be able to find specific information to aid repair and diagnosis of these systems.

With this technology comes new safety concerns, these are identified and explained fully so that any technician working on these systems will be aware of the hazards and the correct working procedures.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Explain how technology has changed in modern vehicle mechanical systems.*
2. *Identify evolving technology in different vehicle systems.*
3. *Explain the technology now used in transmission and drivetrain.*
4. *Explain how different vehicle systems operate to assist in diagnosis.*

ETAUT-406-1512: Vehicle Technology Electrical and Electronic Systems

Unit level (MQF): 4

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit will provide the underpinning knowledge for the technician to carry out diagnosis and rectification on electrical and electronic systems fitted as standard or in most cases as an option on a light vehicle.

The unit explains how this latest electronic technology operates and the components used in the systems. It explains how these systems share information, allowing components to be made smaller.

The unit will describe how these systems are networked, or connected in different formats and how data is transferred through wiring by the means of voltages.

Types of data transfer and methods of transfer will be explained in order to confirm the learners understanding, as well as evaluating signal information to confirm systems are operating correctly.

The unit covers the measuring, diagnosing and rectification of these communication systems and will be practiced by the learner.

Signal and wiring connections will be verified by using multi meters and the introduction and use of an oscilloscope will be explained fully and how it can be used to evaluate signals and data transmission waveforms from a variety of sources.

The latest in battery technology will be explained and how battery and charging systems are now controlled by the engine control unit. Alternators and batteries now being controlled to lower emissions and increase power and torque.

The unit will explain how security systems on a vehicle operate and the options we now have to secure and open our vehicle. Furthermore safety systems now being fitted and offered will be explained, most of which share the communication systems we describe. Vehicle lighting technology and aids to parking, driving and stopping the vehicle will also be explained

Any diagnosis methods and equipment will be explained and demonstrated, then practiced by the learner. This will give the required underpinning knowledge in order for the learner to recommend further internal examination, rectification or replacement electrical system components.

The tie between warranty, diagnosis and rectification, already covered, will be confirmed.

Furthermore engine systems will be fully investigated, learners gathering data to support diagnosis. Workshop manuals, specifications and repair instructions will be used throughout.

Knowledge of using hand tools and equipment will be assessed and guidance given on any equipment not covered in previous units.

The learner will already have an understanding of the reporting procedures to report any work required, or any delays they may have encountered this underpinning knowledge are confirmed.

Learning Outcomes

On completion of this unit the learner will be able to:

- 1. Work safely with the latest electronic and electrical systems.*
- 2. Explain vehicle electrical and electronic principles.*
- 3. Explain how the latest battery and charging systems operate.*
- 4. Explain how light vehicle electrical systems operate.*

ETAUT-406-1513: Overhaul Light Vehicle Mechanical Units

Unit level (MQF): 4

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit provides the underpinning knowledge for the technician to carry out overhaul procedures on mechanical units on a light vehicle. The unit will explain the preparation required before conducting any work on mechanical units and its influence in efficiency and cost.

The unit will explain different mechanical systems operation and how they should be evaluated for replacement or overhaul. Test processes will be explained for a number of different systems and components.

Common faults in these systems will be explored and how they are recognised and rectified.

Diagnosing fluid condition to aid diagnosis and assess the level of repairs required will be explained. To reinforce decisions to overhaul or replace components and also to assess consequential damage that may have occurred.

This unit should be used in conjunction with other units in the programme as knowledge gained in those units will be tested and reinforced during the initial stages of overhaul repairs.

The unit will provide understanding on how the individual components within the braking system can be replaced or overhauled and the procedure for adjusting them after repair.

Furthermore the underpinning knowledge required to dismantle and reassemble components in the braking system will be provided. Including guidance on measuring, assessing and servicing these components prior to and after assembly.

Diagnostic equipment will be used in order to evaluate and when required, bring into service braking system components.

The unit will also explain the steering and suspension system and how components on these systems operate and how we evaluate them for replacement or overhaul.

Test processes will again be explained for these systems as well as the dismantling and reassembly procedures for all their components.

Other systems will be explained and practiced such as coolant pump faults, diagnosis and replacement as well as auxiliary drive and timing assembly components.

The unit will confirm understanding of mechanical units already gained, diagnostic methods and equipment will be explained and demonstrated, then practiced by the learner.

They will understand the instructions on repair orders and react to ID codes used by some manufacturers. Diagnostic equipment will be used to obtain system data and bring the engine unit back into service.

Knowledge of using hand tools and equipment will be assessed and guidance given on any equipment not covered in previous units.

The learner will already have an understanding of the reporting procedures to report any work required, or any delays they may have encountered this underpinning knowledge can confirmed.

Learning Outcomes

On completion of this unit the learner will be able to:

- 1. Work safely while overhauling mechanical components.*
- 2. Identify mechanical components for overhaul in a light vehicle.*
- 3. Dismantle, repair and rebuild light vehicle mechanical components.*
- 4. Test, evaluate and adjust light vehicle mechanical components.*

ETAUT-406-1514: Overhaul Light Vehicle Electrical and Auxiliary Systems

Unit level (MQF): 4

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit will provide the underpinning knowledge for the technician to carry out diagnosis and rectification on electrical and auxiliary systems fitted on light vehicles. The unit explains the testing and evaluating of the starter motor and its components as well as explaining the starter circuit.

Basic electrical knowledge gained in previous units by the learner will be used to diagnose faults in starter, alternator and auxiliary circuits. This knowledge will be reinforced by using wiring diagrams, repair instructions and manufacturers documentation.

Knowledge of starter and engine management relays and switches will be introduced to aid diagnostics.

The unit will explain how the starter and alternator operate and how to remove, dismantle, diagnose and repair both units.

Other circuits on a light vehicle will be explained such as the wiper motor, its electrical circuit, its components and its operation. The learner will have the knowledge to diagnose faults and carry out rectification to the motor and its components, the horn system and how to rectify faults in the circuit, components and the sound and tuning of the horn. It will look at washer systems and how they operate.

Vehicle lighting both exterior and interior is covered with knowledge on how the lighting circuits operate and how to diagnose them. The learners will use digital ammeters, multi meters and vehicle diagnostic equipment to measure and evaluate all auxiliary systems.

Operation and diagnosis of heated windows is also covered in this unit with the learner having the knowledge to determine replacement where required. Any diagnosis

methods and equipment will be explained and demonstrated, then practiced by the learner.

This will also give the underpinning knowledge in order for the learner to recommend further examination, rectification or replacement of system components.

The tie between warranty, diagnosis and rectification, already covered, will be confirmed. Engine systems will be fully investigated, learners gathering data to support diagnosis. Workshop manuals, specifications and repair instructions will be used throughout.

Knowledge of using hand tools and equipment will be assessed and guidance given on any equipment not covered in previous units.

The learner will already have an understanding of the reporting procedures to report any work required, or any delays they may have encountered.

Learning Outcomes

On completion of this unit the learner will be able to:

- 1. Work safely with electrical and auxiliary systems.*
- 2. Diagnose and rectify faults with starters and alternators on a light vehicle.*
- 3. Diagnose and rectify faults with wiper, washer and horn units on a light vehicle.*
- 4. Diagnose and rectify faults with other electrical and auxiliary systems on a light vehicle.*

ETAUT-404-2315: Workshop Practice

Unit level (MQF): 4

Credits: 4

Delivery Mode: Face to Face

Total Learning Hours: 100

Unit Description

This unit will provide the knowledge and practical skills in order to carry out diagnosis and rectification on light vehicles and light vehicle systems.

It will provide the skills in identifying manufacturer repair instructions, wiring diagrams, inspection sheets and periodic maintenance. The learner will be able to interpret this information while carrying out repairs and rectification tasks on a light vehicle.

This unit will also provide practice for the learner to replace vehicle components, they will assess and evaluate at all times demonstrating their underpinning knowledge. The learner will carry out inspections on vehicles and identify faults, where present in vehicle systems, both for safety and recommendation reasons. They will check torque settings and refer to the manufacturer repair instructions to confirm all specifications.

Tyre pressure and tread depth measurements will be taken as well as demonstrating their underpinning knowledge on wheel and tyre safety. Students will evaluate evidence from tyre wear and match wear against vehicle alignment issues. Service documentation will be used, the learner will record their findings and report this information in the proper way on the service documentation. Students should be encouraged to record times on service documentation but not to work to the published times as these are based on trained technicians.

Periodic maintenance will be carried out and the learners will assess fluids and oil condition with a view to diagnosis. Periodic adjustments will be carried out on vehicle systems.

Electrical systems will be explained and then tasks will be set so that the learner can practice electrical diagnosis. They will be encouraged to use processes and procedures that have been recommended by the manufacturers. They will be encouraged to interpret wiring diagrams as an aid to diagnosis. A logical approach will be adopted to assist in diagnosis and this will be practiced on both mechanical and electrical rectification.

Tools and equipment will be used to fabricate materials used in motor vehicle repair and the safe use of these tools and equipment will be encouraged. They will use measuring devices such as Vernier gauges to assess component condition and match their findings against specification.

Braking systems will be assessed and components removed, evaluated and replaced. The braking system will then be bled and tested to bring it back to the required roadworthiness standard.

Engine units will be assessed using compression and cylinder leakage equipment, the learner will then evaluate their findings with the manufacturer specification for the vehicle.

Transmission units will be assessed including clutch and gear change operation. Engine and transmission units will be removed and refitted from a vehicle.

Engines and transmission units will be dismantled, measured, reconditioned where required and rebuilt. The systems will then be checked, using diagnostic equipment. Fault codes and vehicle information will be gathered, interpreted and checked against specification.

Vehicle communication systems will be identified, measured and tested with faults in place to confirm diagnosis and underpinning knowledge. The vehicle external bodywork will be assessed and body and trim items removed and refitted to practice the use of repair instruction information and trim tools, used to remove fasteners and clips.

Interior trim will be removed and refitted such as seats, carpets and headlining. Wiper motor systems will be evaluated, removed and replaced as well as the horn. Window mechanisms and glass will be removed including electrical systems. The learners will be encouraged to seek information, plan ahead with tools and equipment and carry out the task following process and procedures authorised by the vehicle manufacturers.

Learning Outcomes

On completion of this unit the learner will be able to:

- 1. Evaluate health and safety in the working environment.*
- 2. Dismantle, assess and reassemble mechanical systems, units and components on a light vehicle.*
- 3. Dismantle, assess and reassemble electrical systems, units and components on a light vehicle.*
- 4. Dismantle, assess and reassemble body and trim on a light vehicle*

ETAUT-406-1507: Diagnose and rectify Light Vehicle Engine and Component Faults

Unit level (MQF): 4

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit will provide the underpinning knowledge for the technician to carry out diagnosis and rectification on engines, engine systems and components.

It will provide information on the engine management system and how the sensors and actuators operate in order to maintain efficiency and performance. Furthermore, it will provide knowledge of the sensor and actuator properties in order to support diagnosis.

Engine fault codes generated from the various engine systems will be explained and how they can assist in diagnosis. The unit will further explain live data available from the engine components and how to evaluate this data against vehicle specifications.

The unit will confirm understanding of engine and engine systems operation already gained and will show common faults found in these systems. Equipment used in mechanical fault diagnosis will be explained and practiced by the learner in order to provide the required skills in diagnosing internal combustion faults. This will give the underpinning knowledge for the learner to recommend further internal examination, rectification or replacement of engines and engine systems.

Other external systems will be explained and investigated such as induction and exhaust systems used to enhance performance and lower emissions. This will include turbochargers and intercooler systems now used with almost all compression ignition engines and now more often with spark ignition.

Both spark ignition normally and turbo aspirated engines will be explained as well as turbo aspirated compression ignition engines, including high and low pressure fuel systems for both.

The tie between warranty, diagnosis and rectification will be explained. They will understand the instructions on repair orders and react to ID codes used by some manufacturers.

The unit will explain the preparation required before conducting any diagnosis and rectification and its influence in efficiency and cost. The learner will be able to estimate time realistic time scales for rectification.

Knowledge of using hand tools and equipment will be assessed and guidance given on any equipment not covered in previous units.

The learner will already have an understanding of the reporting procedures to report any work required, or any delays they may have encountered this underpinning knowledge can be confirmed.

Learning Outcomes

On completion of this unit the learner will be able to:

- 1. Work safely while carrying out diagnosis and repair on engines.*
- 2. Perform diagnosis and rectification on engine units.*
- 3. Perform diagnosis and rectification on spark ignition engine systems.*
- 4. Perform diagnosis and repair on compression ignition engine systems.*

ETAUT-406-1508: Diagnose and Rectify Faults on Systems found in Light Vehicles

Unit level (MQF): 4

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit provides the required underpinning knowledge for the technician to carry out diagnosis and rectification on chassis systems and components. It will provide the basics in vehicle diagnosis and will highlight procedures used in diagnostics against the subject matter.

The unit will confirm understanding of chassis systems operation already gained and will give guidance on diagnosing, rectifying or replacing system components. Diagnosis methods and equipment will be explained and demonstrated, then practiced by the learner. It will also give the required underpinning knowledge in order for the learner to recommend further examination, rectification or replacement of chassis system components. The tie between warranty, diagnosis and rectification will also be explained.

The unit will provide knowledge of braking systems and brake efficiency to support diagnostics. Furthermore the rectification or replacement of braking system components will be explained, demonstrated and performed by the learner. The unit will explain the operation, diagnosis and rectification of other braking systems normally offered as options on different specifications of vehicles.

Steering geometry will be explained and the measures taken to eliminate roll, warp, pitch and heave in different types of light vehicles. Wheels and tyres will also be explained, the legal requirement and using the condition of tyres as an aid to diagnosis.

It will provide the underpinning knowledge for the learner to use four-wheel alignment equipment. To measure steering angles and calculate the different units of measurement used.

They will understand the instructions on repair orders and react to ID codes used by some manufacturers. Diagnostic equipment will be used to obtain system data.

The unit will explain the preparation required before conducting any diagnosis and rectification and its influence in efficiency and cost. The learner will be able to estimate realistic time scales for rectification.

Knowledge of using hand tools and equipment will be assessed and guidance given on any equipment not covered in previous units.

The learner will already have an understanding of the reporting procedures to report any work required, or any delays they may have encountered this underpinning knowledge can be confirmed.

Learning Outcomes

On completion of this unit the learner will be able to:

- 1. Work safely while carrying out diagnosis and repair on chassis systems.*
- 2. Carry out diagnosis and rectification in steering and suspension systems.*
- 3. Carry out diagnosis and rectification in braking systems.*
- 4. Explain steering geometry and the equipment used and how wheels and tyres would affect vehicle stability and performance.*

ETAUT-406-1509: Diagnose and Rectify Light Vehicle Electrical Unit and Component Faults

Unit level (MQF): 4

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit provides the required underpinning knowledge for the technician to carry out diagnosis and rectification on engine electronic systems and components. It will provide the basics in vehicle diagnosis and will highlight procedures used in diagnostics against the subject matter.

The unit will confirm understanding of engine electrics already gained and will give guidance on diagnosing, rectifying or replacing system components. Diagnostic methods and equipment will be explained and demonstrated, then practiced by the learner. It will also give the required underpinning knowledge in order for the learner to recommend further examination, rectification or replacement of engine electrical system components. The tie between warranty, diagnosis and rectification will also be explained.

The unit will confirm knowledge of basic electrics and will provide further underpinning knowledge on how the basics are used in vehicle electrical circuits, using resistors and semi-conductors to control voltage.

A logical approach will be explained and demonstrated and this will be the basis for future units where this approach can be adopted. The unit will give guidance on the battery and the charging system, explaining the operation and the methods of diagnosing common faults with these systems. Furthermore the starting system will be explained, the components, their operation and the diagnostics and rectification required for that system.

It will also provide knowledge on the cooling fan systems now being used and how pulse width modulation has been used as opposed to a simple on and off version.

They will understand the instructions on repair orders and react to ID codes used by some manufacturers. Diagnostic equipment will be used to obtain system data.

The unit will explain the preparation required before conducting any diagnosis and rectification and its influence in efficiency and cost. The learner will be able to estimate realistic time scales for rectification.

Knowledge of using hand tools and equipment will be assessed and guidance given on any equipment not covered in previous units.

The learner will already have an understanding of the reporting procedures to report any work required, or any delays they may have encountered this underpinning knowledge can be confirmed.

Learning Outcomes

On completion of this unit the learner will be able to:

- 1. Work safely while carrying out diagnosis and repair on engine electrical systems.*
- 2. Use basic electrical knowledge to aid engine electrical unit diagnosis.*
- 3. Carry out diagnosis and rectification on the starting and charging system.*
- 4. Carry out diagnosis and rectification on the battery and cooling fan system.*

ETAUT-406-1510: Overhaul Light Vehicle Engine Units

Unit level (MQF): 4

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit provides the underpinning knowledge for the technician to carry out diagnosis and rectification on engine units and its components. The unit will explain the preparation required before conducting any work on the engine unit and its influence in efficiency and cost.

It will explain the process and the procedures to remove the engine unit, and in some cases the transmission unit from the vehicle.

It will provide guidance on the removal of the cylinder head assembly from the engine and the knowledge required to evaluate the cylinder head condition.

The unit will provide the underpinning knowledge to dismantle, examine and assess cylinder head components and furthermore will provide guidance on measuring, assessing and servicing cylinder head components prior to and during assembly.

It will explain the crankcase assembly and its components, measuring, assessing and calculating the engine block and the crankcase components.

It will provide the basics in vehicle diagnosis and will highlight procedures used in diagnostics against the subject matter.

The unit will confirm understanding of engine units and components already gained, diagnostic methods and equipment will be explained and demonstrated, then practiced by the learner.

They will understand the instructions on repair orders and react to ID codes used by some manufacturers. Diagnostic equipment will be used to obtain system data and bring the engine unit back into service.

Knowledge of using hand tools and equipment will be assessed and guidance given on any equipment not covered in previous units.

The learner will already have an understanding of the reporting procedures to report any work required, or any delays they may have encountered this underpinning knowledge can confirmed.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Work safely while carrying out diagnosis and repair on engine units.*
2. *Remove the engine unit and transmission from the vehicle.*
3. *Dismantle and assess the cylinder head assembly and components.*
4. *Dismantle and assess the crankcase assembly and components.*

ETAUT-406-1801: Vehicle Technology - Engine Management Systems

Unit level (MQF): 4

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit will provide knowledge for the learner to carry out diagnosis and rectification on electrical and electronic engine management systems.

The unit explains how the Electronic Control Unit (ECU) interfaces with various electronic sensors to manage the internal combustion engine. It also explains the physics behind various sensors found in today's engine management systems in a simple manner, so that the prospective automotive technician will be able to diagnose better the internal-combustion-engine behaviour.

The learner will be able to carry out tests on two types of engines: a fuel injection engine (petrol) and a common rail diesel engine.

The learner will be shown how to use a digital multimeter together with an oscilloscope to diagnose sensors and actuators that form part of the electronic control system.

The learner will also build a simple fuel injection tester/cleaner using the famous 555 timer. This part of the course will give invaluable understanding on how the ECU manages the actuators on an engine, apart from learning how to solder/de-solder electronic components. Troubleshooting oneself faults is an added benefit of this exercise.

This unit also explains the functions of generic electronic components found in ECUs today. These include resistors, capacitors, diodes and transistors. A very intuitive approach is taken when explaining these components to make sure that even those students who have never studied electronics before will understand the concepts of how these very important components work.

Common waveforms produced by the ECU to drive actuators such as transformers, fuel injectors, coil-on-plugs, idle-speed control, etc, will be explained and shown on oscilloscope.

Learning Outcomes

On completion of this unit the student will be able to:

1. *Work safely with the latest electronic and electrical systems.*
2. *Use a digital multimeter to troubleshoot DC sensors and actuators.*
3. *Use an oscilloscope to troubleshoot AC sensors and actuators.*
4. *Understand the basic electronic components found in electronic control units.*

ETAUT-406-1516: Diagnose and Rectify Transmission and Drive Line System Faults

Unit level (MQF): 4

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit provides the required underpinning knowledge for the technician to carry out diagnosis and rectification on transmissions and driveline components. It will provide the basics in vehicle diagnosis and will highlight procedures used in diagnostics against the subject matter.

The unit will confirm understanding of driveline operations already gained and will give guidance on diagnosing, rectifying or replacing system components. Diagnosis methods and equipment will be explained and demonstrated, then practiced by the learner.

It will also give the required underpinning knowledge in order for the learner to recommend further examination, rectification or replacement of transmission and driveline components. The tie between warranty, diagnosis and rectification will also be explained.

The unit will provide knowledge of clutch and automatic transmission efficiency to support diagnostics, and the rectification or replacement of driveline components will be explained, demonstrated and performed by the learner.

This unit will also explain the operation, diagnosis and rectification of other types of driveline systems normally offered as options on different specifications of vehicles. Students will understand the instructions on repair orders and react to ID codes used by some manufacturers. Diagnostic equipment will be used to obtain system data.

This unit will also explain the preparation required before conducting any diagnosis and rectification and its influence in efficiency and cost. The learner will be able to estimate realistic time scales for rectification.

Knowledge of using hand tools and equipment will be assessed and guidance given on any equipment not covered in previous units. The student will already have an understanding of the reporting procedures to report any work required. Any delays they may have encountered during this unit can be confirmed.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Work safely while carrying out diagnosis and repair on transmission and driveline systems.*
2. *Perform diagnosis and rectification on manual transmission assemblies.*
3. *Perform diagnosis and rectification on clutch assemblies.*
4. *Perform diagnosis and rectification on other types of transmission assemblies and driveline.*

CDKSK-404-2325: Entrepreneurship Essentials

Unit Level (MQF/EQF): 4

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 100

Unit Description

One of the main policy goals for the EU and Member States over the past years has been the development of the entrepreneurial capacity of European individuals and organizations, since there is a growing understanding that entrepreneurial abilities and information, can be learned, which in turn spurs the development of an entrepreneurial mindset and culture that is advantageous to both people and society at large.

Entrepreneurship is a transversal skill that may be used to launch businesses as well as foster personal growth, actively participate in society, and (re)enter the job market as an employee or self-employed individual (cultural, social, or commercial). Hence, it encompasses a variety of entrepreneurial endeavours, such as intrapreneurship, social entrepreneurship, green entrepreneurship, and digital entrepreneurship. It relates to value creation, and it is applicable to both individuals and groups (teams or organizations), as outlined in the definition below:

‘Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural, or social’ (FFE-YE, 2012)

Therefore, the main objective of this unit is to familiarize the learners with the above-mentioned concept of entrepreneurship, with a view on enhancing entrepreneurial skills by building a strong foundation in this area of studies. Through this unit, learners will be guided on various ideation and creativity techniques, which will enable them to recognize opportunities and/ or generate ideas that address needs which are not currently being met, whilst being driven by sustainability when making these decisions. For example, through the use of the global sustainable developmental goals (SDGs) the learners are encouraged to understand the importance of sustainable development and inspire them to create businesses that contribute to this cause.

Throughout the unit, learners will be encouraged to think critically, creatively, and ethically about entrepreneurship, and to consider the impact of their ventures on society and the environment, by utilising a variety of tools such as the Business Model Canvas(BMC) as a framework, and they will also have the opportunity to develop various other transversal skills such as communication and teamwork skills.

Upon completion of this unit, learners will have developed an appreciation for the role of entrepreneurship in society and acquired an entrepreneurial mindset that will enable them to identify and pursue opportunities for innovation and growth in their personal and professional lives.

Learning Outcomes

On completion of this unit the learner will be able to:

- 1. Identify an entrepreneurial opportunity.*
- 2. Apply creative thinking tool(s) and technique(s) to generate idea(s).*
- 3. Develop an entrepreneurial idea through a strategic plan.*
- 4. Use effective communication skills to persuade various stakeholders.*

CDKSK-402-2324: Community Social Responsibility

Unit Level (MQF/EQF): 4

Credits: 2

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 50

Unit Description

This unit focuses on Community Social Responsibility and provides an opportunity for learners to better understand themselves and others to establish life goals. Community social responsibility enables learners to understand their strengths, areas for improvement, opportunities offered to them during their lifespan and threats which can hinder their achievements. This unit will prepare students for life, employment and how to become active citizens in society.

Lectures will differ from traditional delivery of other units where learners will be empowered to take ownership of their learning process. This means that this unit will be delivered through a combination of discussions, presentations, debates and application of theory through voluntary work. The sessions will focus on students becoming more self-aware of their strengths and limitations and what can be done to improve themselves. Skills needed on working and interacting with other people in the community and the right work ethics when doing the voluntary work. These sessions will help them prepare themselves for life after college and also instil civic duty to become active citizens.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Discover oneself through personal reflection and planning personal goals.*
2. *Interact and cooperate with other people effectively.*
3. *Develop active participation and promote community work.*