



Title:	Automotive Diagnostic Systems APPROVED
Long Title:	Automotive Diagnostic Systems
Module Code:	AUTO7011
Duration:	1 Semester
Credits:	5
NFQ Level:	Intermediate
Field of Study:	Automotive Engineering
Valid From:	Semester 1 - 2016/17 (September 2016)
Module Delivered in	2 programme(s)
Module Coordinator:	Michael J. OMahony
Module Author:	MICHAEL O RIORDAN
Module Description:	This module is designed to give the student a practical knowledge of up to date equipment used in workshops to carry out various diagnostic tests on modern vehicles.
Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
LO1	Evaluate engine performance via the use of modern engine test equipment in compliance with current Health & Safety practices.
LO2	Interpret the various steering geometry angles by use of steering diagnostic test equipment in compliance with current Health & Safety practices.
LO3	Operate various vehicle auxillary systems with suitable diagnostic test equipment in compliance with current Health & Safety practices.
LO4	Determine mechanical/electrical faults using diagnostic test equipment in compliance with current Health & Safety practices
Pre-requisite learning	
Module Recommendations	
<i>This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named MTU module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</i>	
Incompatible Modules	
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements	
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed. You may not enrol on this module if you have not acquired the learning specified in this section.</i>	
No requirements listed	

Module Content & Assessment

Indicative Content

Engine Diagnostic

Cylinder compression testing, Cylinder leakage testing, Coolant system testing, measurement diagnostics.

Brake Systems Diagnostics.

A.B.S circuit testing. Component and sensor testing. Brake fluid testing. Brake vacuum testing.

Vehicle Testing Procedures (National standards)

Demonstrate the procedure in carrying out a test on a vehicle compatible with that of a NCT test.

Steering and Suspension

Electronic steering systems 4 wheel alignment procedures

Petrol fuel injection systems.

Dismantle, identify, reassemble, and test petrol injection system on a spark ignition engines.

Computer Control/Management Systems

Diagnostic procedures with the aid of an oscilloscope, wave form analysis, Automotive diagnostic hardware and software solutions, Emission diagnostics, Component testing, EOBD compliance systems, Chassis Component Diagnostics.

In Vehicle Networks

Examine in vehicle networks; identify the network layout and its active components. Diagnose basic mechanical /physical fault, use scan tool to display fault location presence of CAN signal faults, identify /description, rectify and clear fault memory.

Compression Ignition Fuel Systems

Dismantle, identify, and reassemble, fuel systems on compression ignition engines. Using a serial communication Diagnostic tester, interrogate the ECU for DTCS. Erase DTCS and display live data for common rail engines.

Transmission.

Dismantle, identify and reassemble Manual/Tiptronic/Automatic/ 4-Wheel Drive transmission systems.

Assessment Breakdown

%

Course Work

100.00%

Course Work

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Engine Diagnostic	1	25.0	Week 4
Practical/Skills Evaluation	Brake systems diagnostics	3	25.0	Week 6
Practical/Skills Evaluation	Steering Geometry & Vehicle Auxiliary Systems diagnostics.	2,3	25.0	Week 9
Practical/Skills Evaluation	CAN diagnostics	4	25.0	Sem End

No End of Module Formal Examination

Reassessment Requirement

Repeat the module

The assessment of this module is inextricably linked to the delivery. The student must reattend the module in its entirety in order to be reassessed.

The institute reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lab	Formal Lab Work	4.0	Every Week	4.00
Independent & Directed Learning (Non-contact)	Self Directed Learning	3.0	Every Week	3.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				4.00

Workload: Part Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lab	Formal Lab Work	3.0	Every Week	3.00
Independent & Directed Learning (Non-contact)	No Description	4.0	Every Week	4.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				3.00

Module Resources
<i>Recommended Book Resources</i>
<ul style="list-style-type: none"> • Alma Hillier 2014, <i>Hillier's Fundamentals of Automotive Electronics Book 2.</i>, Nelson Thornes [ISBN: 978-1-4085-1537-2]
<i>Supplementary Book Resources</i>
<ul style="list-style-type: none"> • Tom Denton 2011, <i>Automotive mechanical and electrical systems</i>, Elsevier [ISBN: 0080969453]
<i>This module does not have any article/paper resources</i>
<i>Other Resources</i>
<ul style="list-style-type: none"> • Web based learning support:: Jones and Bartlett2015CDX Automotive http://www.cdxauto.com/

Module Delivered in

Programme Code	Programme	Semester	Delivery
CR_EABMT_8	<u>Bachelor of Science (Hons) in Automotive Business Management and Technology</u>	5	Mandatory
CR_TTMGT_7	<u>Bachelor of Science in Automotive Technology and Management</u>	5	Mandatory