Module specification

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Module Code	ENG492
Module Title	Automotive Systems
Level	4
Credit value	20
Faculty	FAST
HECoS Code	100206
Cost Code	GAME

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
BEng Automotive Engineering	Core
MEng Automotive Engineering	Core

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	36 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	10 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	**46** hrs
Placement / work based learning	0 hrs
Guided independent study	154 hrs
Module duration (total hours)	200 hrs

For office use only	
Initial approval date	Feb 2017
With effect from date	September 2022
Date and details of revision	Aug 22, learning outcomes and assessment update in engineering revalidation
Version number	2

Module aims

- To develop an applied understanding and an overall basic appreciation of automotive engineering including performance on car, electrical, electronics and control systems which are now integral to modern motor vehicles.

Module Learning Outcomes - at the end of this module, students will be able to:

1	Develop knowledge and skills on assessing risks and preparing risk assessments for all major operations of manufacture, improvement and repair of vehicles. Perform in a professional automotive environment, alone and in a team, in line with the HSE procedures,
2	Describe the role of electrical and electronic systems in a modern motor vehicle; Develop knowledge on sensor technology, signal conditioning and information technology relevant to automotive systems.
3	Develop an understanding of all the major automotive mechanical components (chassis, powertrain, suspension, etc.)

In addition to the module learning outcomes, students will also cover the following accreditation of higher education programme (AHEP) fourth edition learning outcomes: C1.

Assessment

Indicative Assessment Tasks:
This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

The assessment is based on a practical activities and investigations presented as a single portfolio/logbook.

Criteria for assessment will be based on the students' professional dialogue and interpersonal skills, evaluative reports, and final presentations.

Portfolio should have a minimum word count of 4000 or equivalent.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1,2,3	Portfolio	100%

Derogations

A derogation from regulations has been approved for this programme which means that whilst the pass mark is 40% overall, each element of assessment (where there is more than one assessment) requires a minimum mark of 30%.

Learning and Teaching Strategies

The module will be presented to students exclusively through practical work and demonstrations in our fully equipped automotive laboratory.

Where possible, visits to local industries will be arranged to demonstrate system operations. Relevant videos will also be used to aid the learning process.

An active and inclusive approach is used to engage learners in the topics and will involve individual, group work and flipped learning experiences aligned to the university's Active Learning Framework (ALF).

The Moodle VLE and other on-line materials and resources will be available to support learning. ALF offers a balance between the classroom elements and digitally enabled activity incorporating flexible and accessible resources and flexible and accessible feedback to support learning.

Indicative Syllabus Outline

Health and Safety in automotive environment. Review of procedures and risk assessments.

Mechanical Components: Suspension, steering, engine technology…

Electrical and electronic systems: Applied overview of modern vehicle electrical systems and electronic systems including wiring, protections, relays, connectors…

Data acquisition systems: ODBD2 and CAN Data collection, collation and analysis, data logging and interpretation.

Assembly techniques: Rivets, taping, welding (steel, aluminium), brazing …

Indicative Bibliography

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads

R. G. Bosch, *Automotive Handbook*, 10th Ed. Professional Engineering Publishing, 2018.

Other indicative reading

T. Denton**,** *Automobile Mechanical and Electrical Systems*. Butterworth Heinemann Ltd, 2017.

Employability skills – the Glyndŵr Graduate

Each module and programme is designed to cover core Glyndŵr Graduate Attributes with the aim that each Graduate will leave Glyndŵr having achieved key employability skills as part of their study. The following attributes will be covered within this module either through the content or as part of the assessment. The programme is designed to cover all attributes and each module may cover different areas.

Core Attributes

Engaged

Enterprising
Creative
Ethical

Key Attitudes
Commitment
Curiosity
Resilience
Confidence
Adaptability

Practical Skillsets
Leadership and Team working
Critical Thinking
Communication