



MODULE SPECIFICATION

Part 1: Information			
Module Title	Vehicle Design Fundamentals		
Module Code	UFMFXS-15-3	Level	Level 6
For implementation from	2022-23		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Engineering, Design and Mathematics
Department	FET Dept of Engineering Design & Mathematics		
Module Type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co-requisites	None		
Module Entry Requirements	None		
PSRB Requirements	None		

Part 2: Description
<p>Overview: The premise of the module is that students will work in groups on a project commissioned by a fictional manufacturing company to design and "theoretically" develop a small Formula-style car. The prototype race car is to be evaluated for its potential as a production item as well as a drivable solution and the adoption of clever problem solving to meet the complex design requirements.</p> <p>Educational Aims: The module provides a system-based approach to the design of an automotive vehicle against a complex regulations and rules.</p> <p>For this purpose the module will adopt, FSAE, FSUK and FSG rules and regulation for the student formal car design</p> <p>Outline Syllabus: The module will cover: Automotive design requirements abstraction and embodiment Powertrain selection; IC, hybrid, electric. Chassis and suspension embodiment Control and low voltage systems (ECU; autonomous systems; LV circuits)</p>

STUDENT AND ACADEMIC SERVICES

Impact attenuation, body work and aerodynamic assistance.
Design set-up and testing.

Teaching and Learning Methods: Scheduled learning includes lectures, Computer practicals, laboratory experiments, design lectorials and demonstrations.

Independent learning includes hours engaged with essential reading, case study preparation, assignment preparation and completion etc.

Part 3: Assessment

Component A

Group Executive Design Briefing, for a GROUP mark, to discuss how the automotive design solution was planned, conducted, reflecting how the engineers have connected with the groups involved in reaching the client's needs. This will be a briefing with a Question and Answer session taking around 20 minutes.

The group work mark will be moderated using the EDM Group Working Policy.

Component B

The students are required to produce an INDIVIDUAL written assignment submitted at the end of the module. The assignment is designed to assess the students' design theory, regulation/ standards and technical understanding and application of the various automotive technologies for a given component/system on the vehicle, integrations and the selection criteria and process in manifesting a solution for a given customer. (Maximum 2000 words + computer-aided design and analysis documents.

Resit Strategy

Component A: Requires the student to give an individual briefing based on a tutor-specified scenario.

Component B: Provides the student with the opportunity to rework the final report (2000 words)

Risk of plagiarism will be mitigated by the individualised variables and data being issued to student groups with the assignment brief.

First Sit Components	Final Assessment	Element weighting	Description
Presentation - Component A	✓	40 %	12 minute GROUP design Briefing.
Report - Component B		60 %	2000 design report + CAE and CAD files, design calculations in Matlab or Excel form
Resit Components	Final Assessment	Element weighting	Description
Presentation - Component A	✓	40 %	12 minute Individual Briefing
Report - Component B		60 %	Individual report (2000 words) + supportive documentation

Part 4: Teaching and Learning Methods

Learning Outcomes	On successful completion of this module students will achieve the following learning outcomes:
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STUDENT AND ACADEMIC SERVICES

	Module Learning Outcomes		Reference
	Evaluate and apply understanding of the trends, legislation and regulations governing an automotive design problem to generate user requirements[]		MO1
	Interpret experimental and computational data to assess the validity of solutions and make clear design recommendations[]		MO2
	Demonstrate techniques for solving and analysing problems relating to a vehicle's, chassis, suspension, powertrain and transmissions against design requirements[]		MO3
	Evaluation and select automotive components (mechanical, electrical and control) based on an understanding of their performance characteristics and regulatory requirements []		MO4
Contact Hours	Independent Study Hours:		
	Independent study/self-guided study		114
	Total Independent Study Hours:		114
	Scheduled Learning and Teaching Hours:		
	Lectorials		36
	Total Scheduled Learning and Teaching Hours:		36
	Hours to be allocated		150
	Allocated Hours		150
Reading List	<p>The reading list for this module can be accessed via the following link:</p> <p>http://readinglists.uwe.ac.uk/lists/09037587-5742-6A72-48FE-B7D18436DACA.html</p>		

Part 5: Contributes Towards

This module contributes towards the following programmes of study: