



Module Specification

Emerging Automotive Technology 2

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Part 1: Information

Module title: Emerging Automotive Technology 2

Module code: UFMFAT-15-M

Level: Level 7

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: None

Field: Engineering, Design and Mathematics

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module builds on the first Emerging Automotive Technologies. The module advances the students knowledge of conventional and unconventional. However, this module also discusses the engineering of emerging automotive technologies in the wider context of legislation, air quality management, infrastructure.

In the first part of the module the students will learn about advanced conventional

and unconventional powertrains. This includes the ability to model them using commercial software.

The second part of the module allows the students to explore the interconnected factors that impact on emerging automotive technologies, such as legal, societal, health and environmental factors. The students are encouraged to find information from a range of sources, including non-technical engineering journals.

Features: Not applicable

Educational aims: The aim of this module is for students to integrate engineering knowledge to confidently research and evaluate the use of emerging automotive technologies within the automotive sector with reference to industry and environmental standards.

Outline syllabus: Vehicle Legislation

Advanced Engine simulation

Connected and Autonomous Vehicles

Air quality Management

Advanced Engine cycles

Combining Strengths of Internal Combustion and Electrical Powertrains

Simulation of Hybrid and Electric Vehicles

Charging infrastructure

Part 3: Teaching and learning methods

Teaching and learning methods: The module makes use of collaborative learning spaces to facilitate small group discussions. The module delivery is based on a lectorial model whereby lecture content and tutorial work and discussion are integrated and carefully managed in each session. Interactive quizzes are used to promote active engagement and regular formative feedback.

The delivery therefore ensures that engineering theory and principles can be readily assimilated and applied within an engineering context including the discussion of the

importance and likely impact of new technologies being adopted within the automotive sector.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Research and demonstrate technical understanding of emerging Automotive technologies. (SM4m)

MO2 Integrate knowledge from engineering and other fields to appraise and evaluate emerging automotive technologies. (SM6m)

MO3 Describe and critically reflect on the commercial, environmental, economic and social context of emerging automotive technologies (EL2)

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link <https://rl.talis.com/3/uwe/lists/E6B06A87-E7FA-FF34-598B-F1DB9028E1DC.html?lang=en-US&login=1>

Part 4: Assessment

Assessment strategy: The assessment strategy will assess both the core engineering related to emerging automotive technologies and their wider impact.

The module places a strong emphasis on the application of research skills and the assessment strategy reflects this with the controlled conditions being a presentation of the findings from the technical investigation.

There will be a single individual report in which students create a co-simulation of an Internal Combustion Engine. The students will need to run the engine in the virtual

environment under different operating conditions, record the outputs and analyse the findings.

Students conduct a brief feasibility study for a research idea of their choice related to the taught material. The students will need to think of an emerging technology that will have a positive wider impact on society, health and the environment. The students will then conduct a brief study to test the feasibility of the idea.

The assessment will involve an individual oral examination based on the submitted report.

The resit assessment will follow the same format as the first sit assessment profile.

Assessment tasks:**Presentation (First Sit)**

Description: Viva of report (15 mins)

Weighting: 25 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

Report (First Sit)

Description: 2500 word report

Weighting: 75 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3

Presentation (Resit)

Description: Viva of report (15 mins)

Weighting: 25 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

Report (Resit)

Description: 2500 word report

Weighting: 75 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Automotive Engineering [Sep][FT][Frenchay][4yrs] MEng 2020-21

Mechanical Engineering [Sep][FT][Frenchay][4yrs] MEng 2020-21