Module Proforma

Approved, 2022.02

Summary Information

Module Code	5570NCCG
Formal Module Title	Future Vehicles
Owning School	Civil Engineering and Built Environment
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 5
Grading Schema	40

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Graham Sherwood	Yes	N/A

Module Team Member

Contact Name	Applies to all offerings	Offerings

Partner Module Team

Contact Name	Applies to all offerings	Offerings

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
Nelson and Colne College Group

Learning Methods

Learning Method Type	Hours
Lecture	48

Module Offering(s)

Offering Code	Location	Start Month	Duration
SEP-PAR	PAR	September	28 Weeks

Aims and Outcomes

Aims	The module aims to provide students with knowledge of advanced future powertrain technologies with a focus on fully electric vehicles, relevant energy storage systems, smart and fast charging solutions, connected vehicles, artificial intelligence, machine learning, autonomous driving and the infrastructure needed. Policies and relevant ethical matters will be discussed.

Learning Outcomes

After completing the module the student should be able to:

Code	Description
MLO1	Analyse the fully electric vehicles powertrain technologies
MLO2	Review the energy storage systems for different vehicles types
MLO3	Investigate role of artificial intelligence and autonomous driving technologies in future vehicles
MLO4	Appreciate the ethical and legal considerations as related to autonomous driving

Module Content

Outline Syllabus
Hybrid and fully electric vehicles powertrain Advanced transmission and driveline conceptsBatteries and super-capacitorsSmart charging solutionsFuel cells technologies in vehiclesHydrogen generation technologiesAutonomous vehicle systemsMachine learningLegal and ethical consideration as related to autonomous driving

Module Overview

Additional Information

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Learning Outcome Mapping
Report	Individual Report	50	0	MLO1, MLO2
Presentation	Group Presentation	50	0	MLO4, MLO3