Module Specification

Module Summary Information

1	**Module Title**	Advanced Powertrains and Control
2	**Module Credits**	20
3	**Module Level**	7
4	**Module Code**	ENG7147

5	**Module Overview**

You will analyse, model and simulate state of the art alternative power units, such as petrol and diesel engines, the impact of alternative fuels/ hybrid systems. Controllers may then be designed for required emissions regulation, fuel economy, and performance. In particular, the potential exists for the application of modern controllers to coordinate and control APUs and their associated subsystems.

6	**Indicative Content**

- SI Engine Idle/Lambda Control
- CI Engine Emission Control
- Driveline Gear Shift Control
- Driveline Speed Control
- Hybrid Power Units & Control
- HEV Battery Management
- Hydrogen/Dual-Fuel Integration
- Hybrid Turbocharger Control

7	Module Learning Outcomes On successful completion of the module, students will be able to:	
	1	Critically analyse alternative powertrains such as dual fuel and hybrid systems.
	2	Model alternative powertrains and drivetrains for control purposes.
	3	Apply a variety of techniques for the control of alternative powertrains.
	4	Design controllers for the purposes of emissions reduction and fuel efficiency.

8	Module Assessment		
Learning Outcome			
	Coursework	Exam	In-Person
1-4	80%		20%

9	Breakdown Learning and Teaching Activities
Learning Activities	Hours
Scheduled Learning (SL) includes lectures, practical classes and workshops, peer group learning, Graduate+, as specified in timetable	36
Directed Learning (DL) includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning, as directed on VLE	N/A
Private Study (PS) includes preparation for exams	164
Total Study Hours:	200