Module Specification

Module Summary Information

1	**Module Title**	Advanced Materials and Manufacture
2	**Module Credits**	20
3	**Module Level**	7
4	**Module Code**	ENG7152

5	**Module Overview**

This module provides an opportunity for you to investigate the world of new materials and to develop an understanding of the techniques used in Computer Aided Manufacture. This will be set in the context of industrial applications and delivered through a combination of taught content and both practical and theoretical research project work.

6	**Indicative Content**

Lecture Topics	Facilitated lab pc / make space/Engineering Workshop	Post-session Activity
Introduction to module. Expectation setting.	Group forming exercises	Software familiarisation.
Material selection	Material selection theory and practice using CES	Software familiarisation.
New and emerging: Metals	Advanced material selection and eco audits.	Software familiarisation.
New and emerging: Polymers	Composite theory and synthesis using software tools	Practical scanning
New and emerging: Ceramics	Research-led group activity (may include practical fabrication)	Practical scanning
New and emerging: Composites	Research-led group activity (may include practical fabrication)	
Process selection	In depth analysis of CAM software and selected CNC machine.	Testing
High Speed Machining	In depth analysis of CAM software and selected CNC machine.	Testing
Multi Axis Machining	In depth analysis of CAM software and selected CNC machine.	Testing
Machine tool calibration and testing	In depth analysis of CAM software and selected CNC machine.	Testing
Additive Manufacture.	In depth analysis of CAM software and selected CNC machine.	Testing

7	Module Learning Outcomes On successful completion of the module, students will be able to:	
	1	Synthesize and critically analyse new materials using appropriate methods.
	2	Argue and defend the case for the use of new techniques in advanced materials and/or manufacture with particular reference to sustainability.
	3	Apply 3D simulation techniques to assess manufacturing process.
	4	Compare programming techniques to create components using Computer Controlled Machine tools.

8	Module Assessment		
Learning Outcome			
	Coursework	Exam	In-Person
1-4	X		

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