

# Advanced Materials

## Module Information

2022.01, Approved

### Summary Information

Module Code	5516NCCG
Formal Module Title	Advanced Materials
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 5
Grading Schema	40

### 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
Practical	12

### Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
APR-PAR	PAR	April	12 Weeks
JAN-PAR	PAR	January	12 Weeks

SEP-PAR	PAR	September	12 Weeks
SEP_NS-PAR	PAR	September (Non-standard start date)	12 Weeks

## Aims and Outcomes

Aims	This module aims to demonstrate an understanding of where Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) can be used in the product development process. The student will be required to deal with complex issues, both systematically and creatively, to construct numerical models of physical systems, and critically evaluate the results of that analysis. The module will also provide a conceptual understanding of the principles of FEA and CFD, including introductory mathematical fundamentals as required.
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**After completing the module the student should be able to:**

### Learning Outcomes

Code	Number	Description
MLO1	1	Demonstrate an understanding of the properties, manufacturing processes and uses of polymers, elastomers and ceramics.
MLO2	2	Demonstrate an understanding of the properties, manufacturing processes and uses of metallic and non-metallic composite materials
MLO3	3	Design and manufacture a component to meet an engineering specification
MLO4	4	Carry out non-destructive and destructive tests to determine the performance of a component against its specification

## Module Content

Outline Syllabus	Knowledge of material properties relating to metals, polymers and ceramics. Relationship between material properties and their structures. Structures, properties, processing and applications of: Metals; Ceramics; Polymers; Elastomers; Composites. Application of the knowledge gained critically to evaluate the suitability of materials for specific engineering applications.
Module Overview	
Additional Information	

## Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	Assignment	100	0	MLO1, MLO2, MLO3
Competency	NCC Group Pass/Fail			MLO4

## Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Christian Matthews	Yes	N/A

**Partner Module Team**

Contact Name	Applies to all offerings	Offerings
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