

Materials Engineering

Module Information

2022.01, Approved

Summary Information

Module Code	6310MECH
Formal Module Title	Materials Engineering
Owning School	Engineering
Career	Undergraduate
Credits	10
Academic level	FHEQ Level 6
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

Learning Methods

Learning Method Type	Hours
Lecture	11
Practical	3
Tutorial	11

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-CTY	CTY	September	12 Weeks

Aims and Outcomes

Aims	To provide an in-depth understanding of advanced engineering materials together with techniques for material property and performance improvements.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Critically review the structure-properties relationships of advanced materials and techniques for performance improvements.
MLO2	2	Relate how the properties and behaviour of materials govern their design and manufacture through consideration of the basic mechanisms involved.
MLO3	3	Apply a range of techniques for improving the properties and performance of materials.
MLO4	4	Select materials to meet the performance requirements of a range of engineering applications.

Module Content

Outline Syllabus	High performance materials and applications. Structure and properties of advanced materials, composition design, processing. New modern materials developments. Use of engineering principles in materials design and developments. Performance oriented materials design and selection. Use of modelling techniques in materials selection and product developments. Life cycle analysis of materials and structures.
Module Overview	
Additional Information	This module will cover a broad range of materials and techniques to improve the performances. It will equip the students with in-depth understanding of the structures of advanced materials and properties improvement. The selection of materials based on applications will also be developed. This module includes content which relates to the following UN Sustainable Development Goals: SDG8 – This module will consider how to provide students with skills that match that labour market in materials and manufacture field and allow them to attain productive employment. SDG9 – This module will consider how to promote sustainable industrialisation and foster innovation. SDG12 – This module will consider the issues of materials waste and recycling when designing engineering solutions.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Examination	100	2	MLO1, MLO2, MLO3, MLO4

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
James Ren	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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