Advanced Materials

Module Information

2022.01, Approved

Summary Information

Module Code	6300CIV
Formal Module Title	Advanced Materials
Owning School	Civil Engineering and Built Environment
Career	Undergraduate
Credits	10
Academic level	FHEQ Level 6
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
Civil Engineering and Built Environment

Learning Methods

Learning Method Type	Hours
Lecture	22
Practical	8
Tutorial	6
Workshop	5

Module Offering(s)

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

Aims and Outcomes

Aims	To advance the student's understanding of the behaviour of engineering materials under a wide range of service conditions with consideration of durability and sustainability and to critically review the choice of materials for different applications. Also to be able to assess the performance and properties of materials using non-destructive testing.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Critically review the use of non-destructive testing methods in the evaluation of the quality of structural concrete exposed to different environmental conditions.
MLO2	2	Evaluate the durability of materials with view to sustainability and performance.
MLO3	3	Analyse composite materials and their modern application.

Module Content

Outline Syllabus	Critical evaluation of the quality performance and properties of concrete structures using non-destructive testing and sensor technology. This includes determining the potential degradation of both concrete and the steel reinforcement.Assessment of durability of concrete and timber structures in relation to their whole life cycle and applying different permeability testing techniques.Establishing the properties and applications of different types of lightweight aggregates and fibres in concrete structures.Advanced consideration of sustainability in terms of materials and construction practices. Evaluation of material in terms of life cycle analysis and carbon emissions.Review of the properties and applications of advanced composite materials impact on the climate.
Module Overview	
Additional Information	This module critically evaluates the different techniques and applications of non-destructive testing of concrete structures. There is more detailed assessment of the durability of concrete with consideration of permeability testing and cracking patterns. It also provides review of the production and application of lightweight concretes. Students would develop understanding of the properties and use of advanced composite materials. The module is supported by practical laboratory experience that would enhance the advanced understanding of materials.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Examination	100	1.5	MLO1, MLO2, MLO3

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
David Yeboah	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings