

### Summary Information

<b>Module Code</b>	4403CIVH
<b>Formal Module Title</b>	Science Materials and Applied Mathematics
<b>Owning School</b>	Civil Engineering and Built Environment
<b>Career</b>	Undergraduate
<b>Credits</b>	20
<b>Academic level</b>	FHEQ Level 4
<b>Grading Schema</b>	40

### Module Contacts

#### Module Leader

Contact Name	Applies to all offerings	Offerings
Oluwapelumi Ojuri	Yes	N/A

#### Module Team Member

Contact Name	Applies to all offerings	Offerings
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#### Partner Module Team

Contact Name	Applies to all offerings	Offerings
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### Teaching Responsibility

<b>LJMU Schools involved in Delivery</b>
Civil Engineering and Built Environment

### Learning Methods

Learning Method Type	Hours
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Lecture	48
Practical	9
Tutorial	9

## Module Offering(s)

Offering Code	Location	Start Month	Duration
SEP-CTY	CTY	September	28 Weeks

## Aims and Outcomes

<b>Aims</b>	To introduce to the student through theory and experiment the basic scientific principles underpinning engineering calculations. To expand the student's knowledge of the engineering properties of the most important construction materials based upon scientific principles. To introduce to the student the principles governing the choice and specification of Materials including sustainability. To provide the student with an opportunity to develop skills in applying statistical and analytical methods to solving engineering problems.
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## Learning Outcomes

After completing the module the student should be able to:

Code	Description
MLO1	Make use of standard laboratory experiments and report upon the outcome.
MLO2	Describe the composition, manufacturing processes and engineering properties of the major construction materials including sustainability and carbon footprint considerations.
MLO3	Determine the behaviour of materials and structures under various loading conditions.
MLO4	Describe the most common process by which construction materials degrade, and the methods by which quality and durability are assured.
MLO5	Apply analytical methods to engineering problems.
MLO6	Apply statistical methods to engineering problems.

## Module Content

<b>Outline Syllabus</b>
Writing laboratory reports, interpretation and presentation of data. To identify health and safety issues and perform risk assessments. Testing of materials: determination of properties, measurements, standard testing methods. Awareness of the importance of sustainability and life cycle analysis with regards to engineering materials. Basic physical science: forces and motion, energy, static's (solid and fluid), thermal properties, the use of various materials in the design of structural elements. Basic mathematical processes to solve Civil Engineering problems: algebra, graphical techniques, trigonometry, statistical methods. Introduction to the science behind the climate emergency threats and the need for carbon accounting, circular economics and sustainability.

## Module Overview

### Additional Information

An introduction to science and materials for civil engineers together with methods of analysis. Emphasis is placed upon experimental work with clear analysis and presentation of results, together with problem solving in relation to the engineering properties and performance of materials. The module incorporates the development of the mathematical and scientific skills required to solve engineering problems.

## Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Learning Outcome Mapping
Report	REPORT 2000 WORD MAXIMUM	40	0	MLO1, MLO5
Centralised Exam	Examination	60	2	MLO2, MLO3, MLO1, MLO4, MLO5, MLO6