

Liverpool John Moores University

Title: SCIENCE AND MATERIALS FOR SUSTAINABLE CONSTRUCTION
Status: Definitive
Code: **4533NCCG** (129470)
Version Start Date: 01-08-2021

Owning School/Faculty: Civil Engineering and Built Environment
Teaching School/Faculty: Accrington Campus

Team	Leader
Fiona Borthwick	Y

Academic Level: FHEQ4
Credit Value: 20
Total Delivered Hours: 48

Total Learning Hours: 200
Private Study: 152

Delivery Options

Course typically offered: S1, S2 and NS2 (S2 for Jan)

Component	Contact Hours
Lecture	48

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Test	Test	Online Test	50	
Report	Assignment	Assignment	50	

Aims

The aim of this module is to support students to identify material choices to meet a brief. This includes identifying materials that are fit for purpose, as defined by testing standards whilst also considering the environmental impact and sustainability. Topics covered include: Health and Safety, storage and handling of materials and the problems associated with misuse.

On successful completion of this module students will have the skills and knowledge to make informed decisions regarding material choice and perform calculations to

establish anticipated performance of the chosen materials.

Learning Outcomes

After completing the module the student should be able to:

- 1 Analyse health and safety legislation associated with the storage, handling and use of materials on a construction site.
- 2 Examine the environmental and sustainability factors which influence the material choices for a construction project.
- 3 Identify materials for a given building using appropriate methodology and techniques.
- 4 Review the performance of a given building in respect of its human comfort requirements.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Online Test	1	2
Assignment	3	4

Outline Syllabus

Regulations including health and safety, design management and control and management of hazardous materials.

Handling and installation of materials including risk assessments and method statements, safely moving materials.

Health risks associated with materials including asbestos related and respiratory related disease, skin and musculoskeletal disorders.

Sustainability: renewable and non renewable materials, reusing and recycling construction waste.

The use of Environmental Assessment Method such as Building Research Establishment Environmental Assessment Method.

Consideration of embedded energy in construction.

Testing methods and the interpretation of test data.

Structural behaviours focusing on inherent material properties, their behaviour and use.

Human comfort focusing on indoor environmental quality, thermal loss and gain, environmental benefit vs implementation cost.

Learning Activities

These will not normally be traditional didactic lectures in which the student plays little active part, but will be delivered in small groups of up to 20 students in which their interaction with their tutor is a key ingredient of their learning experience.

Students will receive approximately 30 hours of taught material, supported by in-

class exercises and discussions designed to help student assimilate learning and to provide early informal feedback on their progress.

Independent Study

Students are expected to undertake personal reading and research into topic areas that have been stimulated from the lectures and seminars. This reading will enhance their academic work and enable valid contribution to lectures and seminars.

VLE support

This will provide links to academic web-sites and on-line journals, facilitate group discussion outside of the classroom, access to outline lecture notes, and provide students with assessment details.

Notes

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