Liverpool John Moores University

Title:	MATHS & SCIENCE IN THE BUILT ENVIRONMENT
Status:	Definitive
Code:	**5604BECC** (125601)
Version Start Date:	01-08-2021

Owning School/Faculty:	Civil Engineering and Built Environment
Teaching School/Faculty:	Coleg Cambria

Team	Leader
Jeff Cullen	Y

Academic Level:	FHEQ5	**Credit Value:**	20	**Total Delivered Hours:**	56
Total Learning Hours:	200	**Private Study:**	144		

Delivery Options
Course typically offered: Semester 1

Component	Contact Hours
Lecture	20
Tutorial	20
Workshop	14

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	AS1	Portfolio	50	
Exam	AS2	Examination	50	2

Aims

This Module aims to:
This module provides the learner with an introduction to the scientific principles and a basic knowledge of the properties of materials needed in the construction industry and to analyse, apply, investigate and evaluate scientific principles and the properties and behaviour of materials in construction related situations.

This module provides the learner with the fundamental mathematical knowledge. This unit has been designed to enable learners to use fundamental mathematical processes in the solution of Construction, Civil Engineering or Building Services Engineering problems.

Learning Outcomes

After completing the module the student should be able to:

1   Apply basic scientific principles in the context of the built environment and understand their relevance to building design and performance.
2   Demonstrate the properties of building materials and understand their performance characteristics with regard to the natural environment with consideration of any potential impacts.
3   Be able to apply statistics to construction problems
4   Be able to apply mathematical methods to surveying and setting out procedures

Learning Outcomes of Assessments

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

Portfolio   1   2   3   4

Examination   1   2   3   4

Outline Syllabus

Science:
Thermal capacity, insulation, vapour and condensation, ventilation, natural and artificial lighting, smoke, fire, sound and weather.
Building Regulation Control and the conservation of energy including carbon emissions and performance control.
Building services including water, both cold and hot along with sewage, power, both fossil and renewable resources, human comfort, heating, cooling and ventilation, fire and security protection.
Maths:
Trigonometry: basic trigonometric ratios and their inverses, trigonometric ratios for the four quadrants, solution of triangles, calculation of areas and volumes of solids
Trigonometric methods: to solve problems such as static forces, relative motion, frameworks, metrology, friction torque, electrical and mechanical energy problems
Calculus: to differentiate and integrate simple equations and demonstrate applications of calculus (refer to Delivery guidance on delivering calculus to construction disciplines)
Probability: interpretation of probability, probabilistic models, empirical variability, events and sets, mutually exclusive events, independent events

Learning Activities

Learning for this module will involve active student participation in lectures, group work, and action learning sets in the discussion of subjects within the module and the manual production of graphical communication techniques to support a design solution.

Notes

The module is designed to provide students on a range of Built Environment study programmes with a sound basic understanding of the principal materials used in construction and the scientific principles related to environmental services within buildings. Alongside this the student will be encouraged to apply appropriate analytical methods.