Liverpool John Moores University

Title:	MATERIAL SCIENCE IN ENGINEERING
Status:	Definitive
Code:	**4503ICBTQS** (126948)
Version Start Date:	01-08-2021
Owning School/Faculty:	Civil Engineering and Built Environment
Teaching School/Faculty:	ICBT, Colombo

Team	Leader
Alison Cotgrave	Y

Academic Level:	FHEQ4	**Credit Value:**	15	**Total Delivered Hours:**	68
Total Learning Hours:	150	**Private Study:**	82		

Delivery Options
Course typically offered: S2 and Non Std S2 (S2 for Jan)

Component	Contact Hours
Lecture	45
Practical	6
Tutorial	15

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Coursework on practicals (equivalent to 1500 words)	30	
Exam	AS2	Examination	70	2

Aims

Aim(s) of the module is to introduce various building & civil engineering materials and to demonstrate understanding of science of building & civil engineering materials & integrity of structural elements. This module focuses on a wide range & forms of buildings & civil engineering structures.

Learning Outcomes

After completing the module the student should be able to:

1 Identify & understand the usage of wide range of materials in various types & forms of buildings & civil engineering structures & integration of elements.
2 Analyse the behaviour, properties & science of wide range of materials in various types & forms of buildings & civil engineering structures & integration of structural elements.
3 Demonstrate the behaviour, properties & science of wide range of materials in various types & forms of buildings & civil engineering structures for effective.
4 Identify specifications & standards of materials testing for building & civil engineering works, structural designing and integration of various type of buildings & civil engineering structures and examine various quality problems & complexities of material selection and alternative materials for building & civil engineering structures.

Learning Outcomes of Assessments

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

Coursework	3		
Examination	1	2	4

Outline Syllabus

Note: Tutor must address below indicative content applies to various forms of building construction, structural forms of civil engineering & service engineering;

Introduction to Form of civil engineering materials used in engineering construction: Sand, cement, steel, rubble, brick, block, soil, plastic, PVC
Engineering & Index properties construction materials: Sand, cement, concrete, steel, rubble, brick, block, soil, plastic, PVC
Calculations associated with material's behaviour: Sand, cement, concrete, steel, rubble, brick, block, soil, plastic, PVC
Experimental method, data collection and data analysis of materials testing's: Concrete (Cube & Slump) and Soil testing's (PSD, Liquid limit, permeability, CBR, Density and plastic limit)
Material wastage
Waste material management
Material double handling
Dangerous & harmful materials
Eco-friendly material selection & cost effective alternative materials

Learning Activities

Students will be supported in their learning, to achieve the above learning outcomes,

in the following ways:

By a series of lectures and theoretical approach to identify the usage of wide range of materials in various types & forms of buildings & civil engineering structures & integration of elements.
In class practical sessions and controlled tutorials to analyse the behaviour, properties & science of wide range of materials & familiarize ASTM & BS, procedures of materials testing for building & civil engineering works, structural designing and integration of various type of buildings & civil engineering structures.
In-house laboratory practical's & demonstrations with the guidance of field experts to understand the behaviour, properties & science of wide range of materials in various types & forms of buildings & civil engineering structures for effective integration of structural elements
Self-managed studies to analyse the behaviour, properties & science of wide range of materials and examine various problems & complexities of improper material selection & quality problems in various form of engineering materials and form of structures.
Properties of materials, behaviours of materials & science of materials, materials testing procedures & related calculations, observations, reading, collection & analysis of data are some key features of this module.
A recommended resource list - indicating key reading, virtual and physical learning assistance, is provided to help enable students to undertake self-directed study.

Notes

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