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Title: SCIENCE, MATERIALS AND APPLIED MATHEMATICS
 Status: Definitive
 Code: **4106BEHN** (118177)
 Version Start Date: 01-08-2016

Owning School/Faculty: Civil Engineering
 Teaching School/Faculty: Civil Engineering

Team	Leader
Edward Loffill	Y
Clare Harris	
Lesley Wright	
Felicite Ruddock	
William Atherton	
John Sinclair	

Academic Level: FHEQ4 **Credit Value:** 24 **Total Delivered Hours:** 82

Total Learning Hours: 240 **Private Study:** 158

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	48
Practical	8
Tutorial	24

Grading Basis: BTEC

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Test	AS1		40	
Exam	AS2		60	2

Aims

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.

To provide the student with an opportunity to develop skills in applying statistical and analytical methods to solving engineering problems.

Learning Outcomes

After completing the module the student should be able to:

- 1 Make use of standard laboratory experiments and report upon the outcome.
- 2 Describe the composition, manufacturing processes and engineering properties of the major construction materials.
- 3 Determine the behavior of materials under various loading conditions.
- 4 Describe the most common process by which construction materials degrade, and the methods by which quality and durability are assured.
- 5 Apply analytical methods to engineering problems.
- 6 Apply statistical methods to engineering problems.

Learning Outcomes of Assessments

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

TEST	1	2		
EXAMINATION	3	4	5	6

Outline Syllabus

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.

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.

Learning Activities

Lectures, tutorials, problem solving sessions and laboratory classes

Theory is covered in lectures and practice is covered in group tutorial sessions.

Laboratory experiments are used to illustrate theory and demonstrate the importance of a methodical approach to the testing of materials.

Notes

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.