Liverpool John Moores University

Title: BUILDING SERVICES ENGINEERING MATHEMATICS
Status: Definitive
Code: **5508BEFDL** (118273)
Version Start Date: 01-08-2011

Owning School/Faculty: Built Environment
Teaching School/Faculty: Liverpool Community College

Team	emplid	Leader
Derek King		Y

Academic Level:	FHEQ5	**Credit Value:**	12.00	**Total Delivered Hours:**	59.00
Total Learning Hours:	120	**Private Study:**	61		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	36.000
Practical	8.000
Tutorial	12.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Controlled assignment under exam conditions	100.0	3.00

Aims

This module aims to provide the students with the fundamental mathematical and analytical techniques to support the mathematical and analytical functions required in the other modules of the programme. This module is intended to enable students studying the commercial pathway of the Building Services programme to apply analytical techniques associated with statistical analysis, heat transfer and electrical waveforms.

Learning Outcomes

After completing the module the student should be able to:

1   Construct differential equations for the purpose of solving building services problems.
2   Demonstrate a knowledge of the properties of trigonometrical functions and relate these to the characteristics of wave forms
3   Analyse and solve problems using statistics and probability.

Learning Outcomes of Assessments

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

EXAM   1   2   3

Outline Syllabus

Differential Equations: General and particular solutions. Boundary condition.
Differential equation models in building services engineering.
Trigonometrical Functions: Properties of waves: Amplitude, wavelength, frequency, phase difference, etc
Graphs: Sin θ, cos θ, sin 2θ, sin θ/2 etc.
Trigonometrical identities: sin θ/cos θ = tan θ, sin2 θ + cos2 θ = 1, compound angle ,formula, etc
Addition of wave-forms: a sinθ + b cosθ = R sin (θ ± α)
Statistics and Probability: Mutually exclusive and independent events. Binomial, Poisson and normal distributions.
Matrices: Multiplication, transposition and inversion, applications.

Learning Activities

Lectures, tutorials, practicals

References

Course Material	Book
Author	Greer, A. & Taylor, G.
Publishing Year	2004
Title	Mathematics for Technicians
Subtitle	
Edition	
Publisher	Nelson & Thorns
ISBN	928-0-7487-7949-9

Notes

This module provides fundamental mathematical and analytical techniques to support and contextualise the mathematical and analytical functions required in the other modules of the programme, such as statistical analysis, heat transfer and electrical waveforms.