Module Title:	Mathematics with IT

Credits:	5

NFQ Level:	6

Module Delivered In	1 programme(s)

Teaching & Learning Strategies:	Lectures and Tutorials Private study

Module Aim:	The aim of the module is to develop the students' mathematical and statistical skills and reasoning and to enable them to apply them to financial and research activities. The module will introduce the students to relevant software applications which can be used for statisical analysis.

Learning Outcomes
On successful completion of this module the learner should be able to:

LO1	Describe basic concepts in statistics and apply statistical skills to explore data numerically and graphically using manual approaches and IT approachs.
LO2	Solve well formed problems by identifying variables, selecting the appropriate formula, applying appropriate mathematical techniques and presenting an answer in applied questions.
LO3	Calculate probabilities and interpret and apply probability distribution functions using information technology where appropriate.
LO4	Calculate the solutions for a variety of financial maths topics including APR, EAR, IRR, BCR, NPV, Present and Future values associated with loan payments and sinking funds etc using information technology where appropriate.

Pre-requisite learning
Module Recommendations *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*
No recommendations listed
Incompatible Modules *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.*
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.*
No requirements listed

Module Content & Assessment

Indicative Content
(1) TRIGONOMETRY, VOLUME AND AREA AND TRANSPOSITION OF FORMULAE: 10% Revise material covered in year 1, applications of this topic to construction and its relevance to the other subjects studied on the course.
(2) FINANCIAL CALCULATIONS 20% (a) Revise the calculation of simple and compound interest. (b) Calculation of loan repayments (c) Mortgage calculations (d) Calculation of Monthly payments, and total interest paid (e) Amortisation and amortisation schedule (f) Inflation: Indices, Manipulation and adjustment, price (g) Depreciation: straight line and reducing balance method.
(3) INTRODUCTION TO STATISTICS 20% (a) Describe statistics and data analysis. (b) Distinguish between categorical (nominal, ordinal) and numerical (discrete, continuous) data. (c) Tabulate data and interpret data using Excel and Excel functions (Formulas, Pivot Tables etc). (d) Draw and Interpret Charts and Graphs manually and using appropriate IT packages. (e) Explain the terms population and sample. (f) Distinguish between and describe random and non-random sampling methods. (g) Design a questionnaire. Distinguish between types of questions and data. Describe how to conduct a sample survey. Describe experiments and observational studies.
(4) TOPICS IN STATISTICS 30% (a) Calculations of the correlation coefficient and the regression line equation. Plotting scatter points and the regression line, Interpolating and Extrapolating using the equation and or the regression line. Using Excel to generate regression lines and correlation data. (b) Draw and interpret the shape of histograms, ogives and boxplots. Calculate and interpret the mean, mode and median. Calculate and interpret quartiles, the range, the interquartile range. Calculate and interpret the variance and standard deviation. (c) Prepare and interpret statistical output from excel/other statistical software.
(5) PROBABILITY: 20% (a) Use the laws of probability. Interpret contingency tables. Calculate conditional probability. Describe Normal, Binomial and Poisson distributions and determine probabilities for appropriate experiments/events using them as an appropriate model.

Assessment Breakdown	%
Continuous Assessment	40.00%
End of Module Formal Examination	60.00%

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	Continuous Assessment	1,2,3,4	40.00	n/a

No Project

No Practical

End of Module Formal Examination				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	No Description	1,2,3,4	60.00	End-of-Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	30 Weeks per Stage	2.00
Estimated Learner Hours	30 Weeks per Stage	2.00
	Total Hours	120.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMBSE_D	Bachelor of Science in Construction Management with Buildings Services	3	Mandatory

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CW_CMBSE_D	Bachelor of Science in Construction Management with Buildings Services	3	Mandatory