MATH H2218: Mathematics

Module Title:	Mathematics

Credits:	5

NFQ Level:	6

Module Delivered In	No Programmes

Teaching & Learning Strategies:	A mix of traditional lectures and take-home exercises will enable the student to fully understand and practice the various mathematical techniques presented.

Module Aim:	To provide students with some mathematical techniques appropriate for computer science.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Apply the basic concepts of graph theory to analyse computer networks.
LO2	Solve various types of probability problems using the theory of probability distributions.
LO3	Explain and apply some numerical analysis techniques.
LO4	Demonstrate an understanding of number theory and its applications particularly basic cryptography.
LO5	Formulate statements using propositions and connectives.
LO6	Establish the validity of simple arguments using laws of reasoning

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

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Module Content & Assessment

Indicative Content
Numerical Methods Newton's method, line and curve fitting, programming of techniques.
Graph Theory Simple graphs, representing graphs, trees, connectivity, analysis of networks
Further Probability Probability distributions, normal binomial and Poisson distributions.
Number Theory Divisibility, Euclidean algorithm, linear congruences, applications to basic cryptography.
Mathematical Logic Propositional logic, formal proofs, resolution principle.

Assessment Breakdown	%
Continuous Assessment	30.00%
End of Module Formal Examination	70.00%

Continuous Assessment

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Other	CA marks will be based on the results of three 1 hour written tests during the term.		30.00	n/a

No Project

No Practical

End of Module Formal Examination

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	The terminal examination will include questions on all aspects of the course	1,2,3,4,5,6	70.00	End-of-Semester

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

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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	1.33
	Total Hours	100.00