Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
CMPU1010					10	6
Module Title	Computing Fundamentals 1					

Computing Fundamentals 1

School Responsible:	School of Computing

Module Overview:

This module presents the essential mathematics of computer science which is necessary to support and enhance other modules on the course. The topics covered on this module are required in computer technology, database systems, software engineering, programming, knowledge representation, and algorithms. The module covers the basics of discrete mathematics including logic, sets, relations and functions. The material is presented using languages and software that emphasise the computer science aspects of discrete mathematics.

Learning Outcomes (LO):	
On Completion of this module, the learner will be able to	
1	Demonstrate a knowledge of number systems, Boolean algebra, sets, logic, relations and functions.
2	Identify foundational issues when they are encountered in other course modules.
3	Use the course content (e.g. logic) to solve a variety of computing problems
4	Use course software the related tools to solve computing problems.
5	Apply fundamental mathematical theory to other course modules.

Indicative Syllabus:

- Logic: Propositional calculus, truth tables, logical equivalence, logical argument, predicate calculus, simple proofs.
- Set Theory: Algebra of sets, power sets, cardinality, Venn diagrams, programming using sets.
- Relations: Types, representations, equivalence, partial order, relational database theory.
- Functions: The graph of a function, properties, composition, functions in programming languages.
- Boolean Algebra: Basic laws, simplification of expressions, application to switching circuits.
- Number Systems: Binary, octal, decimal, hexadecimal, simple binary arithmetic.
- Supporting software: The above topics will be supported by software tools including functional and logic based languages.

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Learning and Teaching Methods:	
The course delivery involves a combination of lectures and labs which may incorporate the use of blended learning techniques as appropriate throughout the delivery.	
Total Teaching Contact Hours	39
Total Self-Directed Learning Hours	148

Module Delivery Duration:
This module is delivered over one semester

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Final Exam	70	1-5
Continuous Assessment	30	1-5
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations		
(b) Module Assessment Thresholds		
(c) Special Repeat Assessment Arrangements		

Essential Reading: (author, date, title, publisher)

Richard Johnsonbaugh, 2013, Discrete Mathematics, Pearson

Kenneth H. Rosen, 2011, Discrete Mathematics and Its Applications, McGraw-Hill

Supplemental Reading

Edgar G. Goodaire & Michael M. Parmenter,, 2006, Discrete Mathematics with Graph Theory, Pearson.

Feil, Todd, 2003, Essential discrete mathematics for computer science, Prentice Hall

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Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned

*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

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