*Programme Document: Approved: Academic Board 22 July 2009*

*OT4765 Bachelor of Information Technology Amended Academic Board 19 October 2016*

## 7.8 Maths for IT

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| *SMS Code* | IN521001/IX521001 | *Directed Learning hours* | 60 |
| *Level* | 5 | *Workplace or Practical Learning hours* | nil |
| *Credits* | 15 | *Self-Directed Learning hours* | 90 |
| Prerequisites | none | *Total Learning Hours* | 150 |
| *This course approved in another Programme: No* | | | |

***Aims***

To introduce students to mathematical concepts and methods that underpin and are directly applicable to the theory of information systems. This course is primarily sited within the field of discrete mathematics.

***Learning Outcomes***

At the successful completion of this course, students will be able to:

1. Use decimal and binary number systems, their notation and arithmetic.
2. Model digital circuits using logic notation.
3. Use number theory to explore encryption techniques.
4. Use the mathematics of algorithms, functions, iteration, and recursion.
5. Apply graphing techniques to a variety of functions.

6. Solve problems using coordinate geometry and trigonometry.

7. Solve network topology problems using recognised algorithms.

***Indicative Content***

All theoretical areas will be presented within an information technology context.

* Number systems
* Set theory
* Logic notation
* Computer coding systems
* Check digits
* Pseudo random number generators
* Encryption techniques
* Algorithms and functions
* Iteration and recursion
* Computational complexity
* Network topologies

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***Assessment***

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| **Assessment Activity** | **Weighting** | **Learning Outcomes** |
| Tests | 100% | 1-8 |

***Resources***

Flannery, S. & Flannery, D. (2001). *In code: A mathematical journey*. London: Profile Books. ISBN: 1-86197-271-7.

Gilbert, G.T. & Hatcher, R.L. (2000). *Mathematics: Beyond the numbers*. New York: John Wiley and Son. ISBN: 0-471-13934-3.

Grossman, P. (2002). *Discrete mathematics for computing*. (2nd ed.). Basingstoke, UK: Palgrave MacMillan. ISBN: 0-333-98111-1.

Russell, M. (2000). *Microcomputer architecture*. Melbourne, Australia: Eastern House. ISBN: 0-86458-028-2.

Singh, S. (1999). *Code book*. London: Fourth Estate. ISBN: 1-85702-879-

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