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South East Technological University

Module Descriptor

Mathematics Fundamentals (Computing and Mathematics)

Mathematics Fundamentals (A13501)

Short Title: Mathematics Fundamentals
Department: Computing and Mathematics
Credits: 5 **Level:** Introductory

Description of Module / Aims

This module introduces students to the basic concepts in matrices, linear and non linear functions, sequences and series and logic. Practical labs will act as a support as students will perform relevant calculations and construct relevant graphs.

Programmes

		stage/semester/status
MTHS-0051	BSc (Hons) in Software Systems Development (WD_KDEVP_B)	1 / 1 / M
MTHS-0051	BSc in Applied Computing (WD_KCOMP_D)	1 / 1 / M
MTHS-0051	BSc in Information Technology (WD_KINFT_D)	1 / 1 / M
MTHS-0051	BSc in Software Systems Development (WD_KCOMC_D)	1 / 1 / M

Indicative Content

- Matrices: Matrix operations; Solving linear equations using the inverse method
- Linear Functions: Slopes; Intercepts; Plotting lines
- Exponential & Logarithmic Functions: Properties; Rules of indices & logs; Graphs
- Sequences & Series: Arithmetic; Geometric; Limits
- Logic: Logical operators & truth tables

Learning Outcomes

On successful completion of this module, a student will be able to:

1. Manipulate 2D matrix operations.
2. Solve equations using matrices and the inverse method.
3. Utilise the rules of indices and logs to simplify expressions and to solve equations.
4. Construct appropriate sequences, series and limits calculations.
5. Construct truth tables by using logical operators.
6. Use industry based software to perform mathematical calculations.
7. Construct linear and non linear graphs using suitable software.

Learning and Teaching Methods

- The lectures will be used to present the mathematical material.
- In tutorials students will solve problems which will be based on material covered in the lectures.
- In practicals students will perform calculations by using built in functions along with creating their own formulae.
- Students will also use graphing tools to explore the properties of functions.

Learning Modes

Learning Type	F/T Hours	P/T Hours
Lecture	24	12
Tutorial	12	6
Practical	12	6
Independent Learning	87	111

Assessment Methods

	Weighting	Outcomes Assessed
Final Written Examination	60%	3,4,5
Continuous Assessment	40%	
In-Class Assessment	15%	1,2
Practical	25%	6,7

Assessment Criteria

<40%: Unable to interpret and describe key mathematical concepts.

40%–49%: Be able to interpret and describe key mathematical concepts.

50%–59%: Ability to discuss key mathematical concepts and ability to discover and integrate related knowledge in other knowledge domains.

60%–69%: Be able to solve mathematical problems using appropriate skills and software tools.

70%–100%: All the above to an excellent level. Be able to analyse and design solutions to a high standard for a range of both complex and unforeseen problems through the use and modification of appropriate mathematical skills and tools.

Supplementary Material(s)

- "https://moodle.wit.ie." https://moodle.wit.ie
- Lipschutz, S. *Essential Computer Mathematics.* New York: Graw-Hill, 1982.
- Morgan, G. and S. O' Neill. *Essential Computer Applications.* 4th Edition. Dublin: Gill & Macmillan, 2007.

Requested Resources

- Room Type: Computer Lab