

Program Content

Semester	I		
Course Code:	EN1106		
Course Name:	Introductory Mathematics		
Credit Value:	02		
Core/Optional	Core		
Hourly Breakdown	Theory	Practical	Independent Learning
	30	-	70

Course Aim/Intended Learning Outcomes:

This course provides core mathematical knowledge and skills that are essential for a student of ICT. At the completion of this course student will be able to:

- Solve mathematical problems quickly and efficiently
- Relate the mathematical concepts to ICT

Course Content: (Main Topics, Sub topics)

Topic	Theory (Hrs)	Practical (Hrs.)
1. Numbers and Arithmetic Operations	3	0
2. Basic Algebra	4	0
3. Solving Equations and Inequalities	4	0
4. Fundamentals of Measurements	4	0
5. Percentages and Ratios	3	0
6. Fundamentals of Sequences and Series	5	0
7. Indices and logarithms	3	0
8. Modular Arithmetic	4	0
Total	30	0

1. Numbers and Arithmetic Operations (3 hrs)

[Ref 1: Pg. (1 – 33)]

- 1.1 Types of numbers and representation on the number line.
- 1.2 The basic arithmetic operations and the rules governing their application
- 1.3 Prime numbers and factorization
- 1.4 Highest Common Factor and Lowest Common Multiple

2. Basic Algebra (4 hrs)

[Ref 1: Pg. (45 – 53), (70 – 113)]

- 2.1 Algebraic terminology
- 2.2 Expansion and factorization of algebraic expressions
- 2.3 Evaluation of algebraic expressions
- 2.4 Formulae

3. Solving Equations and Inequalities (4 hrs)

[Ref 1: Pg. (114 – 125), (189 – 210)]

- 3.1 Understands linear equations and their graphs
- 3.2 Solving Linear equations
- 3.3 Solving Simultaneous equations
- 3.4 Solving Quadratic equations
- 3.5 Inequalities and their solutions
- 3.6 Solving simultaneous equations graphically

4. Fundamentals of Measurements (4 hrs)

[Ref 1: Pg. (251 – 291), (306 – 321)]

- 4.1 Measurements of length, mass, time, capacity, area and volume
- 4.2 Area and volume of basic geometrical shapes
- 4.3 Introduction to trigonometry, trigonometrical ratios, functions and their graphs
- 4.4 Types of triangles and Solution of right-angled triangles
- 4.5 Sine and Cosine rule

5. Percentages and Ratios (3 hrs)

[Ref 1: Pg. (34 – 44)]

- 5.1 Percentages
- 5.2 Ratios

6. Fundamentals of Sequences and Series (5 hrs)

[Ref 1: Pg. (126 – 140)]

- 6.1. Definition and examples of sequences
- 6.2. Series and the sequence of terms of a series
- 6.3. Arithmetic and Geometric progressions
- 6.4. Infinite sequence and series
- 6.5. Arithmetic and Geometric Series

7. Indices and logarithms (3 hrs)

[Ref 1: Pg. (54 – 69), (233 – 250)]

- 7.1. The Laws of indices
- 7.2. Negative powers, Fractional powers, Square roots, Cube roots
- 7.3. Multiplication and division by powers of 10
- 7.4. Scientific notation
- 7.5. Logarithms: Definition, laws of logarithms
- 7.6. Calculate the logarithm of a number to any base
- 7.7. Solving equations with logarithms
- 7.8. Properties and graph of the logarithm function

8. Modular Arithmetic (4 hrs)

[Ref 2: Online, Ref 3: Online]

- 8.1 Introduction to Modular Arithmetic
- 8.2 Rules of Modular Arithmetic (Addition, Subtraction and Multiplication)
- 8.3 Properties of Modular Arithmetic

Teaching /Learning Methods:

Lectures are used to introduce basic concepts and problem-solving techniques in Mathematics. You can access all learning materials and this syllabus in the VLE: <http://vle.bit.lk>, if you are a registered student of BIT degree program. It is very important to participate in learning activities given in the VLE to learn this subject.

Assessment Strategy:

Continuous Assessments/Assignments:

The assignments consist of two quizzes, assignment quiz 1 (it covers the first half of the syllabus) and assignment quiz 2 (it covers the second half of the syllabus). The maximum mark for a question is 10 and the minimum mark for a question is 0 (irrespective of negative scores). Final assignment mark is calculated considering both assignments, and students will have to obtain at least 50% for each assignment. Students are advised to complete online assignments before the given deadline. It is compulsory to pass all online assignments to qualify to obtain the Level I, Diploma in IT (DIT), certificate.

In the course, case studies/Lab sheets will be introduced, and students have to participate in the learning activities.

Final Exam:

The final examination of the course will be held at the end of the semester. Final exam of the course will be held at the end of the semester. This course is evaluated using a one-hour question paper which consists of 25 MCQs and an online assessment given in the VLE for two weeks soon after the written exam. In order to pass this enhancement course (a compulsory requirement to obtain the BIT degree), you will need to pass the online assessment AND the written exam paper in one sitting.

References/ Reading Materials:

Main Materials

- [Ref 1]** Croft, T and Davison R (2016) Foundation maths, 6th ed. Pearson Education
- [Ref 2]** Modular Arithmetic. Brilliant.org. Retrieved 11:08, November 25, 2019, from <https://brilliant.org/wiki/modular-arithmetic/>
- [Ref 3]** Modular Arithmetic. en.wikibooks.org. Retrieved 25 November 2019, from https://en.wikibooks.org/wiki/Modular_Arithmetic/What_is_a_Modulus%3F

Supplementary Materials:

- Krantz, S. G. (2009), Discrete mathematics demystified. London: McGraw-Hill Professional.
- Rayner, D. (2005), Extended Mathematics for IGCSE: Oxford University Press.

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