

# MTH105 Fundamentals of Mathematics

**Level:** 1

**Credit Units:** 5 Credit Units

**Language:** ENGLISH

**Presentation Pattern:** EVERY SEMESTER

## Synopsis:

MTH105 Fundamentals of Mathematics will introduce students to the language, notions and methods upon which a sound education in mathematics at the university level is built. Students will be exposed to the language of mathematical logic, the idea of rigorous mathematical proofs and fundamental mathematical concepts such as sets, relations and functions.

## Topics:

- Predicates
- Quantified Statements
- Direct Proof
- Counterexamples
- Contradiction and Contraposition
- Algorithms
- Sets
- Set Theoretic Operations
- Mathematical Induction
- Relations
- Equivalence Relations
- Functions

## Textbooks:

by Susanna S Epp, Brooks/Cole: Discrete Mathematics with Applications 4th Edition Cengage  
(International Student Edition)  
ISBN-13: 9780495826163-AA

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**Learning Outcome:**

- Show certain mathematical statements by rigorous mathematical arguments.
- Give counterexamples to disprove certain mathematical statements.
- Use mathematical induction or well ordering principle to prove mathematical statements.
- Describe equivalence classes of a given equivalence relation.
- Employ truth tables to determine whether given arguments are valid.
- Determine whether given functions are injective and/or surjective.

**Assessment Strategies:**

<b>Continuous Assessment Component</b>	<b>Weightage (%)</b>
COMPUTER MARKED ASSIGNMENT	10
TUTOR-MARKED ASSIGNMENT	20
<b>Sub-Total</b>	<b>30</b>

<b>Examinable Component</b>	<b>Weightage (%)</b>
Written Exam	70
<b>Sub-Total</b>	<b>70</b>

**Weightage Total** **100**