Fundamentals of Mathematics

Number	Course and Code	Course Title	Number of Units Th. Pr. Credit	Pre-requisetes
6	MATH 251	Fundamentals of Mathematics	3 - 3	MATH 101

Objectives of the course

To introduce the fundamentals concepts of mathematics.

To develop the skills to understand the logical and abstract concepts of contemporary mathematics. To develop the techniques to understand mathematical hypotheses, theorems, and proofs.

Course description

Logical statements: Symbols, notations, methods of proof, truth tables, quantifiers. Sets: Basic operations on sets, De Morgan's laws.

Relations: Equivalence relations, equivalence classes, partial ordering.

Functions: Types of functions, composition of functions, graphs, inverse functions.

Binary operations: Types and examples.

The division algorithms: The greatest common divisor, Euclidean algorithms. Mathematical induction:

Main text book

[1] P. Fletcher, H. Hoyle, and C. Patty Foundations of Discrete Mathematics. PWS-Cant Pub. Co., 91.

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Subsidiary Books

[1] K. h. Rosen. Discrete Mathematics and its Applications, 5th Edition . McGraw-Hill, 2004.

[2] R. Johnsonburg. Discrete Mathematics, 6th Edition . Prentice Hall 2004.

[3] K. Devlin. Sets, Functions and Logic. Chapman and Hall, 1995.

[4] S. Epp. Discrete Mathematics with Applications. PWS-Cant Pub. Co., 1990.

[5] S. Lipschutz. Set Theory and Related Topics. Schaum's Outline Series, 1998.

[6] L. Lesniak. Discrete Structures, Logic, and Computability. Jones and Bartlett Publishers, 2002.