

<b>Module Code</b>	<b>MA2042</b>	<b>Title</b>	<b>Discrete Mathematics</b>			
<b>Credits</b>	<b>02</b>	<b>Hours/Week</b>	<b>Lectures</b>	<b>02</b>	<b>Pre-requisites</b>	MA 1012
			<b>Lab/Tutorials</b>	<b>-</b>		

### **Learning Objectives**

As a continuation to Introductory topics covered in MA102, this course designed to enhance the discrete mathematics application in engineering and computer science. Main aim of the course is to introduce the concepts of logic, recurrence relations, algebraic structures a, graphs and trees to students. Wherever possible algorithmic approach will be made to introduce the concepts.

### **Learning Outcomes**

- To apply logic and Boolean algebra in circuit design and network and other applications.
- To apply graph theory in devising various search algorithms and other algorithm applied in computing.
- To apply discrete mathematics concepts in other areas such as Operational Research.

### **Outline Syllabus**

**Logic:** Symbolic statements and truth tables, conditional connectives, Some methods of proof. Boolean Algebra: disjunctive and conjunctive normal forms, Karnaugh maps, minimization and applications.

#### **Introduction to Graph Theory:**

Basic definitions, degree of a vertex, paths, cycles and connectivity. Digraphs and relationship graphs. Isomorphism of graphs, adjacency, matrices and adjacency lists. Planar graphs Coloring of graphs. Trees: Properties, spanning trees, rooted trees, binary trees, binary search and applications

#### **Miscellaneous**

Recurrence relations, Basic Algebraic Structures and applications , Grammars, languages and Automaton