Course Code	Course Title	C	H	I	E	T
17U1DAC1	DISCRETE MATHEMATICS	3	5	25	75	100

UNIT I: The Foundations: Logic and Proofs　　　　　　　　(15 hours)

Propositional logic – Applications of Propositional logic – Propositional equivalences – (Exclude Propositional satisfiability, Applications of satisfiability, Solving satisfiability problems, and its related problems) – Predicates and Quantifiers – Rules of inference.

UNIT II: Relations　　　　　　　　(15 hours)

Relations and their properties – Representing relations – Closures of relations – Partial orderings (Theorems statement only; Exclude lexicographic ordering - Exclude Lattices)

UNIT III: Counting　　　　　　　　(15 hours)

The basic of counting - The pigeonhole principle – Permutation and Combinations – Applications of recurrence relations – Solving recurrence relations – Divide and Conquer algorithms and recurrence relations. (All theorems and Results statement only)

UNIT IV: Graphs　　　　　　　　(15 hours)

Graphs and Graphs models, (Excluding Biological networks; Tournaments; all its related examples and problems) – Graph terminology and special types of graphs – Representing graphs and Graph isomorphism – Connectivity (paths – connectedness in undirected graphs – paths and isomorphism – counting paths between vertices) – shortest path problems.

UNIT V: Matrices　　　　　　　　(15 hours)

Introduction – operations – inverse – Rank of a matrix, solution of simultaneous linear equations – Eigen values and Eigen Vectors.

Text Books:
1. Kenneth.H.Rosen, Discrete Mathematics and its applications, Seventh Edition, McGrawHill Publishing company.
2. M.Venkataraman , N.Sridharan and N.Chandrasekaran , Discrete Mathematics , 2009 , The National Publishing company

Chapters:
Unit I -　　1: Sections: 1.1, 1.2, 1.3, 1.4, 1.6　　　→ *Textbook 1*
Unit II -　　9: Sections: 9.1, 9.3, 9.4, 9.5, 9.6　　　→ *Textbook 1*
Unit III -　　6: Sections: 6.1, 6.2, 6.3
　　　　　　　8: Sections: 8.1, 8.2, 8.3
　　　　　(Pages: 527 -529 only)

(Exclude algorithms and relations, on page 507 and its related problems) → *Textbook 1*

Unit IV -   10: Sections: 10.1, 10.2, 10.3, 10.4, 10.6) → *Textbook 1*
Unit V -   6 : Sections :6.1 to 6.5, and 6.7)   → *Textbook 2*

Reference Books:

1. Alan Doerr, Levassure – "Applied Discrete Mathematical Structures for Computer Science".

2. Trembly and Manohar – "Discrete Mathematical Structures with Application to Computer Science".