Course Title: Discrete Mathematics

Semester and Year: M.Sc. IT First year, Autumn 2022-23

Credit Structure (L-T-P-Cr): 3-1-0-4

Course Code: SC612

Prerequisites (if any): No

Instructor's Name with email:
Rahul Muthu
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Course Objectives:
The students are expected to understand and be able to use the concept of mathematical proofs, be able to write things using mathematical language and learn the various aspects of discrete mathematics that are relevant in more advanced mathematics courses as well as engineering and other applied domains. Awareness of the topics, as well as ability to work out concrete problems will be emphasized in equal measure

Suggested Textbook/references:
1. Kenneth H Rosen, Discrete mathematics and its applications, Tata McGrawHill, 2011 (Elementary Text Book)
2. Elements of Discrete Mathematics C. L. Liu Publisher: Tata McGrawHill

Mode of Delivery
Three lectures a week to be held in CEP 207.
Mondays: 09:00-09:50
Wednesdays 10:00-10:50
Thursdays 08:00-08:50

Tutorial: time will be announced in due course.

Evaluation Scheme

- Labs and Assignments: Tutorials and scribed notes 20%
- InSem Exam 30 %
- End Sem Exam 50%

Lecture Plan :

1. Propositional logic, Propositional equivalence, First order logic, nested quantifiers, rules of
   inference. Boolean algebra, logic gates. (5 lectures)
   2. Sets, Relations, Functions (5 lectures)
   3. Proof techniques (3 lectures)

4. Counting techniques, binomial theorem, permutations and combinations (6 lectures)
5. Matrices and basic algebraic operations on matrices and related structures (3 lectures)
6. Computational problems and algorithms (3 lectures)
7. Formal languages and some basic machine models of computation (6 lectures)
8. Graphs and Trees (6 lectures)