Course Name: Discrete Mathematics   **Course Code: MATH107**

General Information						
Course Code	**MATH107**	**Level/Year**	**2/1**	**Required (R) / Selected Elective (SE)**		**R**
Credit Hours	**Theory**	**3**	**Lab**	**-**	**Total**	**3**
Prerequisites	**MATH105**	**Course Coordinator**		Dr. Mohammed Danish Siddiqi		
Corequisites	**Nil**					

Course Description
This course is designed to provide an elementary introduction to mathematics logic, basic and advanced counting, basic structures, graphs, trees and Boolean algebra which will facilitate them for further studies in computer sciences and related studies.

Course Objectives : On completion of the course, the student will be able to:
• **Analyze** functions involving integers and describe their relationships and properties.   • **Apply** generating functions to solve counting and combinatorial problems.   • **Interpret** graphs and trees (corridors), and **demonstrate** their applications in solving discrete mathematical problems.

Course Contents
List of Topics
1) Mathematical logic 2)Basic structures 3) Basics of counting 4) Advanced counting techniques 5) Graphs 6) Trees7) Boolean Algebra

Textbook
• K.H. Rosen, Discrete mathematics and its applications, McGraw Hill, 2018.

Reference Materials
• R.P. Grimaldi, Discrete and Combinatorial Mathematics: An applied introduction , Pearson, 2004   • Donald Knuth et. Al, Concrete Mathematics: A foundation for computer science, 1994, Addison-Wesley   • John Dossey et al, Discrete Mathematics and its applications, Pearson, 2017.

Course Learning Outcomes

CLO#01	Demonstrate information relevant to mathematical knowledge in mathematical logic, basic structures, basics of counting, advanced counting techniques, graphs, trees, and Boolean algebra.
CLO#02	Outline required notations and concepts of mathematical logic, basic structures, basics of counting, advanced counting techniques, graphs, trees, and Boolean algebra.
CLO#03	Explain aspects relevant to mathematical logic, basic structures, basics of counting, advanced counting techniques, graphs, trees, and Boolean algebra.
CLO#04	Compute rates/quantities and Approximate Solutions of mathematical logic, basic structures, basics of counting, advanced counting techniques, graphs, trees, and Boolean algebra.
CLO#05	Illustrate ability to work in groups to solve problems in mathematical logic, basic structures, basics of counting, advanced counting techniques, graphs,trees, and Boolean algebra.
CLO#06	Illustrate ability to use IT to Search the internet and using software programs to deal with problems.