

# **The Islamia University of Bahawalpur, Pakistan**

## **Department of Computer Science & IT**

**Program: BSCS, BSIT    Course Title: Discrete Structure (DS)**

**Course Instructor: Dr. Dost Muhammad Khan**

**Objective:** Discrete Structure (DS) course makes students of undergraduate level familiar to express statements with the precision of formal logic, to analyze arguments to test their validity, to apply the basic properties and operations related to sets and the basic properties and operations related to relations and function, to define terms recursively, to prove a formula using mathematical induction, to prove statements using direct and indirect methods, to compute probability of simple and conditional events, to illustrate the basic definitions of graph theory and properties of graphs, to relate each major topic in Discrete Structure to an application area in computing. The course outline is given below:

**Week 1:** Logic

**Week 2:** Sets & Operations on sets

**Week 3:** Relations & Their Properties

**Week 4:** Functions

**Week 5:** Sequences & Series

**Week 6:** Recurrence Relations

**Week 7:** Mathematical Induction

**Week 8:** Loop Invariants

**Week 9:** Combinatorics

**Week 10:** Probability

**Week 11:** Graphs

**Week 12:** Trees

**Week 13:** Project

**Week 14, 15, 16:** Assignments and Review of Course

**--- Good Luck ---**