

Course Syllabus	EECS 2520 – Discrete Structures
Credits & Contact Hours	3 credit hours & 3 50-minute lecture contact hours per week.
Coordinator	Dr. Ahmad Y. Javaid
Textbook	Discrete Mathematics and Its Applications, Kenneth H. Rosen, (Seventh Edition) McGraw-Hill, 2012
Course Information	<p>An introduction to the discrete structures used in computer science to develop software including proof techniques, Boolean logic, graphs, trees, recurrence relations, and functions.</p> <p>Prerequisite: PHIL 1010</p> <p>Required course</p>
Specific Goals- Students Learning Objectives (SLOs)	<p>The students will be able to</p> <ol style="list-style-type: none"> 1. Develop a vocabulary for and appreciation for mathematical rigor in Computer Science. 2. Learn and apply Mathematical Induction to a range of problems. 3. Learn fundamental notations for sets, functions, sequences, and summations. 4. Learn and apply Number Theory to solve problems in Computer Science. 5. Develop the mathematical underpinnings required for computer security. 6. Learn the elementary principles of Combinatorics. 7. Solve a limited class of recurrence relations. 8. Ability to define and construct graphs and trees. 9. Motivate the relevance of sound mathematics to software development.
Topics	<ol style="list-style-type: none"> 1. Propositional Logic. 2. Mathematical Induction. 3. Sets and Functions. 4. Sequences and Summations. 5. The Growth of Functions. 6. The Integers and Division. 7. Primes and Greatest Common Divisors. 8. Modulo arithmetic. 9. RSA Encryption.

10. The Basics of Counting.
11. The Pigeonhole Principle.
12. Permutations and Combinations.
13. Recurrence Relations.
14. Solving Linear Recurrence Relations.
15. Relations and Their Applications.
16. Equivalence Relations.
17. Graph Terminology and Special Types of Graphs.
18. Euler and Hamilton Paths.
19. Shortest-Path Problems.
20. Introduction to Trees.
21. Tree Traversal.
22. Spanning Trees.