

15A Syllabus - Discrete Mathematics

Lecture Schedule based on Epp – *Discrete Mathematics with Applications*, 3rd Edition

Section	Lectures	Topic
1.1	1	Logical Form and Logical Equivalence
1.2	1	Conditional Statements
1.3	1	Valid and Invalid Arguments
1.4	1	Application: Digital Logic Circuits
1.5	1	Application: Number Systems and Circuits for Addition
2.1	1.5	Predicates and Quantified Statements I
2.2	1	Predicates and Quantified Statements II
2.3, 2.4	1	Arguments with Quantified Statements
3.1	1	Direct Proof and Counterexample I
3.2, 3.3	1	Direct Proof and Counterexample II & III: Rational Numbers & Divisibility
3.4	1	Direct Proof and Counterexample IV: Division into Cases and the Quotient-Remainder Theorem
3.5	0.5	Direct Proof and Counterexample V: Floor and Ceiling
3.6	1	Indirect Argument: Contradiction and Contraposition
4.1	0.5	Sequences
4.2, 4.3	1	Mathematical Induction I & II
4.4, 5.1	1	Strong Mathematical Induction and the Well-Ordering Principle; Basic Definitions of Set Theory
5.1	0.5	Basic Definitions of Set Theory con'td
5.2	1	Properties of Sets
7.1	1	Functions Defined on General Sets
7.2	1	Application: Finite-State Automata
7.3, 7.4	1	One-to-One and Onto, Inverse Functions; Application: The Pigeonhole Principle
7.5	1	Composition of Functions
10.1	1.5	Relations on Sets
10.2	1	Reflexivity, Symmetry and Transitivity
10.3	1	Equivalence Relations
10.5	1	Partial Order Relations