Schedule

A week-by-week breakdown of the material.

Week 1

Monday

- Introduction
- Writing Mathematics
- Sets, set notation
- Subsets
- Set Operations
- Quiz 0 (Due Monday night together with Quiz 1)

Tuesday

- Indexed Collections of sets
- Set Partitions
- Cartesian Products
- Quiz 1 (Due Monday night)

Wednesday

- Statements
- Negations
- Disjunction and Conjunction
- Implications
- Quiz 2 (Due Tuesday night)

Thursday

- More implications
- Biconditional
- Tautologies, Contradictions
- Quiz 3 (Due Wednesday night)

Friday

- Logical Equivalence
- Fundamental properties of logical equivalence
- Quiz 4 (Due Thursday night)

- Exam 1

Week 2

Monday

- Quantifiers
- Characterization
- Quiz 5 (Due Sunday night)

Tuesday

- Trivial and Vacuous Proofs
- Direct Proofs
- Proof by Contrapositive
- Quiz 6 (Due Monday night)

Wednesday

- Proof by cases
- Direct and Contrapositive proofs for divisibility
- Direct and Contrapositive proofs for congruence
- Direct and Contrapositive proofs for real numbers
- Quiz 7 (Due Tuesday night)

Thursday

- Proofs involving sets
- Properties of set operations
- Proofs involving cartesian products of sets
- Quiz 8 (Due Wednesday night)

Friday

- Catching up
- Quiz 9 (Due Thursday night)
- Exam 2

Week 3

Monday

- Proofs by counterexample
- Proofs by contradiction
- Existence proofs
- Disproving existence statements
- Quiz 10 (Due Sunday night)

Tuesday

- Principle of Mathematical Induction
- General Principle of Mathematical Induction
- Strong Principle of Mathematical Induction
- Proofs by Minimum Counterexample
- Quiz 11 (Due Monday night)

Wednesday

- Conjectures
- Introduction to Relations
- Quiz 12 (Due Tuesday night)

Thursday

- Properties of Relations
- Equivalence Relations
- Quiz 13 (Due Wednesday night)

Friday

- Equivalence Classes
- Quiz 14 (Due Thursday night)
- Exam 3

Week 4

Monday

- Congruences as an equivalence
- Arithmetic on Integers modulo n

- Definition of functions
- Quiz 15 (Due Sunday night)

Tuesday

- One-to-one and onto functions
- Bijective functions, Inverse function
- Image and inverse image of sets under functions/relations. Properties
- Quiz 16 (Due Monday night)

Wednesday

- Numerically Equivalent sets
- Denumerable sets
- Quiz 17 (Due Tuesday night)

Thursday

- Uncountable sets
- Comparing cardinalities
- Schroder-Bernstein theorem
- Quiz 18 (Due Wednesday night)

Friday

- Wrap-up
- Exam 4