

Topic/Subtopic	Learning Strategies/ Activities	Week/Meeting/ Hours
2. Logical Operators 3. Tautology, Contradiction and Contingencies 4. Tautological Implication and Equivalence 5. Rules of Replacement	Lecture Class Discussions Problem Set	
B. Arguments 1. Valid and Invalid Arguments 2. Rules of Inference 3. Rule of Conditional Proof 4. Rule of Indirect Proof		5 Hours
C. Quantification Theory 1. Propositional Functions 2. Quantification Identities 3. Quantification Rules 4. Valid Arguments		6 Hours
D. Methods of Proof		5 Hours
II. SET THEORY		
A. Sets, Functions and Relations 1. The Concept of Set 2. Some Basic Notations and Definitions 3. Subsets, Equality of Sets, Empty Set 4. Algebra of Sets 5. Special Sets 6. Ordered Pairs 7. Cartesian Products, Relations 8. Functions (or Mappings) 9. Equivalence Relations and Partitions	Lecture Class Discussions Problem Set	12 Hours

B. Finite and Infinite Sets

1. Definition of Sets and Subsets
2. Some Basic Notations and Definitions
3. Subsets, Equality of Sets, Empty Set
4. Algebra of Sets
5. Special Sets
6. Ordered Pairs
7. Cartesian Products, Relations
8. Functions (or Mappings)
9. Equivalence Relations and Partitions

- Average of Long Exams 50%
- Final Exam 30%
- Problem Sets 20%

SOURCES

- Bloch, Ethan. *Proofs and Fundamentals A First Course in Abstract Mathematics*, Springer London, 2011.
- Chartrand, Gary. *Mathematical proofs : a transition to advanced mathematics*, Boston: Addison Wesley, 2003.
- Copi, Irving. *Introduction to Logic*