Propositional & Predicate Logic
Definition of a proposition
Definition of a predicate
Logic connectors such as: negation, and, inclusive or, exclusive or, conditional, bi-conditional
How to prove equivalence using truth tables
Definition of a tautology, contingency, & contradiction and how to show in a truth table
Universal quantifier, Existential quantifier
Equivalences involving negation of universal and existential quantifiers

Rules of Inferences
Definition of rules of inference
Use truth tables to determine if a rule of inference is valid or not valid
Be able to derive a conclusion by applying rules of inferences to the premises

Proof techniques
Direct Proofs
Definition of a direct proof
Be able to prove statement using direct proof technique
Indirect Proofs
Contraposition
Know the principles behind a contraposition proof
Be able to prove statement using contraposition proof
Contradiction
Know the principles behind a contradiction proof
Be able to prove statement using contradiction proof
Proof by cases
Know the principle behind proof by cases
Be able to prove statement using proof by cases

Program Correctness
Pre and post conditions
Loop invariants
Proof rule for while loops

Sets & Functions
N, Z, Q, R
Sets: equivalence, union, intersection, difference, universal set
Cardinality
Subsets and Proper Subsets
Tuples
Cartesian product
Power set