• Refer to the Midterm Review Materials page for the testable material from the first half of the course. Approximately 30-40% of the material on the final exam will be from the first half of the course.

• Predicate Logic
  – Be able to prove that one formula is a logical consequence (|=) of another formula.
  – Be able to prove that one formula is logically equivalent (≡) to another formula.
    Example: Assignment 3, question 3.
  – Given a formula, construct its semantic tableau. As in the midterm you are only responsible for the operators \( \land, \lor, \rightarrow, \leftrightarrow \) and their variations with \( \neg \) (see \( \alpha \) and \( \beta \) rules on Page 32 of the text). You must also know the \( \gamma \) and \( \delta \) rules for \( \forall \) and \( \exists \).
    Example: Assignment 3, question 4.
  – Know how to interpret and create propositional formulas.
    Example: Assignment 3, question 1.
  – Know how to identify and create interpretations for formulas, and which interpretations are models.
    Example: Assignment 3, question 2.
  – Know the concepts of satisfiability, unsatisfiability, falsifiability, and unfalsifiability with respect to predicate formulas.

• Program Verification
  – Determine the weakest precondition.
    Example: Assignment 4, question 4.
  – Be able to verify small programs.
    Example: Assignment 4, question 2 and 3.
  – Identify correct choices for loop invariants.
    Example: Assignment 4, question 2.
  – Identify correct choices for loop variants for total correctness.