Schedule of Topics
CSC/MAT 208, “Discrete Structures”
Department of Computer Science
Grinnell College
revised November 27, 2018

August 31: Overview; R7RS Scheme
Reading: Four handouts: “General Information”; “Scheme: a Refresher”; “Scheme in DrRacket”; and “Definitions and Libraries.”

September 3: Libraries in R7RS Scheme
Reading: Lehman, Leighton, and Meyer, from the beginning of part I through section 1.4 (pages 3–11).

September 5: Axioms and Inference Rules
Reading: Lehman, Leighton, and Meyer, from section 1.5 to the end of chapter 1 (pages 11–28).

September 7: Proof Patterns
Reading: “Basic Text Formatting and Typesetting with \LaTeX”; “Short Math Guide for \LaTeX.”

September 10: \LaTeX and the \texttt{amssymb} and \texttt{amsmath} Macro Packages
Reading: Handout: “The Propositional Calculus”

September 12: The Propositional Calculus
Reading: Lehman, Leighton, and Meyer, from the beginning of chapter 3 through section 3.5 (pages 47–63).

September 14: Validity and Satisfiability
Reading: Handout: “The Predicate Calculus”

September 17: The Predicate Calculus
Reading: Lehman, Leighton, and Meyer, from section 3.6 to the end of chapter 3 (pages 63–102).

September 19: Quantifiers and Inference Rules
Reading: Handout: “Axiom Systems and Mathematical Theories”

September 21: Axiom Systems and Mathematical Theories

September 24: (pause for breath)
Reading: Lehman, Leighton, and Meyer, from the beginning of chapter 4 through section 4.1 (pages 103–107).

September 26: Sets
Reading: Handout: “Laws of Sets”

September 28: Naive Set Theory
Reading: Lehman, Leighton, and Meyer, from the beginning of chapter 8 through section 8.1 (pages 295–305).

October 1: The Zermelo–Fraenkel Axioms and the Axiom of Choice
Reading: Handout: “Records in Scheme”

October 3 and 5: Records in Scheme
Reading: Code inspection: \texttt{/home/reseda/discrete-structures/code/discrete/sets.ss}

October 8: Implementing Sets in Scheme
October 10: Truth-Table Semantics
Reading: Lehman, Leighton, and Meyer, section 4.2 (page 108).

October 12: Sequences
Reading: Lehman, Leighton, and Meyer, from the beginning of chapter 5 through section 5.1 (pages 137–146).

October 15: Mathematical Induction
Reading: Lehman, Leighton, and Meyer, from section 5.2 to the end of chapter 5 (pages 146–172).

October 17: Course-of-Values Induction
Reading: Lehman, Leighton, and Meyer, chapter 7 (pages 217–294).

October 19: Structural Induction

October 29: Rules for Counting
Reading: Handout: “Bags.”

October 31: Bags
Reading: Handout: “Permutations and Combinations”

November 2: Permutations and Combinations
Reading: Handout: “Binomial Coefficients”

November 5: Binomial Coefficients; Falling and Rising Powers

November 7: (pause for breath)
Reading: Handout: “Stirling numbers.”

November 9: Partitions; Stirling Numbers
Reading: Handout: “Bell Numbers and Integer Partitions”

November 12: Bell Numbers and Integer Partitions
Reading: Handout: “Binary Trees and Catalan Numbers.”

November 14: Binary Trees and Catalan Numbers
Reading: Lehman, Leighton, and Meyer, section 4.3 (pages 109–111).

November 16: Functions and Maps
Reading: Handout: “Functions.”

November 19: Functional Operations and Properties
Reading: Lehman, Leighton, and Meyer, section 4.4 (pages 111–115); Handout: “Relations.”

November 21: Relations; Relational Operations and Properties
Reading: Handout: “Semantics of the Predicate Calculus.”

November 26 and 28: Semantics of the Predicate Calculus
Reading: Lehman, Leighton, and Meyer, from the beginning of part II through section 9.4 (pages 339–358).

November 30: Divisibility and Euclid’s Algorithm
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Reading: Lehman, Leighton, and Meyer, sections 9.6 and 9.7 (pages 362–366).

**December 3:** Modular Arithmetic
Reading: Lehman, Leighton, and Meyer, chapter 17 (pages 773–803).

**December 5:** Events and Event Spaces
Reading: Lehman, Leighton, and Meyer, chapter 18 (pages 805–856).

**December 7:** Conditional Probability; Bayes's Theorem

**December 10:** Random Variables; Probability Distribution Functions
Reading: Handout: “Rational Inference under Uncertainty”

**December 12:** Rational Inference under Uncertainty

**December 14:** Review; Student Evaluations

**Thursday, December 20, 2 p.m.:** Final Examination

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