CpSc 3500 Fall 2024

Foundations of Theoretical Computer Science

MWF 10:10–11:00am, Lehotsky G22

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Office Hours. See logistics page.

Content.
• Regular Expressions and Finite Automata
• Grammars and Pushdown Automata
• Turing Machines and Undecidability
• Brief Overview of Complexity

Goals/Learning Outcomes.
• Design a finite automaton or regular expression for a given language.
• Convert among notations for a given regular language.
• Design a context-free grammar, pushdown automaton, or Turing Machine for a given language.
• Explain the Church-Turing thesis and its significance.
• Explain why the Halting Problem has no algorithmic solution.
• Define the classes P and NP and explain the significance of NP-completeness.

Grade. The grade is determined as follows.
First, a class-grade $G$ is obtained as a weighted average:

Assignments: 36%; Quizlets: 4%; Tests: 60%.

The overall numerical grade is the maximum of $0.75G + 0.25F$ and $0.97G + 0.03F$ where $F$ is grade on the final.
The cut-off for an A will be 89.50; the cut-off for a B will be 80.00; the cut-off for a C will be 70.00. (Grades are calculated to two decimal places.)

Assignments/Homework. Unless otherwise specified, these are individual, and must be strictly your own work and are not to be shown to anyone else.

Logistics. See separate hand-out for logistics.

Books and Notes and Handouts. Most handouts and other material will be archived at course website people.computing.clemson.edu/~goddard/handouts/cpsc3500. Some info will be placed on Canvas. The previously suggested book was: Goddard: Introducing the theory of computation.

For more rules and regulations, see separate hand-out. This includes discussion of course management, academic integrity, accessibility, equal opportunity and equity, and emergency preparedness.