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 $.75G + .25F$ and $.97G + .03F$ 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.