

CSC702 **Spring 2011**
Automata Theory

Professor: Torgersen

Office Phone: 758-5536

Office Hours: MW 11:00 – 12:00, F 2:00 – 3:00 and by appointment

Text: Introduction to the Theory of Computation, 2nd edition, by Michael Sipser

Goals:

1. Survey of various models of computation, corresponding classes of languages, and an understanding of the fundamental limits of computation.
2. Models of computation and languages
 - (a) Finite Automata and Regular Languages
 - (b) Non-determinism
 - (c) Context free grammars, pushdown automata, and context free languages
 - (d) Turing Machines, Turing decidable languages, and Turing recognizable languages
 - i. Deterministic Turing Machines
 - ii. Non-Deterministic Turing Machines
3. Turing Decidability
 - (a) The Halting Problem and related undecidable problems
 - (b) Decidability of acceptance and equality problems for Finite Automata, Push-down Automata, and Turing Machines
 - (c) Mapping reducibility
4. Time Complexity (if time/if necessary)
 - (a) The classes \mathcal{P} and \mathcal{NP}
 - (b) \mathcal{NP} -complete problems

Expectations:

1. Attendance
2. Your best effort
3. Communicate your thoughts and concerns

Grading: 3 exams (60%). As many take home problem sets as we can schedule (expected 5 to 6) (40%). Expected exam dates (subject to revision) are Friday February 11, Monday, March 21, and Friday, April 29 (final exam).

Disability Notice:

If you have a disability that may require an accommodation for taking this course, then please contact the Learning Assistance Center (758-5929) within the first two weeks of the semester.

Pandemic Planning Notice:

The University has requested that faculty collect personal contact information as part of emergency planning and preparation. The information you provide is strictly confidential.