

SU DEPARTMENT OF MATHEMATICS & COMPUTER SCIENCE

SYLLABUS (*Tentative*)

COSC 362: *Theory of Computation*

Objectives: To introduce the mathematical underpinnings of theoretical computer science and the theory of computation.

Description: Applications of discrete mathematics to computer science and introduction to the theory of computation. Topics include automata and formal languages, computability by Turing machines and recursive functions, undecidability, and computational complexity. **Three hours per week.**

Intended for: Computer science majors and mathematics majors with an interest in computer science.

Prerequisite: “C” or better in MATH 210 (Introduction to Discrete Mathematics) and in COSC 120 (Computer Programming).

Required Text: “An Introduction to Formal Languages and Automata,” 6th edition, by Peter Linz, Jones & Bartlett Learning. ISBN: 978-1284077247.

	<i>Weeks</i>
<i>Preliminaries</i> Sets, relations, closures and algorithms, alphabets and languages, finite representations of languages.	2
<i>Finite Automata</i> Deterministic and nondeterministic finite automata, regular expressions, languages that are not regular, state minimization.	4
<i>Context-free Languages</i> Context free grammars, pushdown automata, parse trees.	2
<i>Computational Theory</i> Turing machines, Church-Turing thesis, halting problem, unsolvable problems.	4
<i>Computational Complexity</i> The class P, the class NP, NP completeness.	1
<i>Tests</i>	<hr style="width: 10%; margin-left: auto; margin-right: 0;"/> 1 14

EVALUATION

Homework, Quizzes and Class Participation: 30 - 70%

Tests and Comprehensive Final Exam: 30 - 70%

NOTE: ONCE A STUDENT HAS RECEIVED CREDIT, INCLUDING TRANSFER CREDIT, FOR A COURSE, CREDIT MAY NOT BE RECEIVED FOR ANY COURSE WITH MATERIAL THAT IS EQUIVALENT TO IT OR IS A PREREQUISITE FOR IT.