CS 301: Languages and Automata

Course Syllabus

Lectures
Times: MWF 1:00 - 1:50pm
Room: 220 SH

Discussion
Times: Fri 4:00 - 4:50pm
Room: 220 SH

Professor: Piotr Gmytrasiewicz
Office: 935 SEO
Phone: (312) 355-1320
Office Hours: MW ~~3:00 - 4:00pm~~ 2:00 - 3:00 pm
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Teaching Assistant: Office: SEO
Office Hours:

1 Objectives

This class is intended to teach you the theoretical foundations for study in computer science.

2 Description

Selected theoretical concepts including predicate logic, regular sets and finite automata, context-free languages and push-down automata, parsing, computability theory including Turing machines and decidability.

Prerequisites: Grade of C or better in CS 201 and credit or concurrent registration in CS 202.

The textbook for this course is the *Elements of the Theory of Computation*, **second edition, by Harry Lewis and Cristos Papadimitriou**, published by Prentice Hall. Other books that can provide extra insight are *Theory of Computation: Formal languages, Automata, and Complexity*, by J. Glenn Brookshear, *Languages and Machines: An Introduction to the Theory of Computer Science* by Thomas Sudkamp, *Introduction to Automata Theory* by John Hopkroft and Jeffrey Ullman, and *Introducation to the Theory of Computation* by Michael Sipser.

Grade Breakdown

Weekly Homework (approximately 12)	50%
Midterm	20%
Final Exam	30%

Homeworks will be due at the beginning of class, probably every Monday.

3 Tentative Schedule

Introduction, sets, relations, functions, induction (1 week)

Propositional and predicate logic (2 weeks)

Alphabets and languages (2 weeks)

Finite automata (2 weeks)

Finite automata and regular languages (2.5 weeks)

Context-free languages (2.5 weeks)

Pushdown automata (2.5 weeks)

Turing machines (1 week)

Decidability and computability (1 week)