BOSTON UNIVERSITY
METROPOLITAN COLLEGE
COMPUTER SCIENCE DEPARTMENT

MET CS 662 COMPUTER LANGUAGE THEORY

Course Overview

This course begins with a theory of finite automata and regular expressions and properties of regular sets. Then context-free grammars, context-free languages, and pushdown automata are covered. In the last part of the course, Turing machines, the Chomsky hierarchy, computational complexity theory and NP-complete problems are discussed.

Prerequisites

MET CS 248 Discrete Mathematics

Learning Objectives

By the end of this course the student will have learned:

- Finite Automata (DFA's and NFA's). Regular Expressions and properties of Regular Sets
- Context-free Languages and Pushdown Automata
- Turing machines, Chomsky Hierarchy
- Computational Complexity Theory and the study of NP-complete problems

Textbook Peter Linz. An Introduction to Formal Languages and Automata;
Jones and Bartlett Learning, Fifth Edition, 2012, ISBN#: 978-1-4496-1552-9

Evaluation and Grading

There will be two exams. If any grading criteria event will be missed it will be the responsibility of the student to arrange a mutually agreeable schedule for completion of work.

Grades will be based on:

Class participation	10%
Midterm Exam	50%
Final Exam	40%

Academic Honesty

The course is governed by the Academic Conduct Committee policies regarding plagiarism (any attempt to represent the work of another person as one's own). This includes copying (even with modifications) of a program or segment of code. You can discuss general ideas with other people, but the work you submit must be your own. Collaboration is not permitted.

Instructor Information

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Classes are scheduled at CGS Room 515

Schedule of Classes

9/5	Introduction to the Theory of Computation Proof Techniques, Languages, Grammars	Chapter 1
9/12	Finite Automata Deterministic Finite Accepters	Chapter 2
9/19	Finite Automata, Nondeterministic Finite Accepters Equivalence of DFA's and NFA's	Chapter 2
9/26	Regular Expressions, Connection between Regular Expressions and Regular Languages	Chapter 3
10/3	Regular Grammars, Equivalence between Regular Languages and Regular Grammars	Chapter3
10/10	**Substitute Monday Schedule of Classes**	
10/17	Properties of Regular Languages	Chapter 4
10/24	Context-Free Grammars, Parsing and Ambiguity	Chapter 5
10/31	**Midterm Exam**	
11/7	Transforming Grammars, Chomsky and Greibach Normal Forms A Membership Algorithm for Context-Free Grammars	Chapter 6
11/14	Pushdown Automata and Context Free Languages	Chapter 7
11/21	Properties of Context-Free Languages	Chapter 8
11/28	The Standard Turing Machine, Other Models of Turing Machines	Chapter 9, 10

12/5 Recursive and Recursively Enumerable Languages, Unrestricted Grammars, Context-Sensitive Grammars and Languages Chomsky Hierarchy — Chapter 11

12/12 Review

12/19 Final Exam

Homework Exercise Set

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