CIT 596 – Theory of Computation
University of Pennsylvania
Spring 2010
Instructor: Donna Dietz
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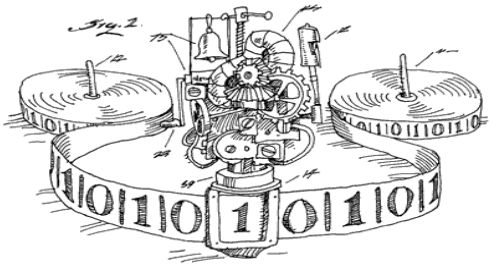
Lecture: TR 1:30-3:00 Skirk. Aud.
Recitation: F 11-noon Towne 313
Office Hours: MT: 11-noon, W:10-noon, or appointment



Text: *Introduction to the Theory of Computation, 2nd Edition*, Michael Sipser, 2006. ISBN-10: 0-534-95097-3 (We will make occasional use of the textbook from CIT 592, *Discrete Mathematics and Its Applications,* Kenneth H. Rosen, 6th edition.)

Official Course Description: - Prerequisite: CIT 592 or equivalent. Relations. Finite automata, regular languages, regular grammars, and applications. Pushdown automata, trees, context-free grammars, and applications. Turing machines. Introduction to computability and complexity theory.

Registration in both this lecture, as well as the associated recitation, is required.

Upcoming events:
Thursdays , 6-8 pm Levine
January 14
February 18
March 18
April 15
Social event for MCIT students
(Pizza will be served.)

Special Guest Speaker:
ERIC RAYMOND
Thursday, January 21st 6-8pm
Wu and Chen Auditorium

This course is part of a two-course sequence in the MCIT program. (CIT592, Mathematical Foundations of Computer Science, is the other course in this sequence.)

Grading: Your final grade for the semester will be weighted as follows: 25% each for Exam I and Exam II, 30% for the Final, and 20% for the various homeworks and/or projects which will be assigned roughly once per week during the semester. All assignments and other announcements will be posted through Blackboard.

Calendar:

This course meets 28 times for 90 minutes during the semester, plus once (2 hours) for the final exam.

	date	**agenda**	**agenda**
1	Th Jan 14	Intro, 1.1	Finite Automata
2	Tu Jan 19	1.1	Regular Operations
3	Th Jan 21	1.2	Nondeterminism, DFAs and NFAs
4	Tu Jan 26	1.2	Closure under regular operations
	Tu Jan 26	12.2 Rosen	Finite State Machines w/Output
5	Tu Feb 2	1.3	Regular Expressions
6	Th Feb 4	1.4	Nonregular Languages
7	Tu Feb 9	2.1	Context-free Grammars
8	Th Feb 11	**Exam I**	**(on material from days 1-6)**
9	Tu Feb 16	2.2	PDAs
10	Th Feb 18	2.2	PDA=CFG
11	Tu Feb 23	2.3	Non-context-free grammars
	Tu Feb 23	12.1 Rosen	Languages and Grammars
12	Th Feb 25	3.1	Turing Machines
13	Tu Mar 2	3.2	TM continued... & variants
14	Th Mar 4	3.3	Definition of Algorithm
15	Tu Mar 16	4.1	Decidable Languages
16	Th Mar 18	4.2	The Halting Problem
17	Tu Mar 23	5.1	Undecidable Problems from Language Theory
18	Th Mar 25	**Exam II**	**(on material from days 7 and 9-16)**
19	Tu Mar 30	5.2	A Simple Undecidable Problem (Post)
20	Th Apr 1	5.3, 6.1	Mapping Reducibility, Recursion Theorem
21	Tu Apr 6	6.2, 6.3	Decidability, Reducibility
22	Th Apr 8	6.4, 7.1	Information, Complexity Theory
23	Tu Apr 13	7.2	The Class P
24	Th Apr 15		continued...
25	Tu Apr 20	7.3, 7.4	The Class NP and NP-Completeness
26	Th Apr 22		continued...
27	Tu Apr 27	Review	
	We May 5 9-11	**FINAL EXAM**	**(most likely will be cumulative)**