

Welcome to CSE 322: Intro. to Formal Models

- ◆ More popularly known as: CS Theory 101
- ◆ Instructor: Rajesh Rao (rao@cs.washington.edu)
- ◆ TA: Deepak Verma (deepak@cs)
- ◆ Brief reminder about this evening (Red Square, 5pm)...

Syllabus and Course Information

- ◆ Browse class web page for syllabus and course information:
 - ⇒ <http://www.cs.washington.edu/education/courses/322/01au/>
- ◆ Lecture slides will be made available on the website
- ◆ Add yourself to the mailing list→ see the web page
- ◆ Textbook
 - ⇒ *Introduction to the Theory of Computation* (1997)
 - ⇒ By Michael Sipser (at MIT)

Items on Today's Menu

- ◆ Course Topics
- ◆ Course Goals
- ◆ How do I get an A? Homework, exams, etc...
- ◆ Review of Selected Topics from Chapter 0
 - ⇒ Sets and Mathematical Notation
 - ⇒ Functions and Relations
 - ⇒ Strings and Languages

Course Topics

- ◆ Mathematical Preliminaries (Chap. 0)
- ◆ Regular Languages and Finite Automata (Chap. 1)
- ◆ Context-Free Languages and Pushdown Automata (Chap. 2)
- ◆ Turing Machines and the Church-Turing Thesis (Chap. 3)
- ◆ Decidable and Undecidable Languages (Chap. 4)
- ◆ Selected topics from Chaps. 5 and 6

Course Goals

- ◆ General Goals:
 - ⇒ Learn to mathematically express and analyze a problem or statement about computation
 - ⇒ Learn to prove mathematical theorems about computation
 - ⇒ Hone your analytical skills for your future career!
- ◆ Specific Goals:
 - ⇒ Understand how problems can be classified as computationally “easy” or “hard” using abstract computational “machines”
 - ⇒ Learn about regular expressions, finite automata, context-free grammars, and Turing Machines
 - ⇒ Discover their applications in string searching, compilers, hardware design, programming languages, and algorithmic analysis

How do I get an A in this class?

- ◆ Answer: Practice, Practice, Practice (solving problems)
- ◆ Weekly homework assignments (50%)
 - ⇒ Total of 6-7 assignments
 - ⇒ Collaborative/group work is encouraged but *only after you have tried to solve each problem by yourself first*
 - ◆ No copying of solutions – explain in your own words!!
 - ◆ See Course Policies regarding this on the Web
 - ⇒ No late submissions: due in the *beginning of class* on due date
- ◆ Midterm exam (20%)
 - ⇒ Monday, November 5, 2001
- ◆ Final exam (30%)
 - ⇒ Friday, December 14, 2001 from 8:30-10:20 a.m.

Okay, let's begin with some basics...

- ◆ Review of things you probably already know:
 - ⇒ Sets and mathematical notation
 - ⇒ Functions
 - ⇒ Relations
 - ⇒ Strings
 - ⇒ Languages

Next Class: Proving things – how and why...

- ◆ Things to do:
 - ⇒ Visit course website
 - ⇒ Sign up for mailing list (instructions on website)
 - ⇒ Read Chapter 0
- ◆ Adds: The class is currently full. If you want to add, send e-mail explaining why you need to take this course this quarter.