

Introduction to Formal Models in Computer Science

GENERAL DESCRIPTION:

Introduction to the theory of computing through a study of *automata* (finite automata, push-down automata and Turing machines) and *formal languages* they capture (regular languages, context-free languages and decidable languages, respectively). Emphasis on understanding abstract models and on rigorous analytical arguments.

PREREQUISITES:

CSE 321 (Discrete Structures)

INSTRUCTOR:

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TEACHING ASSISTANT:

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Office hours: TBA

MEETINGS:

MWF 10:30 am – 11:20 am (EE1 037)

TEXT:

Michael Sipser, *Introduction to the Theory of Computation*, PWS, 1997.

COURSEWEB AND MAILING LIST :

Courseweb for CSE 322: <http://www.cs.washington.edu/education/courses/322/01sp>. Check it regularly (several times a week). Announcements may be made there that are not made in class. Homeworks will be posted there. Instructions for subscribing to the class mailing list (cse322@cs) is on the courseweb. I will be using both the courseweb and the class mailing list to communicate with the class. All messages sent to the class mailing list will be placed in an archive accessible from the courseweb.

ASSIGNMENTS AND EXAMS:

There will be regular homework assignments. Particularly difficult problems may be assigned as group work. Homeworks will generally be due a week after they are assigned. **Late homeworks will not be accepted.** There will be one in-class midterm on **Wednesday May 2** and a comprehensive final during finals week on **Monday June 4**. I will inform the class if this changes.

GRADING:

Homework	50%
Midterm	15%
Final	35%

The above percentages are approximate. They will be used to compute a numerical score that will be used to determine final grades.

COURSE OUTLINE:

The following is a tentative schedule of topics I plan to cover:

1. [week 1] Introduction and mathematical background (chapter 0).
2. [weeks 2-5] Regular languages: deterministic and non-deterministic finite automata, closure properties, regular expressions, pumping lemma (chapter 1).
3. [weeks 5-8] Context-free languages: context-free grammars, Chomsky normal form, push down automata, pumping lemma (chapter 2).
4. [weeks 9-10] Turing machines, decidability, the halting problem (chapters 3, 4).