CS581 Theory of Computation

Tim Sheard
Portland State University

Syllabus   and   Class Preliminaries

Registration Details

CRN 65316
CS 581	Theory of Computation(3 cr)
Tuesday	16:00-18:30
Willow Creek Campus, room 313

Offered at Willow Creek Center
241 SW Edgeway Drive
Beaverton, OR 97006.

Near SW 185th and Baseline Road.
50 yards from the MAX Blue Line Willow Creek Station

Contact Details:

- Tim Sheard:
  - Office: Fourth Ave Building (FAB) 120-04
  - Telephone: (503) 725-2410
  - Email: sheard@cs.pdx.edu

Teaching assistant:

- Yu Yang
- Email   yyang@pdx.edu
- Office hours: TBA

- Further arrangements to be made as the class progresses.

Exams

- Midterm:
  - April 30, 2013

- Final:
  - Tuesday June 11, 2013
  - Final Exam period 15:30 -> 17:20
    - (3:30 PM -> 5:20 PM)

    - The University scheduled final exam period is not the same as normal class hours!

Methods of assessment:

Class worksheets Start in class, turn in by Thursday midnight	15%
Homework (8 weekly homeworks)	40%
Midterm (April 30, 2013)	15%
Final exam (June 11, 2013)	30%
TOTAL	100%

Policies:

- By default, all deadlines are firm.

- We will be as flexible as possible in accommodating special circumstances; but advance notice will make this a lot easier.

Academic Integrity

- We follow the standard PSU guidelines for academic integrity Students are expected to be honest in their academic dealings. Dishonesty is dealt with severely.

- Examinations. Notes and such,
- only as the instructor allows.

- Homework..

  – Discussion is good;

  – Items turned in should be your own

  – individual work. You are encouraged

  – to talk to other people about the

  – homework problems, but you must write

  – up your answers independently. If

  – you're stuck with a problem,

  – please ask for help.
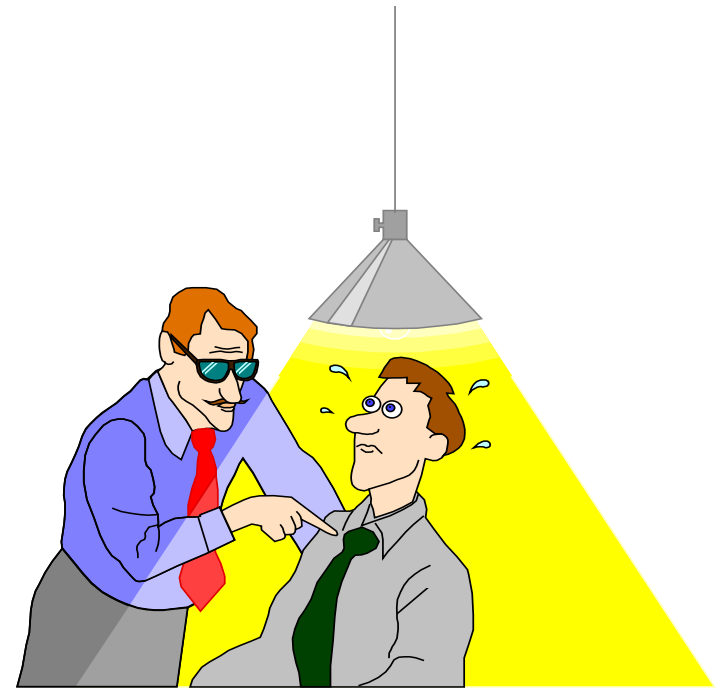
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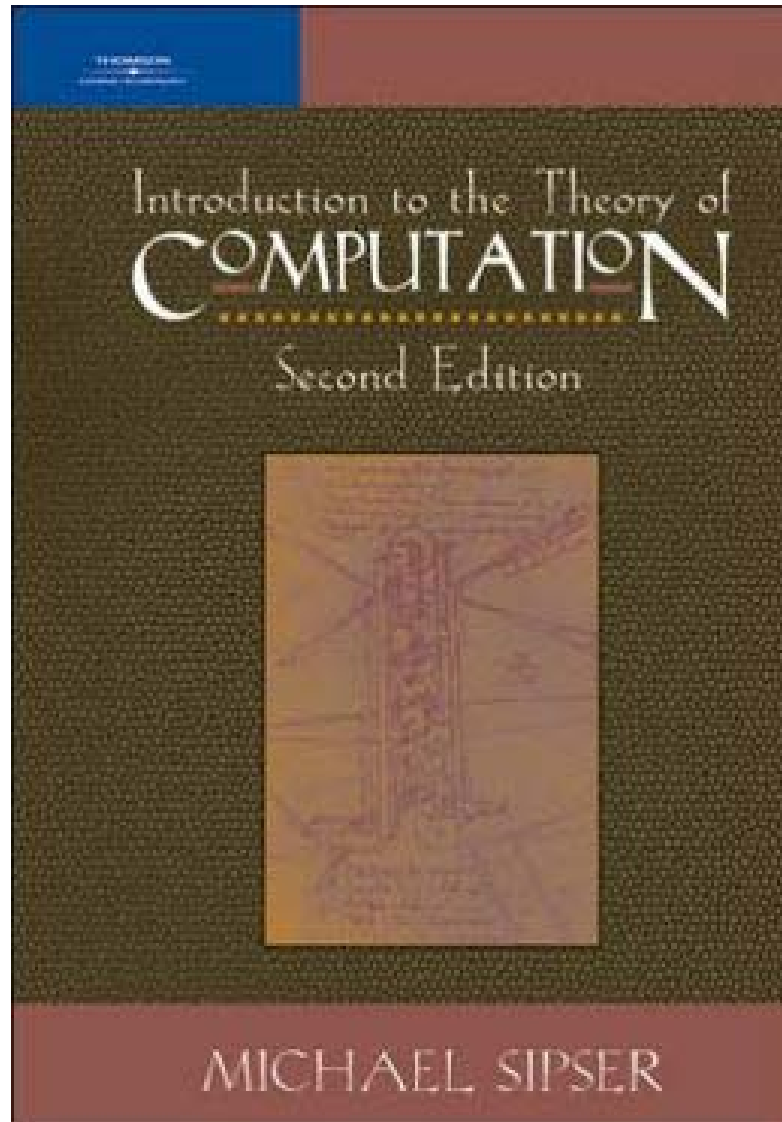
Introduction to the Theory of Computation

(2nd edition)

Michael Sipser

ISBN-13 978-0-534-95097-2

Home page of the text book:

http://www-math.mit.edu/~sipser/book.html

It looks like this!

Topics covered

- *Mathematical Preliminaries*
- *Finite State Automata*
- *Non-deterministic Finite State Automata*
- Regular Expressions
- Equivalence of RE DFA NFA
- Regular Language Pumping Lemma
- Context Free Grammars (CFG)
- Push Down Automata (PDA)
- CF pummping Lemma
- Turing Machines

- Church-Turing Thesis
- Decideability
- The Halting Problem
- Diagonalization
- Reducability
- Mapping Reducability
- The reursion Theorem
- Decideability
- Information Theory
- Complexity
- P and NP
- NP Completeness