cse303
Introduction to the Theory of Computation

Professor Anita Wasilewska

COURSE SYLLABUS

Course Web Page
www3.cs.stonybrook.edu/∼ cse303

The course webpage contains a set of

very detailed Lectures slides

Lectures closely follow the book

Lectures contain many examples and carefully written
solutions to many of the homework problems

All materials are designed to help you to study

Elements of the Theory of Computation

R. Lewis and Christos H. Papadimitriou

Prentice Hall, Second Edition

Course Objectives are to

introduce abstract models of computation,

analyze their relative expressive power,

explore the **connection** between abstract machine models

and formal languages

Course Description

The course is an **introduction** to the abstract notions encountered in machine computation

Topics include finite automata, regular languages,

regular and context-free grammars

push down automata,

Turing machines

Workload

There will be:

four homework assignments,

four quizzes covering respective homework problems,

practice midterm and midterm,

practice final and final

There will be some **extra credit** problems as a part of quizzes and tests

The **consistency** of your efforts and work is the most important for this course

Grading Components

Homework Problems

There are 4 sets of **homework problems**

Not all of them might be covered

None of Homeworks will be collected or graded

Students will be **tested** on their work on homework assignments by respective **quizzes**

Solutions to almost all homework problems are included in **posted solutions** of past Quizzes and tests

and in the posted **Lectures**

Grading Components

Quizzes - total 100pts

There will **4 quizzes**, 20 -25 minutes each, 25 points each.

Quizzes problems will be taken from, or will be very close to **homework assignments**

Quizzes will also cover some definitions and examples included in **Lectures** and

in posted solutions to previous Quizzes

Posted solutions of previous Quizzes and Tests contain solutions of majority of your Homework problems

Grading Components

All QUIZZESand TESTS are CLOSED NOTES and CLOSED BOOK

A student found using notes in any form (especially electronic) during any **test** will receive **0 pts** **for the test**.

Grading Components

Practice Midterm (10 extra pts) is a TAKE HOME test

It is designed to **help** students to **study** for Midterm test

I will POST the **solutions** on after class I collect your solutions

<div style="text-align: center; color: red;">Grading Components</div>

Midterm (100pts)

Midterm will cover some material needed for Q1, Q2, Hmk 1, 2 (only problems dealing with material actually covered in class), and Practice Midterm

Midterm will be given on in class

Grading Components

Practice Final (10 extra pts)

covers some material needed for Q3, Q4

It is a TAKE HOME test

It will be put on course webpage and collect it in class

Final (100pts)

will cover **some** material from the Q1, Q2,

practice midterm and midterm

It will **mainly (70%)** cover material needed for Q3, Q4, Hmks 3, 4 (only problems dealing with material actually covered in class), and the Practice Final

Final will be given will be given during the FINALS week

FINAL GRADE COMPUTATION

NONE of GRADES will be CURVED

Records of students grades are being kept by the course TA

During the semester you can earn 300pts or more in the case of extra points

The **% grade** will be determine in the following way:

# of earned points divided by 3 = % grade

The % grade is **translated** into a letter grade in a standard way as follows

100 - 90 % is A range

A (100 - 95%),   A- (94- 90%)

89 - 80 % is B range

B- (80 - 82%),   B (83 -84%),   B+ (85 -89%)

79 - 70 % is C range:

C- (70- 72%),   C (73-75%),   C+ (76-79%)

69 - 60 % is D range

F is below 60%

Course Contents and Schedule

The course will **follow** the book **very closely**

In particular we will cover some or all material from the following chapters and subjects

Chapter 1

Sets, Relations, Languages (pp. 1 - 53)

Some of it a review material

You can use any other book for the review

Our book is very condensed

I posted **special Lectures 1, 2**

Course Contents and Schedule

Chapter 2 (Part 1)

Deterministic and Non-Deterministic Finite Automata and their equivalence (pp.55- 75)

Chapter 2 (Part 2)

Finite automata and regular languages (pp 75 - 102)

Chapter 3 (Part 1) Context-free grammars and Pushdown automata (pp. 113 - 140)

Chapter 3 (Part 2)

Languages that are and are not context-free (pp. 141-150)

Course Contents and Schedule

Chapter 4

Turing Machines (pp 179 -194)

Chapters 5, 6

Church- Turing Thesis, Computability

Computational Complexity

General Overview

The **preliminary schedule** is published in Syllabus and on the course webpage

Changes and updates, if any, will be advertised in the NEWS section on the course webpage