CSE547, AMS547   Discrete Mathematics   Spring 2018

Professor Anita Wasilewska

web page: http://www3.cs.stonybrook.edu/∼ cse547/

Meets   Monday, Friday, 1:00 PM - 2:20 PM

Place   JAVITS 101

Professor Anita Wasilewska

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Professor Office Hours   Wednesday 7:00 pm - 8: 00pm, Friday 3:30pm - 4:30pm, and by appointment

TA: tba

e-mail   tba

TA Office Hours   tba

TA Office   tba

Textbook

Concrete Mathematics

A Foundations for Computer Science

R. Graham, D. Knuth, O. Patachnik

Addison-Wesley Publishing Company, Third edition

Course Lecture Notes are in the Course Web Page Downloads

Course Description

Concrete Mathematics is defined in the course text book as "a controlled manipulation of (some) mathematical formulas using a collection of techniques for solving problems".
Original textbook was an extension of "Mathematical Preliminaries" part of Knuth book ART OF COMPUTER PROGRAMMING. Concrete Mathematics is supposed to help reader (and hopefully will) in the art of writing programs, or thinking about them.

We will cover the course textbook closely. We plan to cover all or parts of material from Chapters 1-5. The textbook is supplemented by very detailed Lecture Notes. They often contain some additional material extending very concise book presentations. The course webpage also includes detailed solutions of majority Homework Problems from the chapters we plan to cover. Students need to solve them, compare with presented solutions for the precision and correctness. The precision of their work will be tested on tests.

If time allows we will cover some chosen topics in classical Discrete Mathematics.

I will provide Lecture Notes and sets of Problems and you can use any Discrete Mathematics book as an extra reading

Grading

There will be a **Practice Midterm**, a **Midterm**, **three One Question Quizzes** and a **Final** examination given during the semester.

Homework Problems

There are 6 sets of 6 Homework problems. Not all of them might be **covered. None will be collected or graded.** You will be tested on Homework problems dealing with material covered in class.

Students are responsible for working out and writing **detailed solutions** of problems covered in class and assigned Homework problems explaining all steps and methods used, as it is done in our Lecture Notes and posted Homework solutions. We will cover some of such detailed solutions in class.

The book also contains majority of homework problems solutions but they usually are are not complete.

On **Quizzes** and **Tests** students are expected to write **detailed solutions** explaining all steps and methods used, as it is done in our **Lecture Notes** and in posted **Homeworks Solutions**

We will cover some of such detailed solutions]in class

Grades for Quizzes and Tests will depend on the form, details, and carefulness of your written solutions

During the semester you will have to take the following examinations.

3 Quizzes (25pts each). These are **one question**, 10 -15 minutes Quizzes covering Homework and Lectures problems

Practice Midterm (25pts) - in class test designed as your practice for the Midterm . Onky one problem will be corrected.

Midterm (100pts) - in class regular test.

Both tests cover material from chapters 1, 2 covered in class before the test and corresponding Homework problems solutions examples as posted on the course web page.

Final (100pts) - in class regular test will cover book material covered in class, as reflected in Tests and Quizzes.

All test are CLOSED NOTES and CLOSED BOOK. If a student is found using notes or a book during a test, he/she will receive AUTOMATICALLY **0 pts for a given test**.

Final grade computation

Attention: **NONE of the grades will be curved!**

Records of students grades are being kept by the course TA. Contact the TA for information

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 which is **translated** into letter grade as follows.

100 - 90 % is A range;

A (100-96%) A- (95- 90%),

89 - 80 % is B range:

B- (80 - 82%), B (83 -85%), B+ (86 -89%) , 79 - 70 % is C range: C- (70- 72%), C (73-75%), C+(76-79%), 69 - 60 % is D range and F is below 60%.

Course Contents and Schedule

Concrete Mathematics Book

The course will follow the book very closely and in particular we will cover some , or all of the following chapters and subjects.

Chapter 1 Recurrent Problems

Chapter 2 Sums

Chapter 3 Integer functions

Chapter 4 Number Theory

Chapter 5 Binomial Coefficients pp. 153- 204

Chapter 6 Special numbers pp. 243- 264 (reading)

Discrete Mathematics - if time allows

Some Lecture Notes and Problems (Hmk 6) are posted on the course webpage. We will cover them if time allows.

Homework Assignments

HOMEWORK 1: Chapter 1 Problems on pages 17 -20. Write carefully a detailed solution to problems 2, 6, 7, 8, 9, 11, 12, 14,15, 16, 19, 18, 20.
Write details of pp. 12-13 discussion of cyclic properties of $J(n)$ and the false guess that $J(n) = \frac{n}{2}$, write details of pp 15-16 binary solutions to generalized recurrence.

HOMEWORK 2: Chapter 2 part one Problems on pages 62-63. Write and present a detailed solution to problems 5 ,6, 7, 8, 9, 10, 11, 13, 14, 15.

HOMEWORK 2: Chapter 2 part two Problems on pages 63-66. Write and present a detailed solution to problems 16, 17, 19, 20, 21, 23, 24, 25, 26, 27, 29, 30, 31.

HOMEWORK 3: Chapter 3 Problems on pages 96- 101. Write and present a detailed solution to problems 10, 11, 12, 14, 16, 17, 19, 20, 23, 28, 31, 33, 35, 36.

HOMEWORK 4: Chapter 4 Problems on pages 144 - 149. Write and present a detailed solution to problems 2, 6, 14, 15, 45.

HOMEWORK 5: Chapter 5 Problems on pages 230 - 235. Write and present a detailed solution to problems 2, 4, 6, 7, 8, 15, 16, 17, 18, 35, 43, 45, 74.

HOMEWORK 6 will be posted on the course webpage

Tests and Quizzes Schedule

This is a **preliminary schedule**. Changes and updates, if any, will be advertised in the NEWS section on the course webpage.

Q1 Monday, February 12

Practice Midterm   Monday, March 5, in class.

Use it as your own PRACTICE- write carefully all solutions. Only **one problem will be corrected**.

Spring Break MARCH 12 - 18

MIDTERM   FRIDAY, March 23, in class.
It covers homework problems from chapters 1, 2 (all solutions posted on the course web page), plus problems in the Lecture Notes that were covered in class **before** the Practice Midterm.

Q2 Monday, April 29

Q3 Monday, April 23 .

FINAL Friday, May 4 - in class

Final covers homework problems from all all Quizzes, hmks and Tests

Required Syllabus Statements: The University Senate has authorized that the following required statements appear in all teaching syllabi on the Stony Brook Campus.

Americans with Disabilities Act: If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC(Educational Communications Center) Building, Room 128, (631)632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

Academic Integrity: Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures.