

CSE547 Discrete Mathematics Fall 2023
Professor Anita Wasilewska
Course webpage: <http://www3.cs.stonybrook.edu/~cse547/>

Meets Tuesday, Thursday 2:30 pm - 3:50 pm

Place JAVITS 111

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Office location New Computer Science Department, office 208

Professor Office Hours t.b.a

Teaching Assistants Office Hours are posted and updated on Brightspace

TA Office location: Room 2126 Old CS Building

Textbook Concrete Mathematics

A Foundations for Computer Science
R. Graham, D. Knuth, O. Patashnik
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.

Grading and Course General Information

There will be THREE tests: **Midterm 1**, **Midterm 2**, and a **Final**. All tests are CLOSED NOTES and CLOSED BOOK. If a student is found using notes or a book during a test, he/she will receive AUTOMATICALLY **0pts** for a given test.

There are 6 sets of Homework problems. **None will be collected or graded.** You may be tested only on Homework problems dealing with **material covered in class.** Some solutions (very short) of homework problems are in the text book. Students are responsible for working out and writing detailed solutions explaining all steps and methods used, as it is done in the published **Lecture Notes.** We will cover a lot of such detailed solutions in class. Moreover, all of the Homeworks SOLUTIONS you may need to know for tests are POSTED on the course web page. You have to study them and to learn how to write proper, detailed solution to problems on your tests.

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

TESTS Grades will depend on the form, **attention to details**, and carefulness and style of your **solutions writing.**

GRADING COMPONENTS

Midterm 1 - 60pts

Midterm 2 - 60pts

Final - 80pts

Final Grade Computation

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

You can earn up to **200** points during the semester.

The % grade will be determined in the following way: # of earned points divided by 2 = % grade.

The % grade is **translated** into a **letter grade** in a standard way i.e.

100 – 95 % is A, 94 – 90 is A–,

89 – 86 % is B+, 85 – 83 % is B, 82 – 80 % is B–,

79 – 76 % is C+, 75 – 73 % is C, 72 – 70 % is C–,

69 – 60 % is D range and F is below 60%

None of the grades will be curved.

Records of students points are kept on the Brightspace

You have to contact TAs when you have questions about grading and your grade

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 we will cover some chosen classical topics in Discrete Mathematics - to be advertised

Homework PROBLEMS

None of the Homeworks will be collected.

ALL of the Homeworks SOLUTIONS you need to know are POSTED on the web page for you to study and learn how to write proper, detailed solutions on your tests.

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.

Make-up Exams

Make-up exams will be given only in extenuating circumstances (e.g., doctor's note stating that you were ill and unfit to take the exam). Students who miss an exam for a valid reason must contact the instructor immediately to take a make-up exam at the earliest possible time; specific arrangements will be made on a case-by-case basis.

PRELIMINARY TESTS SCHEDULE

This is a preliminary schedule. The changes and updates, if any, will be advertised in the GENERAL NEWS section the course webpage

MIDTERM 1 Tuesday, **October 3**

Fall Break October 9 - October 10

MIDTERM 2 Tuesday, **November 14**

Thanksgiving Break November 22 - November 26

Last Day of classes December 11

FINAL during Final Period - December 12 -21

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.

Student Accessibility Support Center Statement

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, 128 ECC Building, (631) 632-6748, or via e-mail at: sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Academic Integrity Statement 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. Any suspected instance of academic dishonesty will be reported to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at <http://www.stonybrook.edu/uaa/academicjudiciary/>

Stony Brook University Syllabus Statement If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact Disability Support Services at (631) 632-6748 or <http://studentaffairs.stonybrook.edu/dss> They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following website: <http://www.sunysb.edu/ehs/fire/disabilities.shtml>

SASC Student Accessibility Support Center

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu

Critical Incident Management

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook