Discrete Mathematics II - CSI 35, Sec. D02

Professor: Dr. Luis Fernández
Class times and room: Mo, We, 12:00 to 13:50 at CP 305.
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Overview of the course.

The main objectives are:

- Classify basic discrete structures,
- Use graphs and trees as models and tools for studying computational complexity,
- Analyze finite and infinite structures using mathematical reasoning and tools of first order logic,
- Design and analyze algorithms, in particular those based on recursion and iteration,
- Prove formal statements using mathematical induction,
- Use mathematical induction in verification of program correctness.

Some resources:

- **Classes:** Attendance is essential to succeed in the class. In class you will have time to learn new material, practice, and ask questions.
- **Math Tutorial Lab:** In the Math Tutorial Lab you will find permanent tutors for all math courses. It is located at CP 305 and opens 10–17 Monday to Thursday, 10–20 Friday, and 10–15 Saturday and Sunday.
- **Meetings with the instructor:** If you need help, or for any other matters concerning the course, you can talk to me during office hours or at other time we arrange.
- **Email:** If you have questions while doing homework and need help quickly, please email me anytime (address above).

Textbook:

- *Discrete Mathematics and its Applications, 8th Ed.*, by Kenneth H. Rosen. You need to have to book. You can find it online new or used at a good price.

Student's responsibilities

- To use the **resources** available (some are above) to attain the main goal: to learn.
- To **prepare** each class by studying the material in the previous class, solving the recommended exercises and reading ahead in the text.
- To work on many **exercises**, as it is impossible to learn mathematics without doing so. The main purpose of the exercises is not quite to find the answer, but to learn from them. Therefore, if you work in an exercise for a long time without finding a correct answer, do not feel frustrated, instead consider how much you have learned in the process.
- To **ask** questions during classs or tutorials about anything that has not been understood. EVEN IF YOU THINK THAT YOUR QUESTION IS TOO TRIVIAL, I GUARANTEE THAT MANY OTHER STUDENTS WILL BENEFIT FROM THE ANSWER. So when in doubt do your classmates a favor and ASK!

Instructor's responsibilities

- To act as *facilitator* of the learning process of the students, and to assist with any question that students may have about the material.
- To give tests and exams of appropriate difficulty. To grade tests and exams promptly and explain the students the meaning of their grades.

Some Rules

- Cell phones, music devices and laptops are not allowed during class time.
- Tests will not be repeated. The only exception, in some situations, is if the instructor receives notice of the absence (via e-mail or telephone) **on or before the day of the test or quiz**.

Exams and homeworks:

- Four **midterm exams**, each worth **15%** of the final grade, lowest one dropped, totaling **45%**.
- **Weekly homework:** Each week I will collect 5 of the exercises listed below for each of the days of the previous week. Some weeks I may assign homework using WeBWoRK. It counts **20%**.
- The **final exam** will count **35%** of the final grade.

Class plan and assigned exercises. CSI 35. Professor Luis Fernández

Use this to prepare each class in advance. Note that dates may change depending on how fast we advance.

Date	Section	Examples in text	Exercises
	Chapter 5: Induction and Recursion		
We 8/27	1.7 Introduction to proofs	1, 2, 3	**p. 95:** 1, 3, 4, 5, 7
Mo 9/1	NO CLASS - LABOR DAY		
We 9/3	5.1 Mathematical Induction	1-6, 8, 10, 13-15	**p. 350:** 1, 3, 4, 5, 7, 8, 9, 10.
Mo 9/8	5.2 Strong Induction and Well- Ordering	1-4	**p. 362:** 1, 3, 4, 12.
We 9/10	5.3 Recursive definitions, structural induction	1-10, 12	**p. 378:** 1-9 odd, 18, 23, 25, 36-38.
Mo 9/15	5.4 Recursive Algorithms	1, 2, 3, 5-10	**p. 391:** 1, 2, 3, 7, 21, 44.
We 9/17	**Midterm 1**. Chapter 5.		
Mo 9/22	NO CLASS		
We 9/24	NO CLASS		
	Chapter 9 Relations		
Mo 9/29	9.1 Relations and their properties	1-22	**p. 608:** 1, 3, 5, 10, 27, 33, 35, 44, 45.
We 10/1	NO CLASS		
Mo 10/6	9.2 n-ary relations and their applications	1-11	**p. 619:** 1-9 odd, 19.
We 10/8	9.5 Equivalence relations	All	**p. 646:** 1, 3, 9, 11-16 odd, 21, 23, 43.
Mo 10/13	NO CLASS - COLUMBUS DAY		
Tu 10/14	9.6 Partial orderings	1-20	**p. 662:** 1, 3, 4, 5, 9, 11, 13, 15.
We 10/15	**Midterm 2**. Chapter 9.		
Mo 10/20	NO CLASS		
	Chapter 10 Graphs		
We 10/22	10.1 Graphs and graph models	All	**p. 682:** 1, 3-12 all.
Mo 10/27	10.2 Graph terminology	1-13	**p. 669:** 1, 2, 3, 5, 7, 8, 9, 18-26 odd.
We 10/29	10.3 Representing Graphs & Isomorphisms	1-11	**p. 710:** 1-15 odd, 39-47 odd.
Mo 11/3	10.4 Connectivity	1, 2, 3, 5, 6,7, 13,14	**p. 724:** 1-6, 20, 21.
We 11/5	10.5 Euler and Hamilton paths	All	**p. 739:** 1-15 odd, 19-23 odd, 31, 33, 35.
Mo 11/10	10.6 Shortest path problems	All	**p. 751:** 1-13 all.
We 11/12	10.8 Graph Coloring	All	**p. 768:** 1-11 all, 13, 15..
Mo 11/17	**Midterm 3**. Chapter 10.		
	Chapter 11 Trees		
We 11/19	11.1 Introduction to Trees	All	**p. 791:** 1-11 odd, 21, 23.
Mo 11/24	11.2 Applications of Trees	All	**p. 805:** 1, 3, 5, 19, 21, 23, 25, 37, 40.
We 11/26	11.3 Tree Traversal	All	**p. 819:** 1-5, 7-15 all.
Mo 12/1	11.4 Spanning Trees	All	**p. 832:** 1-9 all, 13, 15, 23.
We 12/3	11.5 Minimum spanning Trees	All	**p. 839:** 1-9 all.
Mo 12/8	**Midterm 4**. Chapter 11.		
We 12/10	REVIEW FOR THE FINAL		
Mo 12/15	REVIEW FOR THE FINAL		

REMEMBER: The exercises listed correspond to the material that will be covered on the date they are listed.

Academic Integrity:

Academic dishonesty (such as plagiarism and cheating) is prohibited at Bronx Community College and is punishable by penalties, including failing grades, dismissal and expulsion. For additional information and the full policy on Academic Integrity, please consult the BCC College Catalog.

Accommodations/Disabilities:

Bronx Community College respects and welcomes students of all backgrounds and abilities. In the event you encounter any barrier(s) to full participation in this course due to the impact of a disability, please contact the disAbility Services Office as soon as possible this semester. The disAbility Services specialists will meet with you to discuss the barriers you are experiencing and explain the eligibility process for establishing academic accommodations for this course. You can reach the disAbility Services Office at: disability.services@bcc.cuny.edu, Loew Hall, Room 211, (718) 289-5874.