BRONX COMMUNITY COLLEGE
Of the City University of New York
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

SYLLABUS: CSI 35 DISCRETE MATHEMATICS II 3 credits 4 hours

SYLLABUS: CSI 35 Discrete Mathematics II
PREREQUISITE: CSI 30 and MTH 31; and CUNY English Proficiency, or ENG 100 or 110, if required
TEXT: *Discrete Mathematics and its Applications* Seventh Edition, by Kenneth H. Rosen, McGraw Hill, 2012

Objectives: A successful student in this course will learn to

1. classify basic discrete structures,
2. use graphs and trees as models and tools for studying computational complexity,
3. analyze finite and infinite structures using mathematical reasoning and tools of first order logic,
4. design and analyze algorithms, in particular those based on recursion and iteration,
5. prove formal statements using mathematical induction,
6. use mathematical induction in verification of program correctness.

		Suggested in-class examples		**Suggested Homework**
Chapter 5: Induction and Recursion (4 weeks)				
5.1	Mathematical Induction	Examples 1-6, 8, 10, 13-15	p. 329	1, 3, 4, 5, 7, 8, 9, 10, 18, 49, 56
5.2	Strong Induction and Well-Ordering	Examples 1-4	p. 341	1, 3, 4, 12,
5.3	Recursive definitions and structural induction	Examples 1-10, 12	p. 308	1-9 odd, 18, 23, 25, 34-36, 44, 47, 48
5.4	Recursive Algorithms	Examples 1, 2, 3, 5-10	p. 370	1, 2, 3, 7, 21, 44, 45
Computer projects			p. 382	1, 4, 5, 8, 9, 11, 12, 13, 15
Computations and explorations			p. 383	1, 2, 3, 4, 7
Chapter 9 Relations (3 weeks)				
9.1	Relations and their properties	Examples 1-22	p. 581	1, 3, 5, 10, 27, 33, 35, 42, 43, 44
9.2	n-ary relations and their applications	Examples 1-11	p. 589	1-9 odd, 19
9.3	Representing relations	All	p. 596	1, 3, 13, 18, 20, 31, 32
9.5	Equivalence relations	All	p. 615	1, 3, 9, 11-16, 21-24, 43, 46, 47
9.6	Partial orderings	Examples 1-20	p. 630	1, 3, 4, 5, 9, 11, 13, 15, 19-21, 32, 36
Computer projects			p. 638	1, 2, 3, 4
Computations and explorations			p. 638	1, 2, 3, 6, 7

Chapter 10 Graphs (3 weeks)

10.1	Graphs and graph models	All	p. 649	1, 3-12 all
10.2	Graph terminology	Examples 1-13	p. 665	1, 2, 3, 5, 7, 8, 9, 18-26 all
10.3	Representing Graphs and Graph Isomorphism	Examples 1-11	p. 675	1-15 odd, 35-43 , odd, 57
10.4	Connectivity	Examples 1, 2, 3, 5, 6,7, 13,14	p. 689	1-6, 20, 21
10.5	Euler and Hamilton paths	All	p. 703	1-15 odd, 19-23 odd, 31, 33, 35
10.6	Shortest path problems	All	p. 707	1-13 all
10.8	Graph Coloring	All	p. 732	1-11 all, 13, 15
Computer projects			p. 742	1, 2, 3, 4, 5, 17
Computations and explorations			p. 743	1, 2, 3, 4, 8, 9, 10, 11

Chapter 11 Trees (4 weeks)

11.1	Introduction to Trees	All	p. 755	1-11 odd, 21, 23
11.2	Applications of Trees	All	p. 769	1, 3, 5, 19, 21, 23, 25, 37, 40, 42
11.3	Tree Traversal	All	p. 783	1-5, 7-15 all
11.4	Spanning Trees	All	p. 795	1-9 all, 13, 15, 23
11.5	Minimum spanning Trees	All	p. 802	1-9 all

Computer projects, computations and explorations for chapter 11: there are many relevant projects listed on page 808; choose those that correspond to the material covered and emphasized in class.

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.

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Last updated 01/14/2019, EA 8/22 for prereq