

**BOROUGH OF MANHATTAN COMMUNITY COLLEGE**

City University of New York

**Department of Mathematics**

**Introduction to Discrete Mathematics**

**MAT 200**

**Semester:**

**Credits: 4**

**Class hours: 4**

**Instructor Information:**

**Name:**

**Email:**

**Phone:**

**Office:**

**Course Description**

This course is designed to equip students with mathematical support for the study of a course in Discrete Structures. This course covers fundamental mathematical topics associated with computer information systems, including: numeration systems, sets and logic, Boolean algebra, functions, and elementary switching theory, combinatorics, mathematical induction, permutations, combinations, binomial coefficients, and probability distributions.

**Prerequisites/Co-requisites**

The student must have passed or been exempt from MAT 056 (Intermediate Algebra and Trigonometry).

Note: MAT 206 (Precalculus) is not a prerequisite but is strongly recommended as additional preparation.

**Student Learning Outcomes**

Upon successful completion of this course, students will be able to:

- analyze and formalize logical arguments;
- apply Boolean Algebra to digital logic circuits;
- apply various techniques of proof to number theory;
- perform operations on sets and identify order and equivalence relations on sets;
- identify various types of sequences, find the sum and general form, and verify these results using proof by induction.;
- solve problems using methods of counting, basic principles of combinatorics and discrete probability theory;
- identify walks, paths, circuits, and trees and use graph theory to solve real-life problems.

**Required Text & Readings**

*Discrete Mathematics with Applications*; 3rd Edition; Susanna S. Epps; Brooks/Cole Publishing Co. 2004.

**Evaluation & Requirements of Students**

The instructor will advise the student of the determination of the final grade. Students are required to attend all scheduled classes.

**Outline of Topics**

**Text Pages**

Chapter 1 – THE LOGIC OF COMPOUND STATEMENTS

1.1	1-17
1.2	17-29
1.3	29-43
1.4	43-57
1.5	57-74

Chapter 2 – THE LOGIC OF QUANTIFIED STATEMENTS

2.1	75-88
2.2	88-97

<b>Chapter 3 – ELEMENTARY NUMBER THEORY AND METHODS OF PROOF</b>	
3.1	126-141
3.2	141-147
3.3	148-156
3.4	156-164
3.5	164-171
3.6	171-179
3.7	179-185
<b>Chapter 4 – SEQUENCES AND MATHEMATICAL INDUCTION</b>	
4.1	199-215
4.2	215-227
4.3	227-235
<b>Chapter 5 – SET THEORY</b>	
5.1	255-269
5.2	269-282
5.3	282-293
5.4	293-296
<b>Chapter 6 – COUNTING AND PROBABILITY</b>	
6.1	298-306
6.2	306-320
6.3	321-333
6.4	334-349
<b>Chapter 10 – RELATIONS</b>	
10.1	571-583
10.2	584-594
10.3	594-610
<b>Chapter 11 – GRAPHS AND TREES*</b>	
11.1	649-665
11.2	665-683
11.3	697-704
11.4	705-722

\*Denotes Optional Topics

### **College Attendance Policy**

At BMCC, the maximum number of absences is limited to one more hour than the number of hours a class meets in one week. For example, you may be enrolled in a three-hour class. In that class, you would be allowed 4 hours of absence (not 4 days). In the case of excessive absences, the instructor has the option to lower the grade or assign an F or WU grade.

### **Academic Adjustments for Students with Disabilities**

Students with disabilities who require reasonable accommodations or academic adjustments for this course must contact the Office of Services for Students with Disabilities. BMCC is committed to providing equal access to all programs and curricula to all students.

### **BMCC Policy on Plagiarism and Academic Integrity Statement**

Plagiarism is the presentation of someone else's ideas, words or artistic, scientific, or technical work as one's own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations, require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism.

Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC's web side, [www.bmcc.cuny.edu](http://www.bmcc.cuny.edu). For further information on integrity and behavior, please consult the college bulletin (also available online).