MATH UA 120(1): DISCRETE MATHEMATICS
SYLLABUS, SPRING 2017

Class Time: Section 001 - 194 Mercer St., Room 307 - MW 8:55am-10:45am

Instructor: Dr. Enkeleida Lushi
E-mail: el962 [at] nyu.edu
Office: Courant Institute (Warren Weaver Hall) Rm. 1108
Office Hours: Mondays 1:00pm-3:00pm

Course description: This course is a one-semester introduction to discrete mathematics with an emphasis on the understanding, composition and critiquing of mathematical proofs. At the semester's conclusion, the successful student will be able to:

- write clear mathematical statements using standard notation and terminology.
- understand and execute a variety of proof techniques, e.g. contradiction, induction.
- show fluency in the language of basic set theory and Boolean logic.
- understand the basic theorems and their implications in a variety of fields including function theory, group theory, number theory and graph theory.

Textbook: Scheinerman, E. Mathematics: A Discrete Introduction. 3rd Edition.

Grading: The final grade will be computed with the following weights:
Homework 20%, Quizzes 10%, Two Midterm Exams 40%, Final Exam 30%.

NYU Classes: The chief means of communication for this course will be the course Classes site, accessed through *home.nyu.edu*. Students are expected to check this for up-to-date assignments – including any material separate from the text – and announcements.

Homework: 11 written assignments will be given. They will be due on Wednesdays before the start of class. Due to fairness to all the students, no late assignments will be accepted. The lowest score out of 11 will be dropped.

Quizzes: Short 10 minute quizzes will be given at the start of the class on some Wednesdays. See schedule for the dates. Notice that there is a bonus quiz in the last class.

Midterm: Two midterms will be given, see the schedule for the dates.

Final Exam: One the date scheduled by NYU, 05/10/2017. Time 8:00AM-9:50AM in 194M 307.

A note on grades of W and I: You may drop the course in the first three weeks without it appearing on your transcript. After that, and through the ninth week, you may withdraw and receive a grade of 'W' on your transcript. No withdrawals are granted after the ninth week. A grade of 'Incomplete' (I) is granted only in the rare circumstances that an emergency prevents a student in good standing from finishing the course in its last few weeks. As per the CAS Bulletin: Students who are ill or have a serious personal problem should see, call, or write to an adviser in the College Advising Center, College of Arts and Science, New York University, Silver Center, 100 Washington Square East, Room 905, New York, NY 10003-6688; 212- 998-8130.

Make up Exams: We can only accommodate a limited number of out-of-sequence exams in the following cases:
(1) A documented medical excuse.
(2) A University sponsored event such as an athletic tournament, a play, or a musical performance. Athletic practices and rehearsals do not fall into this category. Please have your coach, conductor, or other faculty advisor contact your instructor.
(3) A major religious holiday.
(4) Extreme hardship such as a family emergency.
We will not be able to accommodate out-of-sequence exams, quizzes, and finals for purposes of more convenient travel, including already purchased tickets. Scheduled out-of-sequence exams and quizzes (those not arising from emergencies) must be taken before the actual exam. Makeups must occur within one week of the regularly scheduled exam or quiz, otherwise a zero score will be given.

If you require additional accommodations as determined by the Center for Student Disabilities, please let your instructor know as soon as possible.

Technology: Technology can play an important role in the learning of mathematics, and as such, calculators can be used for class and homework, though they will not be needed or required. Calculators will not be permitted on tests and quizzes, and thus it is emphasized that students learn not to rely on them.

Academic Honesty: Guidelines regarding cheating and plagiarism are laid out in the College of Arts and Sciences guidelines and will be adhered to strictly. Collaboration is permitted, in fact encouraged, for home and class assignments; however, all submitted assignments must be written up independently and represent the student's own work and understanding.

Below is a proposed schedule for covering topics and assignments during the semester. All are subject to change as the semester progresses.

Week	Date	Sections	Topic	Due	Quiz
1	01/23	§1-4	Introduction; Definitions & Theorems		
1	01/23	§5-7	Proofs,Counterexamples, Boolean Algebra		
2	01/30	§8-9	Lists, Factorials		
2	02/01	§10-11	Sets, Quantifiers	HW1	Q1
3	02/06	§11-12	More Sets		
3	02/08	§13	Combinatorial Proofs	HW2	
4	02/13	§14-15	Relations, Equivalence Relations		
4	02/15	§16-17	Partitions, Binomial Coefficients	HW3	Q2
5	02/20		*Presidents' Day (No Classes)*		
5	02/22	§18	Multisets; Review	HW4	
6	02/27		**Midterm Exam One (§1-15)**		
6	03/01	§20	Contradiction		
7	03/06	§21	Well-Ordering Principle, Smallest Counterexample		
7	03/08	§22	Induction	HW5	Q3
8	03/13		*Spring Break (no classes)*		
8	03/15		*Spring Break (no classes)*		
9	03/20	§23	Polynomial Sequences		
9	03/22	§23	Recurrence Relations	HW6	
10	03/27	§24-25	Functions; Pigeonhole Principle		
10	03/29	§26	Composition	HW7	Q4
11	04/03	§27	Permutations; Review		
11	04/05		**Midterm Exam Two (§16-26)**	HW8	
12	04/10	§28	Symmetry		
12	04/12		*no class, no assignment due*		
13	04/17	§47	Graphs		
13	04/19	§48	Subgraphs	HW9	
14	04/24	§48-49	Connection		
14	04/26	§50	Trees	HW10	Q5
15	05/01	§51	Eulerian Graphs		
15	05/03	§52-53	Planar Graphs and Coloring	HW11	QB (opt)
16	05/08	§1-53	Catch-up and Review		
16	05/10		**Final Exam (all §)**		