MATH-UA.120.001: Discrete Math, Fall 2016
Syllabus

Instructor	Zsolt Pajor-Gyulai	**Lecture**	MW 8:55pm-10:45pm
Email	zsolt@cims.nyu.edu	**Classroom**	Silv 410
Office	WWH 1105A	**Course Page**	via NYU Classess
Office hours	Mon 7:50-8:50am, 4:00-5:00pm.		

Welcome to Discrete Mathematics!

This course is a one-semester introduction to discrete mathematics with an emphasis on the understanding, composition and critiquing of mathematical proofs.

Goals of the course

By the end of the course, students will be able to:

- Write clear mathematical statements using standard notation and terminology.
- Understand and execute a variety of proof techniques (contradiction, induction, etc.).
- Show fluency in the language of basic set theory and Boolean logic.
- Understand the basic theorems and their implications in a variety of (discrete) fields including:
  - Function theory
  - Number theory
  - Graph theory

Textbook

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

Additional literature

Rosen, K. H., *Discrete Mathematics and Its Applications. 7th Edition.*

Epp, S.S., *Discrete Mathematics with Applications. 4th Edition.*

Assessments

Written Homework (25%)

Written homework assignments will be due most weeks. These are distributed via the Classes site and collected in class or in case the homework is typeset, it may be uploaded to NYU classes. That means you must produce an electronic copy, in PDF format. You may compose your assignment using a mathematics typesetting language like LaTeX, mathematical software like Mathematica, or a standard word processor like Word with an equation editor.

Further things to note:

- Homeworks are **due at the beginning of the lecture at the due date**.

- The lowest two homework score will be dropped. N.B. It is advised that students reserve this 'pass' for unexpected absences.
- In fairness to all students and graders, **no late homework** will be accepted. **No emailed homework** will be accepted.
- Rough grading rubriks for proof based problems:
  4 - Fully correct and supported (allowing for small typographical and, perhaps, arithmetical errors).

  3 - Mostly correct, but one missed connection or misconception.

  2 - Relevant work, perhaps correct setup and looking for the right type of solution, but not able to execute the core idea of the problem.

  1 - For extremely unnecessarily long solutions containing good elements. (Like 2 pages instead of 2 lines.)

  0 - Missing or irrelevant work.
- On top of this, there will be a progressively growing penalty (from simple warning to -1 point) for not giving your proofs in full English sentences.
- As a courtesy to the grader, he/she is allowed to send back homeworks for rewriting because of awful handwriting. You are not allowed to put any extra work on it just rewrite it legible.

Quizzes (10%)

- Quizzes will take place in class.
- The lowest three of these will be dropped.
- No make ups for any other reason than the ones detailed under **Course Policies below.**

Midterm Exams

Location: In class.

- Midterm 1 (20%) : October 12
- Midterm 2 (20%) : November 14

Final Exam (35%)

Date: December 19 & Location: TBA

Summary

The final score will be calculated according to the formula:

$$FS = 0.25 \cdot HW\% + 0.1 \cdot Q\% + 0.2 \cdot M1\% + 0.2 \cdot M2\% + 0.25 \cdot F\%$$

where, for example, HW% is the percentage of the sum of the homework scores out of the maximum possible.

Grades

Based on this final score, the following grade will be assigned:

Cutoff	Letter Grade
93	A
90	A-
87	B+
83	B
80	B-
77	C+
70	C
65	D

Curving at the end of the semester is possible, but only downwards (i.e., towards better grades). However, no information about curving will be given out before the end of the semester (and therefore there is no point about asking the instructor about it). In the same vein, no letter grades are assigned to any individual midterms.

How to succeed in this course!

- **Get your hands dirty in class!** Participate when we solve problems in class.
- **Spend time** on written assignments. Expect each written assignment to take 4-8 hours. This is your opportunity to wrestle with and to internalize new ideas introduced in class.
- **Prepare for quizzes**, for example, by practicing on textbook problems at the end of the section.
- **Get help** early:
  - **Form study groups.** Collaboration is encouraged, but make sure that you write up your own homework. In other words, you can work out the ideas and get the answers together but then your homework should demonstrate your own individual understanding. In further other words, do not blindly copy, it is very easy to spot.
  - **Attend instructor and TAs' office hours**. Office hours schedule, course information, homework assignments, and grades will be posted in **NYU Classes**.
  - **Use the internet, but cautiously.** There is a plethora of information related on the course material. However, not all of them are 100 percent correct and you should be able to verify their validity. Think critically!

Course policies

There will be no accomodation for missed homework other then dropping the lowest Homework score in the end. There will be no make ups for quizzes or exams, except in the cases of illness, observance of religious holidays, and university sponsored events. In the case of observance of religious holidays, you must make arrangements to make up missed work **at least one week in advance**. In the case of illness, you must present a detailed letter from a physician/health care provider. A University sponsored event is for example and 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 adviser contact your instructor. In the case of extreme hardship other than medical, such as a family emergency, please contact the instructor to work out arrangement, appropriate documentation will be needed.

We will not be able to make accommodation for purposes of more convenient travel, including already purchased tickets. Please note again the date of the final and plan your winter break travel accordingly.

Technology and Calculators

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

Students who need special accommodation

Students who are in need of special arrangements must present a letter from the Moses Center(or arrange a letter to be sent) at the start of the course. Students who take their exam at Moses Center, needs to schedule this approximately one week before the exam takes place. Students will be given due warning a week ahead, but ultimately it is their responsibility to make the arrangement.

Note on the grades 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, 1 Silver Center, 100 Washington Square East, Room 905, New York, NY 10003-6688; 212- 998-8130.

Honor Code

We do not tolerate academic dishonesty. You are expected to uphold academic integrity as specified by the university and the College of Arts and Sciences. See `http://cas.nyu.edu/page/academicintegrity`. 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 students own work and understanding.