NYU TANDON SCHOOL OF ENGINEERING

Course Syllabus

Computer Science and Engineering

CS-GY6003-Foundations of Computer Science

Course Information

Instructor

Students can contact the instructor anytime by email or directly through NYU classes, or by making an appointment during the online "office hours". Reaching out for help or questions on any of the practice material is strongly encouraged since this is an online course.

General Information

This course is offered *online*, through NYU classes. All course material, lecture notes, video content, practice problems as well as the class forum can be found there.

Course Structure

Grading Breakdown

- 20% Homework Assignments
- 5% Practice Problem Participation
- 35% Midterm
- 40% Final

Topics

- Mathematical foundations of logic and reasoning
- Review of functions
- Summations
- Sequences
- Inequalities

- Growth of functions
- Proof techniques
- Recurrence relations
- Counting techniques
- Elementary number theory
- Introduction to Graph Theory
- Probability

Course Reading Materials

The material for the course will be provided on NYU classes and will include lecture notes and videos. The textbooks below are excellent references, and most of the material can be found in these books and they have many practice problems. They are **not required** for the homework, since I will not refer to specific page numbers or questions or sections directly.

Discrete Mathematics and its Applications, by Rosen. (6,7, or 8th edition).
Discrete Mathematics, Elementary and Beyond by Lovasz, Pelikan, Vesztergombi

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Course Communication

Office Hours

Office hours are held online with Zoom. If you are not available during the scheduled time, please feel free to ask to schedule on another day. Before the midterm and exam, additional office hours will be organized.

Live Practice Sessions

There are weekly live sessions organized on Zoom used to solve the practice problems as a group. This time is used to go over the details from the course material and see how they are applied to practice problems. Students are strongly encouraged to attend live and use the time to interact directly with others and discuss solutions. Each student is required to present two solutions during the course. This can be done either live or via a recording.

Assignments and Exams

Homework

There will be 4 homework assignments in this class. The homework is to be handed in online through NYU classes. The homework is twofold. The written part (which is handed in), and one live online question which is conducted by the instructor and with the student. The live online question will focus on one randomly selected part of the homework, and will be carried out after the written part is submitted. In order to get credit for the homework, the student is required to complete the online live portion. The time slots for booking the online part of the homework will be posted at least 7 days in advance.

Exams

There will be one midterm and one final in this class. Both exams will be take-home this term.

University Policies

Academic Integrity Policy (Does not supercede University Policy)

Students must behave ethically at all times. All work should represent the students' original ideas and thoughts. When doing the assignment you may consult any relevant source or person, but if you take information in a substantial way from someone or somewhere, you should reference it. You are NOT allowed to copy code/content in ANY FORM from any source. All tests will be individual and open book, but timed, and you may not consult anyone during the test. Any violation of the academic integrity policy will be awarded ZERO points.

Moses Center Statement of Disability

Academic accommodations are available for students with disabilities. Please contact the Moses Center for Students with Disabilities (212-998-4980 or mosescsd@nyu.edu) for further information. Students who are requesting academic accommodations are advised to reach out to the Moses Center as early as possible in the semester for assistance.

NYU Tandon School of Engineering Policies and Procedures on Academic Misconduct[1]

A. Introduction: The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who breach the School's rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the School's Policy on Academic Misconduct.
B. Definition: Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to influence a grade or other academic evaluation. Academic dishonesty also includes intentionally damaging the academic work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:
    a. Cheating: intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another person's work during an exam; submitting work prepared in advance for an in-class examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.
    b. Fabrication: including but not limited to, falsifying experimental data and/or citations.

[1] Excerpted from the Tandon School of Engineering Student Code of Conduct

c. Plagiarism: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise; failure to attribute direct quotations, paraphrases, or borrowed facts or information.
d. Unauthorized collaboration: working together on work that was meant to be done individually.
e. Duplicating work: presenting for grading the same work for more than one project or in more than one class, unless express and prior permission has been received from the course instructor(s) or research adviser involved.
f. Forgery: altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.

NYU School of Engineering Policies and Procedures on Excused Absences

A. Introduction: An absence can be excused if you have missed no more than 10 days of school. If an illness or special circumstance has caused you to miss more than two weeks of school, please refer to the section labeled Medical Leave of Absence
B. Students may request special accommodations for an absence to be excused in the following cases:
    a. Medical reasons
    b. Death in immediate family
    c. Personal qualified emergencies (documentation must be provided)
    d. Religious Expression or Practice