4190.101 Discrete Mathematics (2018 Spring)

Time: Monday/Wednesday 9:30∼10:45 AM
Location: Building 302 Room 208
Lecturer: Gunhee Kim (gunhee@snu.ac.kr)
Office Hour: Monday/Wednesday 10:45∼11:15 AM (only by appointment)
TA: Minjung Kim, Taeyoung Hahn, Amelie Schmidt-Colberg (ta.dm@vision.snu.ac.k

Grade

1. 5 homework assignments (20%).
2. 3 Exams: Midterm I (25%), Midterm II (25%), Final (30%).
3. Attendance: -0.5 (or -1) per absence (out of 100) randomly at the beginning of class. (Being late twice is counted as absence).
4. Cheating includes (i) copying other students' solutions, (ii) googling for solutions, and (iii) omitting key citations of references. Anyone who cheats on any assignment or exam will receive a score of zero.
5. Final grads will be assigned based on the earned scores. A: 30%, B: 40%, C or below: 30%. (subject to change according to the University's rule).
6. Any appeals or complaints about homework, exams, or grade should be submitted in a written form (including email). If TAs turn down your appeal, there will be no second consideration on the same issue.

Course description

In this course, we learn the mathematical fundamentals for computer science. More specifically, we study basic concepts of logics, sets, algorithms, probability, functions, graphs, and algebra.

The goal of the course is to introduce concepts and techniques from discrete mathematics that are widely used in computer science.

Policy

1. Class notes and assignments will be posted via ETL.
2. If you have any homework questions, please ask TAs or use the board of ETL.
3. Students are allowed to discuss with others about the problems, but must hand in their own answers.
4. Homework should be submitted at the beginning of class on due date.
5. Within 24 hours after the deadline, you can still submit the homework directly to TAs, but your credits will be half.

Textbooks

1. Discrete Mathematics and its Applications (7th Edition). Kenneth H. Rosen. McGraw Hill 2012.

Course Outline

The weekly coverage may change as it depends on the progress of the class.

Date	Lecture	Homework
3/5	Course Introduction Propositional logic (sec 1.1)	
3/7	Propositional equivalence (sec 1.2, 1.3)	
3/12	Predicate logic and nested quantifiers (sec 1.4 and 1.5)	
3/14	Rules of inference (sec 1.6)	HW1 Out
3/19	Mathematical proofs and proof strategies (sec 1.7 and 1.8)	
3/21	Sets (sec 2.1 and 2.2)	HW1 Due HW2 Out
3/26	Functions and sequences (sec 2.3 and 2.4)	
3/28	Cardinality and matrices (sec 2.5 and 2.6)	HW2 Due
4/2	**Midterm I**	
4/4	Algorithms (sec 3.1)	
4/9	The growth of functions (sec 3.2)	
4/11	Midterm I solution	
4/16	Complexity of algorithms (sec 3.3)	HW3 Out
4/18	Mathematical induction and strong induction (sec 5.1 and 5.2)	
4/23	Recursive definitions (sec 5.3)	HW3 Due
4/25	Recursive algorithms (sec 5.4)	HW4 Out
4/30	Counting: basic counting rules (sec 6.1 and 6.2)	
5/2	**Midterm II**	
5/7	Children's day (**No class**)	HW4 Due
5/9	Counting: permutations and combinations (sec 6.3, 6.4, and 6.5)	
5/14	Discrete probability (sec 7.1 and 7.2)	
5/16	Bayes' theorem (sec 7.3 and 7.4)	
5/21	Midterm II solution	HW5 Out
5/23	Advanced counting I (sec 8.1 and 8.2)	
5/28	Advanced counting II (sec 8.3, 8.5, and 8.6)	HW5 Due
5/30	Relations I (sec 9.1 and 9.3)	
6/4	Relations II (sec 9.5 and 9.6)	
6/6	Memorial day (**No class**)	
6/11	**Final Exam**	