Discrete Mathematics / 이산수학

This course will cover elementary techniques useful for discrete problem solving. These will include mathematical induction, combinatorial counting and elementary graph theory.

Lecture	MWF 9AM-9:50AM	Classroom: E4 (Creative Learning Bldg. 창의학습관), Room 301
Instructor	Sang-il Oum (엄상일)	`http://mathsci.kaist.ac.kr/~sangil/`
	Email: sangil@kaist.edu	Office: E6-1 Room 3403.
Office Hours	T.B.A.	
Course website	`http://moodle.kaist.ac.kr/`.	
Textbook	J. Matousek, J. Nesetril, *Invitation to Discrete Mathematics*, 2nd edition, Oxford Univ. Press, 2008.	
Grading	Students with at least 90% mark are guaranteed to get A. Students with at least 80% mark are guaranteed to get B. Students with at least 70% mark are guaranteed to get C.	

Team Homework (25%) Students work on homework in groups of four students each.

There will be homework assignments given every week on Wednesday in class. The assignment is due at 10PM of the following Tuesday.

Guideline: Each team meets at least twice during the week to discuss homework; each student must try to solve homework problems before the first meeting. In the first meeting, the most work for solving the homework problems should be finished and decides the writer for that particular homework.

Before the second meeting, the writer should prepare a rough draft of the homework solution. In the second meeting, the team members should refine the draft and make sure that the writing is polished and acceptable to be submitted. After the second meeting, the homework can be submitted with the cover sheet. The homework solution should be written in the quality that can be shown to other students without any modification.

The cover sheet of the homework should contain the following information: (1) List of members and their student IDs (2) Dates, times, and location of your meetings, (3) Description of each member's participation and contribution.

Each homework solution should be typed in LaTeX (preferred) or HWP/MS-Word and submitted to the moodle website. You should submit the source file (.tex/.hwp/.doc) as well as the pdf file.

Midterm Exam (20%) March 28, 9AM-10:50AM (tentative)

Final Exam (40%) May 23, 9AM-10:50AM (tentative)

If a student misses at least one third (9) of the lectures, he or she is not allowed to take the final exam. No excuses are accepted.

There will be no make-up exams. Exams will be "closed book", "closed note". But you may bring one A4-size paper "cheat sheet"; the "cheat sheet" must have your name written on top. Calculators and mobile phones are not allowed in the exams.

Group Project (10%) Make a short video explaining the course material (section of your choice, covered or not covered in class) in the book (in Korean or English) and upload to youtube or the course website. (cf. KhanAcademy.org)

Attendance (5%)

Tentative Plan Some sections may be omitted or added.

2/6- Chapter 1. Introduction. (1.1–1.6) *2/13-* Chapter 2. Orderings. (2.1–2.4) *2/17-* Chapter 3. Combinatorial Counting. (3.1–3.8) *3/5-* Chapter 4. Graphs: an introduction. (4.1–4.4, 4.6–4.7) *3/14-* Chapter 5. Trees. (5.1, 5.3, 5.4) *3/21-* Chapter 6. Drawing graphs in the plane. (6.1–6.4) *3/28* Midterm Exam *4/6-* Chapter 7. Double Counting. (7.1–7.3) *4/13-* Chapter 8. The number of spanning trees. (8.1–8.2) *4/16-* Chapter 10. Probability and probabilistic proofs. (10.1–10.4) *4/27-* Chapter 11. Order from disorder: Ramsey's theorem. (11.1–11.3) *4/30-* Chapter 12. Generating functions. (12.1–12.6)

Advice: Try to solve all the exercise problems in the book! Compared to other books, this book has more interesting exercise problems and less examples in the text. You don't learn any if you only attend a lecture and read the main text only.