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	MW 9:00AM-10:15AM	Classroom: E4 (Creative Learning Bldg. 창의학습관), Room 304
Instructor	Sang-il Oum (엄상일)	`https://dimag.ibs.re.kr/home/sangil/`
	Email: sangil@kaist.edu	
	Office: E6-1 Room 3403 / Room B221, Institute for Basic Science (기초과학연구원). 55 Expo-ro, Yuseong-gu.	
Office Hours	T.B.A.	
	Every student is strongly encouraged to meet the professor at least once.	
Course website	`https://klms.kaist.ac.kr/`.	
Textbook	J. Matousek, J. Nesetril, *Invitation to Discrete Mathematics*, 2nd edition, Oxford Univ. Press, 2008.	
Grading	Students with at least $(90 - \varepsilon)$% mark are guaranteed to get A. Students with at least $(80 - \varepsilon)$% mark are guaranteed to get B. Students with at least $(70 - \varepsilon)$% mark are guaranteed to get C.	

The following plan is based on the assumption that in-person lectures are given. If we have to switch to online, then we may revise the plan.

Homework (25%) There will be homework assignments given every week on Wednesday, posted on KLMS. The assignment is due at 10PM of the following Tuesday.

Each homework solution should be typed in LaTeX (preferred) or HWP/MS-Word and submitted to the gradescope website to be announced on KLMS.

Midterm Exam (25%) To be decided.

Final Exam (35%) To be decided.

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.

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

Attendance (5%)

Tentative Plan — Some sections may be omitted or added.

*2/28- Chapter 1. Introduction. (1.1–1.6) **3/14-** Chapter 2. Orderings. (2.1–2.4) **3/21-** Chapter 3. Combinatorial Counting. (3.1–3.8) **4/4-** Chapter 4. Graphs: an introduction. (4.1–4.4, 4.6–4.7) **4/11-** Chapter 5. Trees. (5.1, 5.3, 5.4) **4/18** Midterm Exam **4/25-** Chapter 6. Drawing graphs in the plane. (6.1–6.4) **5/2-** Chapter 7. Double Counting. (7.1–7.3) **5/9-** Chapter 8. The number of spanning trees. (8.1–8.2) **5/11-** Chapter 10. Probability and probabilistic proofs. (10.1–10.4) **5/18-** Chapter 11. Order from disorder: Ramsey's theorem. (11.1–11.3) **5/25-** 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 lectures and read the main text only.