MAS575 Combinatorics, 2017 Spring Fall, KAIST

This is a graduate-level course on Combinatorics. Since the area of Combinatorics is so wide, we will study various theorems as well as useful methods for approaching combinatorial problems. The list of topics covered include

- many results in extremal set theory, in particular with linear algebraic methods,
- applications of the combinatorial nullstellensatz,
- existence of a certain object (Ramsey's theorem, Hales-Jewett, Van der Waerden, etc),
- probablistic methods,
- recent results in combinatorics.

It is strongly recommended that you have certain knowledge of materials covered in Discrete Mathematics (MAS275). Some elementary knowledge of graph theory and probability theory will be helpful.

Lecture	TTh 10:30AM-11:45AM	Classroom: E6, Room 2411
Instructor	Sang-il Oum (엄상일)	`http://mathsci.kaist.ac.kr/~sangil/`
	Email: sangil@kaist.edu	Office: E6-1 Room 3403.
Recitation	Monday 5:30PM-6:30PM (tentative)	
	We will discuss homework solutions.	
Course website	`http://klms.kaist.ac.kr/`.	
Textbook	No textbook is required. However, the major part of this course will be from the following book (highly recommended):	
	S. Jukna, *Extremal Combinatorics*, Springer-Verlag. ISBN: 978-3-642-17363-9. (E-book available at KAIST Library)	
	Another interesting book to be covered in the last month: N. Alon, J. Spencer, *The Probabilistic Methods*, Wiley.	
Grading	30% Homework, 30% Presentation, 40% Final Exam.	
Homework	Homework will be given mostly biweekly in class on Thursday and it is due at the following Tuesday. It is allowed to collaborate with other students. But the solution has to be written by yourself independently and you must understand your solution.	
	The lowest score and the second lowest scores from homework assignments will be dropped.	
Presentation	Students will form a group of two students. Each group will pick a paper and present it in class for 25 minutes. A list of (recent) papers will be announced in March.	
Final Exam	T. B. A.	
	There will be no make-up exams. Exams will be "closed book", "closed note". Calculators are not allowed in the exams. Any violation of honor code will be reported.	