Topics in Mathematics: Matroid Theory

수학특강 : Matroid 이론

Please see the following document for a quick introduction to matroids:
J. Oxley, **What is a matroid?**, `http://www.math.lsu.edu/~oxley/survey4.pdf`

This course will introduce the notion of matroids, a common generalization of vector spaces and graphs. We will start with learning several equivalent definitions of matroids and then study various aspects of matroids, including duality and minors, matroid intersection and union theorems, representable matroids and graphic matroids, and branch-width of matroids.

It is recommended to have some prior knowledge on elementary linear algebra as well as graph theory.

Lecture	TTh 2:30PM-3:45PM	Classroom: E6-1 (자연과학동), Room 2413
Instructor	Sang-il Oum (엄상일)	`http://mathsci.kaist.ac.kr/~sangil/`
	Email: sangil@kaist.edu	Office: E6-1 Room 3403.
Office Hours	Tuesday 4PM or by appointments.	
	We will discuss homework solutions during the office hour following the due date. Therefore it is recommended to attend office hours.	
Course website	`http://moodle.kaist.ac.kr/`. Passcode to enroll: whitney	
Textbook	D. Král' and O. Pangrác, Introduction to Matroid Theory (Lecture notes), ITI Series 2009-430, Charles University, Prague, Czech Republic.	
	It will be provided to students in class.	
	For the reference, one may wish to check J. Oxley, matroid theory, Oxford University Press.	
Grading	20% Homework, 30% Midterms, 50% Final.	
	The lowest score and the second lowest score from assignments will be dropped. You will earn A if (but not only if) your score is at least 90, B if your score is at least 80, C if your score is at least 70.	
Midterm Exams	March 26 Thursday, 2:30PM–5:30PM (tentative)	
Final Exam	We will have an oral exam for the final, unless there are too many students.	
Homework	Homework will be given biweekly in class on Thursday. The assignment is due at the beginning of class on the following Tuesday. You may collaborate with other students. But **homework should be written by yourself independently and you must understand your solution.**	
Plan	**Week 1-3** Definitions and Basic Examples, Duality and Minors	
	Week 5-6 Matroid intersection theorems, Matroid algorithms	
	Week 6-7 Connectivity and Separation	
	Week 8 Midterm Exam	
	Week 9-10 Representability of matroids	
	Week 11-12 Graphic matroids	
	Week 13 The Splitter Theorem (Oxley's book)	
	Week 14 Branch-decompositions	
	Week 15 Delta-matroids (Bouchet's papers)	
	Week 16 Final Exam	
	This plan is subject to change.	

- Hint for the course: Attend the class, Understand notions through examples, Ask questions, Do the homework.