MAS477 Introduction to Graph Theory
2015 Fall, KAIST

   This course is an introduction to some of the major topics of graph theory. They include graph connectivity, matchings, planar graphs, graph coloring, and nowhere-zero flows.
   Basic notions and theorems covered in Discrete Mathematics (MAS275 or CS204) will be assumed; but we will review them in the first week. It is recommended to take MAS275 before taking this course, unless you are familiar with proofs using the mathematical induction.

Lecture	TTh 9AM-10:15AM	Classroom: E11 (Creative Learning Bldg.), Room 201
Instructor	Sang-il Oum (엄상일)	`http://mathsci.kaist.ac.kr/~sangil/`
	Email: sangil@kaist.edu	Office: E6-1 Room 3403.
Recitation	Monday 5PM-6PM (tentative)	
	We will discuss homework solutions.	
Course website	`http://klms.kaist.ac.kr/`.	
Textbook	Main textbook: R. Diestel, "Graph Theory", 4th edition. Springer (3rd edition is fine)	
	`http://diestel-graph-theory.com/`	
	Reference: Bondy, Murty, "Graph Theory", Springer	
	`http://dx.doi.org/10.1007/978-1-84628-970-5`	
Grading	20% Homework, 30% Midterm, 50% Final.	
	The lowest score and the second lowest scores from assignments will be dropped. You will earn A if (but not only if) your score is at least 80, B if your score is at least 70, C if your score is at least 60.	
Midterm Exam	T.B.A.	
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.	
Homework	Homework will be given weekly or biweekly in class on Thursday. The assignment is due at the beginning of class on the following Thursday. You may collaborate with other students. But **homework should be written by yourself independently and you must understand your solution.**	
Plan	**Week 1-2** Basics. Reviews. (chapter 1)	
	Week 2-4 Matchings (chapter 2)	
	Week 4-5 Connectivity (chapter 3)	
	Week 6-7 Planar graphs (chapter 4)	
	Week 8 Midterm Exam	
	Week 9-10 Coloring (chapter 5)	
	Week 11-12 Flows (chapter 6)	
	Week 13-14 Extremal Graph Theory (chapter 7)	
	Week 14 Ramsey Theory for Graphs (chapter 9)	
	Week 15 Graph minors and well-quasi-ordering (chapter 12)	
	Week 16 Final Exam	
	No lectures on : Oct 13, 15 (conference trip)	

- For week 13-15, we may cover alternative materials.

- Hint for the course: Definitions are very important!

  Attend the class, Ask questions, Do the homework, Solve exercise problems.

  You should learn how to prove mathematically. Most of the homework problems and exam problems will require you to prove something.

- Try to be familiar with mathematical induction. In particular the "strong induction" is very useful. Be familiar with the well-ordering principle. (Every non-empty set of positive integers have the minimum element.) Thus, it is recommended to take "Discrete Mathematics" (MAS275) before taking this course