



Department of
Industrial Engineering

IE 454 Combinatorial Analysis

<http://ie454.cankaya.edu.tr>

Fall 2010 Tuesday 9:40-12:30 A201

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Voice: 189 Dean's office

Introduction to combinatorial reasoning and modeling; the systematic analysis of different possibilities; the exploration of the logical structure of a problem. Applications to many real life decision problems from algorithmic viewpoint.

Tentative Schedule

Date	Topics
tba	<i>Midterm: 20 %</i>
Sep 28	What is Combinatorics? Basic counting rules: product, sum probability vs combinatorics
Nov 23	Optimization Methods: DP based shortest path DP: production planning
Oct 05	Basic counting rules: sampling problems occupancy problems examples
Nov 30	Famous Problems: Hamilton + Euler Eulerian circuit/path Chinese Postman Problem <i>Quiz 2: 5.0%</i>
Oct 12	<i>Quiz 1: 5.0%</i> generating functions
Dec 07	Famous Problems: Traveling Salesman Problem Spanning Tree Problem
Oct 19	generating functions recurrence
Oct 26	Recurrence Relations: Fibonacci numbers inclusion/exclusion divide and conquer algorithms
Dec 14	Famous Problems: Steiner Tree Problem (Hyper)graph Partitioning: K&L, mincut <i>Quiz 3: 5.0%</i>
Nov 02	Searches: linear, binary, Fibonacci tree searches network (graph) searches
Dec 21	Famous Problems: (Hyper)graph Partitioning: F&M, maxcut <i>Quiz 4: 5.0%</i>
Nov 09	Dynamic Programming: Bfs based shortest path Review for midterm
Dec 28	Review: "since midterm"
various (5)	<i>Homework: 30.0 %</i>

No lectures will be held on Nov., 16th. Tentative final date is on January 4, at the lecture time.