

Discrete Mathematics

Fall 2018

Lecturer: Ruhan İkedä, ruhan@bilgi.edu.tr

Lecturer Office hour: Fri 13:00-14:00 at S-EK Instructors room

Assistant : Ebru Nayır, eburunayirr@bilgi.edu.tr

Course content: Basic counting principles and typical questions. Permutations and combinations. Pigeonhole principle, induction. Binomial theorem, Pascal's triangle and Fibonacci numbers. Recurrence relations. Combinatorial probability. Integers, divisors and primes. Introduction to graph theory, matchings in graphs and graph coloring.

Lectures: All information exchange will be during lecture hours. All assigned work will be done individually. Any plagiarism in the quizzes, midterm or final will result in failing the class.

Main Textbook:

1. L. Lovász and K. Vesztergombi, Discrete Mathematics Lecture Notes, Yale University, Spring 1999 (exists as a freely downloadable pdf on the internet; uploaded on the course's site) (supplementary)
2. K. H. Rosen, Discrete Mathematics and Its Applications (7th Ed.): Chapters [6-10] [pp 385 - 744]

Grading: Best two pop-up quizzes (%5 each), Midterm (%40), Final Exam (%50).

Weekly Schedule

1 .Week	Review of sets, the basic counting principles, induction
2. Week	Permutations and combinations
3. Week	Permutations and combinations with repetition
4. Week	The binomial coefficients, the binomial theorem and Pascal's triangle
5 .Week	Fibonacci numbers and recurrence relations
6 .Week	Integers, divisors, primes
7 .Week	Midterm: No lectures
8 .Week	Graphs
9 .Week	Trees
10 .Week	Algorithms (search, sort)
11 .Week	Finding the optimum

12 .Week	Matching in graphs
13 .Week	Graph coloring
14 .Week	A look at cryptography
15 .Week	One-time pads
