Math 112 – Discrete Mathematics
2009 – 2010 Spring semester

Course Webpage:
`http://www.metu.edu.tr/~komer/112/`

Textbook:
R.P. Grimaldi, Discrete and Combinatorial Mathematics (Addison-Wesley, 4th edition)

Reference books:
I. Anderson, A First Course in Discrete Mathematics (Springer SUMS, 2001)
K.H. Rosen, Discrete Mathematics and its Applications (McGraw-Hill, 4th edition)

Tentative Course Outline:

1. **Counting principles:** The rules of sum and product. Permutations, Combinations, The Binomial Theorem. Combinations with repetions. (Sec. 1.1-1.4). Discrete Probability. (Sec. 4.4[1])
2. **Pigeonhole principle:** (Sec. 5.5)
3. **The principle of Inclusion and Exclusion:** The Principle of Inclusion and Exclusion. Generalization of the Principle. Derangements. (Sec. 8.1-8.3)
4. **Recurrence relation:** The First and Second Order Linear Recurrence Relation. The Nonhomogeneous Recurrence Relation. (Sec. 10.1-10.3)
5. **Introduction to Graph Theory:** Definitions. Subgraphs, Complements, Graph Isomorphism. Euler Trials and Circuits. Planar Graphs. Hamiltonian Paths and Cycles, (Sec.11.1-11.5)

Exam Schedule:

- Midterm 1 : **April 1** (30%)
- Midterm 2 : **May 6** (30%)
- Final : **To be announced** (40%)

Lecture Hours:

1. **Zheltukhin, Kostyantyn**
   Monday 10:40-11:30 (M103), Wednesday 08:40-10:30 (M103).
2. **Berkman, Ayse**
   Monday 10:40-11:30 (M104), Wednesday 08:40-10:30 (M104).
3. **Kucuksakalli, Omer**
   Tuesday 10:40-12:30 (M103), Thursday 10:40-11:30 (M103).

[1] K.H. Rosen