September 9, 2003.

Examiner: Jeffrey Steif, room 2324 (in Math. Center), phone : 3513, `steif@math.chalmers.se`

Course book: N. Biggs: *Discrete Mathematics, Oxford University Press,*
SECOND EDITION!!!.

This course concerns enumerative combinatorics, graph theory, elementary number theory with applications to RSA encryption, and error correcting codes. Although, sometimes, the boundaries between the different areas might be a little unclear. Some of the relevant parts of the course book are *approximately* the following.

Combinatorics: 10.1–10.6, 11.1–11.4, 12.1–12.6 (we also cover recurrence relations which is not covered in the book).

Graph theory: 15.1–15.7, 16.3, 17.4

Modular arithmetic: 13.1–13.5, RSA encryption (not in book).

Group theory: most of 20.1–20.8

Groups of permutations and applications to counting: 21.1–21.4

Error correcting codes: 24.1–24.4

This book has MUCH more background than the earlier version. In fact the first 9 chapters (Part I) is mostly elementary background. It would be good to quickly read/skim through this part of the book on your own. Even Chapter 10 covers some combinatorics that you have seen in your first discrete mathematics course in the first year.

Some material covered in the lectures will not be in the book (e.g. RSA encryption). In addition, the exercise sessions will also sometimes be used for presenting some background material.

At the end of the course, there will be a written final exam which will determine your final course grade.

[**** The following paragraph is the only change in this course information from the earlier version.]

On each homework, there will be a few problems which may be handed in. This is not mandatory but can add up to 10 % to your grade. Rules for the homework will be stated at the top of the homework.

An email list will be created for this course. Every participant is responsible for making sure he/she is on it, and it will be assumed that you read my messages sent to this list.

All the material for this course can be found on the following homepage.

http://www.math.chalmers.se/Math/Grundutb/CTH/tma965/0304