MA053G
Diskret Matematik för Yrkeshögskoleutbildning-IT

LECTURER

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KEYWORDS

Welcome to Discrete Mathematics A for Vocational Studies!

I very much hope you will enjoy studying this course. All comments about the course, positive as well as negative, are welcome. You can email me at the address below, and you are also welcome to come to my office to discuss any problems with the course or to get help with exercises.

Discrete Mathematics A for Vocational Studies is a university level A mathematics course. If this is your first course at this level, you will probably find that studying mathematics at university level A can be very different from what you experienced in your 'gymnasium'-days. The following is a small note on how this course is going to be organised and also contains some hints about study skills, which might help you cope better with the course.

A short Course Description

Firstly, this course is a distance course, so there will be *no compulsory lectures*. A one-day meeting in Sundsvall will be scheduled a the beginning of the course. At this meeting lectures will be given to get you started. You are strongly advised to attend this meeting if you possibly can. The course also has a place on WebCT, where a chatroom is available for us to have virtual meetings from time to time.

The course is studied at quarter-speed and is best studied over 12 weeks. I have thus divided the material to be studied into **12 blocks** which you can study on your own or in study groups if you live sufficiently close to other students to be able to partake in such a group. The 12 blocks cover most of **K Eriksson & H Gavel: *Diskret matematik och diskreta modeller,* ISBN 91-44-02465-7 (Studentlitteratur 2002)**. I shall refer to this book as [EG]. We shall also cover a large part of **A Dunkels & B Klefsjö, I Nilsson, R Näslund: *Mot bättre vetande i matematik,* ISBN 91-44-01919-X (Studentlitteratur 2002)**. I shall refer to this book as [D]. It is essential to have regular access to both these books throughout the course.

To each of the 12 blocks of the course there is a **study guide** which will help you understand the most difficult passages in the books. Sometimes the study guides also contain additional material. The links to the study guides are on the course resources page which you can find at

http://www.tfm.miun.se/~piahei/dmy/resources.html

The study guides will explain what and how you should study. This is important because you are expected to **read all material and solve all exercises yourself**. We shall not have any course meetings during the run of the course, though you may use MatteAkuten if you wish. We may also have virtual meetings. Watch the News-section on the course homepage for dates, times and how to participate in such meetings. You are of course welcome to ask me questions via email.

At the end of each block, there will be a **week exercise** which is very important as it is very like the exam questions on the course.

There will also be two assignments on the course. They will be published on the course resources page together with

information on how and when to submit them. You should *attempt the assignments on your own* rather than in your study group. The reason for this is that the assignments are supposed to prepare you for the exam, and in the exam you will not have your group there to support you, if you get stuck. However, if you are hopelessly stuck in an exercise on the assignment or cannot get started at all, it is essential that you seek help. You can post a question on the message board in WebCT or you can visit MatteAkuten (or come to see me in my office if you live nearby).

When your assignment has been marked, it will be posted back to you together with some model solutions. You should then work through your script to see where you went wrong and check the model solutions to see how I solved the problem. Assignments are one of the most important parts of the course, so you will get bonus points for completing them. These bonus points will count towards your examination (tenta) mark and also for the first omtenta.

The examination and bonus points

The examination on this course is a written 5 hour paper.

You will get one of the grades A, B, C, D, E, Fx and F on the course. A grade A - E is a pass, grade Fx means you have failed, but you will be given a resttenta. Grade F is a fail.

There will be 24 points on the examination (usually 8 questions of 3 points each). In addition to this there will be an optional, harder and/or more theoretical, question.

The first assignment will give you 2 bonus points and the second assignment will give you one further bonus point, that is you will have a total of 3 bonus points if you have completed all the coursework. **The bonus points are valid on the tenta in June and the omtenta in August only**.

Grades

You will always obtain as high a grade as possible. If you score e points out of the 24 on the exam and have b out of the 3 bonus points, you will get

Grade A

- if $e+b \geq 20$ AND you have a good answer to the optional question

Grade B

- if $e+b \geq 20$
- if $e+b \geq 15$ AND you have a good answer to the optional question

Grade C

- if $e+b \geq 14$
- if $e+b \geq 12$ AND you have made a good attempt at the optional question

Grade D

- if $e+b \geq 10$
- if $e+b \geq 9.5$ AND you have made a good attempt at the optional question

Grade E

- if $e+b \geq 9$

Grade Fx

- if $e \geq 8.5$

Grade F

- if $e+b < 9$ and $e < 8.5$.

Only in exceptional circumstances where a student demonstrates clearly that he/she has not met the learning outcomes on the course, will the grade deviate from this table.

How to study the blocks

An average student is expected to study for at least 150 hours on the course (plus c. 50 hours of revision for the tenta). This gives you not less than 12 hours study time per block. Here is how I envisage that this time could be spent on a typical block studied by an average student:

1. **Reading**
   She would spend c. 6 hours (over 2 - 3 days in slots of no more than 2 hours each) on reading the text covered by the study guide of the block. However, depending on her study technique and previous mathematical experience, this task may take her longer. She is expected to have understood all definitions, all examples and all major theorems. She is not expected to be able to give the proofs unless the study guide specifically says otherwise, but she should read proofs as they often help getting an understanding for a result. To help her achieve this, the study guides will contain explanations of difficult passages in the text and further explanation of theorems, proofs and examples. They may also contain extra examples and exercises to aid her understanding. On the course homepage there is a link to a short note on **how to read a maths book** (This note is in Swedish!). It is useful to read this note before starting the reading of the first block.
2. **Exercises**
   When she thinks she has understood the theory reasonably well, it is time to consolidate her knowledge by solving exercises. She would spend at least 4 hours (2 slots of 2 hours each) on solving the exercises of the block. Again, depending on her experience, she may need more time for this task. If she cannot/does not have time to solve all exercises, it is important that she plans her time so that she has solved a selection of exercises on all topics covered by the block. Answers to most exercises are available at the back of the course books or via the course resources page.
3. **Week Exercises**
   After reading the block and solving the exercises, it is time for her to do the week exercise. She would need to spend c. 2 hours for the week exercise of each block. Answers to the week exercises are available on the course resources page, but she should not consult the solution sheet before she has written down her own solution.
4. **Assignments**
   The questions in the assignments will be old exam questions. An assignments should not take her more than 2-3 hours. She is expected to spend some time on presenting it well before submitting it. This does not mean that it needs to be typeset, but rather that she should make sure that she has solved all the problems and argued all her steps carefully. While she is normally encouraged to work in a study group if possible, I would expect her to do her own assignment. She will *not* suffer a reduction in the number of bonus points for getting the assignment exercises wrong. All I expect is that she has made a very good attempt at solving the exercise in order for her to get the bonus points for it. If she has problems with the assignment, she should ask me for help well before the send-in date or visit MatteAkuten. Bonus points will not be awarded for sending in (nearly) blank sheets.
5. **Summary sheets**
   After studying a block and doing the assignments, she will spend a little time writing one page of keywords and main results from the block as this will help her when she is going to revise the course for the examination.

Get Organised fast!

You will acummulate lots of paper during your course. Buy an A4 ringbinder and some dividers such that you can keep your notes apart from your exercise solutions and your coursework. Being organised will help you during the course, but especially at the end of the course, when you have to revise for the exam over a very short period (usually just one week!). It is essential at that point to be able to get an overview of the course very quickly as this will aid your understanding of the course, which in turn is essential in order to achieve a good mark in the exam.

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