Syllabus for GRA 6035
Mathematics

Course Information

Course code	GRA 6035
Course title	Mathematics
ECTS credits	6
Examination	Midterm 20 % (1 hour individual multiple choice)
	Final exam 80 % (3 hours individual written exam)

Instructor Information

Instructor	Eivind Eriksen
Office	B4-032
Office hours	Wednesday 10.00 - 12.00
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Compulsory Reading

Book	Sydsæter, Hammond, Seierstad, Strøm, *Further Mathematics for Economic Analysis*, 2nd Edition, ISBN 9780273713289 [FMEA]
Handout	Eriksen, *Linear Systems and Gaussian Elimination*, Available through It's Learning

Lecture Notes

Lecture Notes for each lecture will be made available through It's Learning.

Exercise Problems

A set of exercise problems for each lecture will be made available through It's Learning, and it is part of the course requirements that you work out the problems. Some topics will only be treated in the exercise problems. In fact, the problems are perhaps the most important part of the course. Your final grade will depend mostly on your ability to work out problems. **If you do not solve most of the exercise problems, do not expect to be able to solve the problems on the exam.** Full solutions to exercise problems will be available through It's Learning.

Prerequisites

We require the following to be known: (1) Methods and techniques from a standard mathematics course at Bachelor level, and (2) Linear Algebra at the level of FORK 1003 Preparatory course in Linear Algebra. The book C.P. Simon, L. Blume, *Mathematics for Economists* [ME] covers the prerequisites (and also parts of the material for this course). It contains a lot of examples and exercises.

The most important material from the prerequisites is general algebra, derivation and integration, and to be able to work with standard functions such as polynomials, rational functions, exponential functions and logarithms. It is also very useful to be familiar with min/max-problems in one and two variables.

Lectures

Date	Time	Room	Theme
Aug 23	08 - 11	C1-060	Linear systems, Gaussian elimination, Rank
Aug 30	08 - 11	C1-060	Matrices, Matrix algebra, Minors and rank
Sep 06	08 - 11	C1-060	Vectors, Linear independence and rank
Sep 20	08 - 11	B1-030	Eigenvalues and -vectors, Diagonalization
Sep 28	14 - 17	B1-020	Quadratic forms
Oct 04	08 - 11	C1-060	Convex and concave functions, Hessians
Oct 11	08 - 11	C1-060	Extreme points, Lagrange problems
Oct 18	08 - 11	C1-060	Bordered Hessians, Envelope theorems
Oct 25	08 - 11	B1-030	Kuhn-Tucker problems
Nov 01	08 - 11	C1-060	First order Differential equations
Nov 08	08 - 11	C1-060	Second order Differential equations
Nov 15	08 - 11	C1-060	First order Difference equations
Nov 22	08 - 11	C1-060	Second order Difference equations

Problem sessions

Date	Time	Room	Session
Oct 02	17 - 20	C2-060	Problem session I Group 1
Oct 09	17 - 20	C2-060	Problem session I Group 2
Oct 16	17 - 20	C2-060	Problem session II Group 1
Oct 23	17 - 20	C2-060	Problem session II Group 2
Nov 13	17 - 20	C2-060	Problem session III Group 1
Nov 20	17 - 20	C2-060	Problem session III Group 2

Exams

Date	Time	Exam
Oct 12 2012	14 - 15	Midterm Exam
Dec 13 2012	09 - 12	Final Exam