

Syllabus: GRA6035 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	B4-055
Office hours	Wednesday 10.00 - 12.00
Home page	http://home.bi.no/a0710194/

Compulsory Reading

Book	Sydsæter, Hammond, Seierstad, Strøm, <i>Further Mathematics for Economic Analysis</i> , 2nd Edition, ISBN 9780273713289
Web	www.pearsoned.co.uk/HigherEducation/Booksby/Sydsæteretal/

Lecture Notes

The Lecture Notes for GRA6035 Mathematics are available in It's Learning as a pdf-file, and it contains lecture notes, exercise problems with solutions and exam problems with solutions.

Exercise Problems

The Lecture Notes contains a set of exercise problems for each lecture, 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.**

You are encouraged to work with the problems during the weekly exercise sessions. A teaching assistant will be available to help you with the problems. A selection of the problems will be explained in the plenary exercise sessions.

Prerequisites

We require the following to be well-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. The book K. Sydsæter, P. Hammond, *Essential Mathematics for Economic Analysis*, 3rd Edition, ISBN 9780273713241

covers the prerequisites. **It is recommended that you review central topics from the prerequisites.**

In particular, you should be skilled in concepts, methods and techniques connected to: Basic algebra, functions of one variable, derivation with applications, elasticities, exponential functions and logarithmic functions, series and financial mathematics, integration, functions of multiple variables, optimizing techniques, constrained optimization, Lagrange multipliers, systems of linear equations, matrices and matrix operations, matrix multiplication, the transpose, vectors, determinants

Lectures

Date	Time	Room	Theme	FMEA
Aug 20	08 - 11	C1-060	Matrix algebra, Determinants	1.1
Aug 27	08 - 11	B1-030	Inverses, Linear dependence	1.9, 1.2
Sep 03	08 - 11	C1-060	Rank, Applications	1.2-1.4
Sep 10	08 - 11	C1-060	Eigenvalues, Diagonalization	1.5-1.6
Sep 17	08 - 11	C1-060	Quadratic forms, Convex and concave functions	1.7, 2.2-2.3
Oct 01	08 - 11	C1-060	Hessian matrix	1.8, 2.3, 3.1
Oct 08	08 - 11	C1-060	Local extreme points, Lagrange problems	3.2, 3.3
Oct 15	08 - 11	C1-060	Constrained problems	3.1, 3.3-3.5
Oct 22	08 - 11	C1-060	Differential equations	5.1, 5.3
Oct 29	08 - 11	C1-060	Linear first order, exact DE	5.4-5.5
Nov 05	08 - 11	C1-060	Second order DE	5.7, 6.1-6.3
Nov 09	08 - 11	C1-060	Difference equations	11.1-11.3
Nov 19	08 - 11	C1-060	Difference equations	11.3-11.4

Problem Sessions

Date	Time	Room	Responsible	Session
Aug 26	17 - 19	C2-010/030	TA (RS, AV)	Exercise session
Sep 02	17 - 19	C2-010/030	TA (RS, AV)	Exercise session
Sep 09	17 - 20	C1-060	Eivind Eriksen	Plenary session
Sep 16	17 - 19	C2-010/030	TA (RS)	Exercise session
Sep 23	17 - 19	C2-010/030	TA (RS, AV)	Exercise session
Sep 30	17 - 20	C1-060	Eivind Eriksen	Plenary session
Oct 07	17 - 19	C2-010/030	TA (RS, AV)	Exercise session
Oct 14	17 - 19	C2-010/030	TA (RS, AV)	Exercise session
Oct 21	17 - 20	C1-060	Eivind Eriksen	Plenary session
Oct 28	17 - 19	C2-010/030	TA (RS, AV)	Exercise session
Nov 04	17 - 20	C1-060	Eivind Eriksen	Plenary session
Nov 11	17 - 19	C2-010/030	TA (RS, AV)	Exercise session
Nov 18	17 - 19	C2-010/030	TA (RS, AV)	Exercise session
Nov 22	17 - 19	C2-010/030	TA (RS, AV)	Exercise session