



APPLIES TO ACADEMIC YEAR 2009/2010

## EXC 2910 Mathematics

### Programme

Bachelor in Business Administration (1. year)

### Responsible for the course

### Department

Department of Economics

### Term

According to study plan

### ECTS Credits

7,5

### Language of instruction

English

### Introduction

This is a basic mathematics course that spans over two semesters. It aims to prepare the student for quantitative courses in economics and finance. The first semester (autumn) covers basic mathematical skills in algebra, equations, inequalities, functions and their graphs, and differentiation. The second semester (spring) focuses on more advanced calculus and some financial mathematics.

### Learning outcome

#### Acquired knowledge:

Students will get to know a wide area of mathematical topics relevant to subjects in business administration such as statistics, finance and economics.

#### Acquired skills:

- Master fundamental skills in algebra, and be able to solve equations and inequalities
- Firmly understand the notion of a function and its graph
- Master derivatives and understand the relation between the derivative and the slope on a graph
- Use differentiation to solve optimization problems and calculate elasticities
- Master simple integration and understand its relation to the area between graphs
- Be familiar with exponential and logarithmic functions. Understand the use of the exponential function in calculating compound interest
- Be familiar with the use of price, profit and cost functions in economics
- Be able to solve constrained optimization problems in two dimensions by using partial differentiation and Lagrange multipliers
- Be able to evaluate determinants and use Cramer's rule to solve linear equations

### Prerequisites

None

### Compulsory reading

#### Books:

Sydsæter, Knut and Peter Hammond. 2008. Essential mathematics for economic analysis. 3rd ed. Harlow : Prentice Hall

### Recommended reading

#### Course outline

- Basic algebra
- Solving equations and inequalities. Systems of equations
- Functions and graphs
- Differentiation and its use in economics
- Basic financial mathematics
- Basic integration
- Functions of two variables. Partial differentiation and Lagrange's method
- Determinants and Cramer's rule

### Computer-based tools

### Learning process and workload

The course spans over two semesters and consists of an introduction and an advanced part, total 84 lecture hours.

#### Introduction part

First semester (autumn - EXC 2911) 36 hours - covers basic mathematical skills in algebra, equations, inequalities, functions and their graphs, and differentiation.

#### Advanced part

Second semester (spring - EXC 2912) 48 hours - focuses on more advanced calculus and financial mathematics.

The lecture hours will cover both the theory and train the students in practical problem solving. Every week the students are assigned exercises that will be discussed in the following lecture. The students are expected to work with these weekly exercises, and they will form a basis for the exams.

During each semester a mid-term mandatory assignment will be given. This will have to be approved to get the course approved.

Activity	Use of hours	
	Introduction	Advanced
Lectures (participating in class) - Introduction	36	
Prepare for lectures/reading literature	10	
Working with the weekly exercises	11	
Multiple choice exam	3	
Lectures (participating in class) - advanced		48
Prepare for lectures/reading literature		72
Working with the weekly exercises		75
Written exam		5
<b>Total use of hours recommended</b>	<b>60</b>	<b>200</b>

### Use of hours

Lectures: 84 hours

### Examination

Final grade in the course will be based on following elements:

- Assignment 1 will be given half way through first semester. Pass/Fail.
- A three hour individual multiple choice exam will be given at the end of first semester, counts for 20 % of final grade.
- Assignment 2 will be given half way through second semester. Pass/Fail.
- A four hour individual written exam will be given at the end of second semester. counts for 80 % of final grade.

All elements must be passed to obtain final grade. It will be possible to take re-take exam separately.

### Exam code(s)

EXC 29101 - Assignment 1- Pass/fail

EXC 29102 - Multiple choice. Counts 20% of final grade.

EXC 29103 - Assignment 2- Pass/fail

EXC 29104 – Written exam. Counts 80% of final grade.

### Examination support materials

Multiple choice - No aids allowed

Written exam - All aids + calculator TEXAS INSTRUMENTS BA II Plus™ are allowed

Exam aids at written examinations are explained under exam information in our web-based

Student handbook. Please note use of calculator and dictionary.  
<http://www.bi.edu/studenthandbook/examaids>

**Re-sit examination**

A makeup exam is held in every term.

**Additional information**