APPLIES TO ACADEMIC YEAR 2009/2010

MET 1180 Mathematics

Programme
Bachelor of Science in Business (1. year)

Responsible for the course

Department
Department of Economics

Term
According to study plan

ECTS Credits
7,5

Language of instruction
Norwegian

Introduction

Learning outcome
Knowlegde:
After completing the course, the student will have acquired an understanding of basic algebra, functions on one and two variables, basic financial mathematics, integration and linear algebra.

Abilities:
After completing the course, the student will have acquired at least the following abilities:
- Be able to compute the derivative of standard functions that can be expressed as the compositions of rational functions, logarithmic functions and exponential functions.
- Be able to analyze the sign of the derivative of a function and deduce where the function is increasing and where it is decreasing.
- Be able to find maxima and minima of a function from a sign diagram for it derivative or by using the second derivative test
- Understand the notions of marginal cost, marginal revenue and marginal profit and be able to deduce these as functions.
- Understand the notion of elasticity and be able to compute it.
- Be able to compute the sum of different types of series and use these in connections with present values and annuities.
- Be able to compute integrals of different kinds of functions using partial integration, substitution and the method of partial fractions.
- Be able to compute partial derivatives of first and second order of functions in two variables
- Know the maximum theorem and be able to find the global maximum and minimum of a function defined on a closed and bounded region in the plane.
- Know how to use implicit differentiation
- Be able to identify the stationary points of a function in two variables and classify these using the second derivative test.
- Be able to use the method of Lagrange multipliers for finding a maximum of a function given one constraint.
- Be able to solve systems of linear equations using matrices.

Attitudes:
After completing the course the student will have enhanced his analytic skills. The student should also be able to reflect on results of computations and have a critical attitude to their validity.

Prerequisites
Basic knowledge of mathematics equivalent to admission requirement for the program.

Compulsory reading
Books:
Bjørnestad, Harald ... [et al.]. 2007. Matematikk for økonomi og samfunnsfag. 7. utg. Kristiansand : Høyskoleforlaget

Recommended reading
Books:
Bjørnestad, Harald ... [et al.]. 2007. Matematikk for økonomi og samfunnsfag : løsningsforslag til 7. utgave. 7. utg. Kristiansand: Høyskoleforlaget

Other:
Foss, Tron.. 2005.. Eksamensoppgavesamling med løsningsforslag i matematikk for siviløkonomstudiet.. Oslo: BI Forlag

Course outline
- Introductory topics
- Functions
- Differentiation and applications
- Exponential and logarithmic functions
- Sequences and series
- Integrals
- Functions of more than one variable
- Linear algebra

Computer-based tools
None.

Learning process and workload
The course is lectured over one year and consist an introduction part (36 hours) and a continous part (48 hours).

Introduction part - Are given trough out autumn. (Two lectures a week each of two hours).
Continuous part - Starts after introduction part in autumn. (Two lectures a week each of two hours). The countinuous part goes on in spring term. One lecture a week each of three hours).

To each week there will be exercises and reading assignments. The student must gain knowledge from the material presented in the reading assignments and work through the exercises. Some of the exercises will be reviewed in class the following week. It is assumed that the student has worked with the exercise in order to take full advantage of the review.

By disposing some time in class for short assignment affiliated to fresh topics, students will be activated and learning results achieved.

Recommended use of hours:

	Use of hours	
Activity	**Introduction**	**Continuous part**
Participation in class - Introduction	36	
Preparation for class and reading the literature	10	
Execises individually and in groups	14	
Participation in class - Continuous part		48
Preparation for class and reading the literature		71
Execises individually and in groups		73
Multiple Choice		3
Written exam		**5**
Total use of hours recommended	**60**	**200**

Use of hours

Examination
Final grade in the course is based on following activities;
Mid-term assignment half way through autumn term. Pass/Fail.
Three hour individual written multiple choice at the end of autumn term. Count 30 % of final grade.
Five hour individual written exam at the end of spring term. Count 70 % of final grade.

To obtain final grade all parts must be passed. Re-sit can be carried out in each separate part.

Exam code(s)
MET 11801 - Written assignment. Pass/Fail

MET 11802 - Multiple choice. Counts 30% of finals grade in MET 1180 Mathematics, 7,5 credits.
MET 11803 - Written exam. Counts 70% of finals grade in MET 1180 Mathematics, 7,5 credits.

Examination support materials
Multiple choice - All aids + calculator TEXAS INSTRUMENTS BA II Plus™ allowed.
Written exam - All aids + calculator TEXAS INSTRUMENTS BA II Plus™ allowed.
Students are encouraged to bring solutions to previous assignments from the course.

Re-sit examination
Re-sit are offered accordingly to next course.

Additional information