APPLIES TO ACADEMIC YEAR 2014/2015

MET 1180 Mathematics

Programme
Bachelor of Science in Business (1. year)

Responsible for the course
Dag Einar Sommervoll

Department
Department of Economics

Term
According to study plan

ECTS Credits
7,5

Language of instruction
Norwegian

Introduction

Learning outcome
Acquired knowledge
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.

Acquired skills
After completing the course, the student will have acquired at least the following abilities:
- Understanding basic properties of functions, domain and range of functions, inverse functions, special functions in particular exponential and logaritmic functions.
- Ability to compute the derivative of standard functions that can be expressed as the compositions of rational functions, logarithmic functions and exponential functions.
- Ability to analyze the sign of the derivative of a function and deduce where the function is increasing and where it is decreasing.
- Ability to find maxima and minima of a function from a sign diagram for its derivative or by using the second derivative test
- Understanding the notions of marginal cost, marginal revenue and marginal profit and be able to deduce these as functions.
- Understanding the notion of elasticity and be able to compute it.
- Ability to compute the sum of different types of series and use these in connection with present values and annuities.
- Ability to compute integrals of different kinds of functions using partial integration, substitution and the method of partial fractions.
- Ability 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
- Ability to identify the stationary points of a function in two variables and classify these using the second derivative test.
- Ability to use the method of Lagrange multipliers for finding a maximum of a function given one constraint.
- Ability to solve systems of linear equations using matrices.
- Know basic power series expansion of functions.

Reflection
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 the admission requirement for the programme.

Compulsory reading
Books:
Sommervoll, Dag Einar. 2012. Matematikk for økonomifag. 2 utg. Gyldendal akademisk

Recommended reading
Books:

Sommervoll, Dag Einar. 2009. Mattespettboka. Gyldendal akademisk
Sommervoll, Dag Einar. 2012. Hjelper til matematikk for økonomifag. 2. utg. Gyldendal akademisk

Other:
I tillegg til litteraturen vil det bli brukt tidligere eksamensoppgaver. Tilgjengelig gjennom BIs eksamensdatabase

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
No specified computer-based tools are required.

Learning process and workload
The course is lectured over one year and consists of an introductory part (36 hours) and an advanced part (48 hours).

Introductory part - Taught throughout the autumn semester.
Advanced part - Starts after the introductory part in autumn and continues in spring term.

For 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 on the exercise in order to take full advantage of the review.

By allocating some time in class to short assignment related to new topics, students will be activated and learning objectives achieved.

Recommended use of hours:

Activity	Intro-ductory part	Advanced part
Participation in teaching activities – Introductory part	36	
Preparation for lectures/reading literature	10	
Assignments outside lecture hours	14	
Participation in teaching activities – Advanced part		48
Preparation for lectures/reading literature		71
Assignments outside lecture hours		73
Multiple-choice examination		3
Written examination		5
Total recommended use of time	**60**	**200**

Use of hours

Examination
The final grade in the course is based on following activities:
Individual mid-term assignment half way through autumn term. Pass/Fail.
A three-hour individual written multiple-choice examination at the end of autumn term. Counts 30 % towards final grade.
A five-hour individual written examination at the end of spring term. Counts 70 % towards final grade.

To obtain final grade all parts must be passed. A re-sit can be taken in each separate part.

Examination code(s)
MET 11801 - Written assignment. Pass/Fail
MET 11802 - Multiple choice. Counts 30% towards the final grade in MET 1180 Mathematics, 7,5 credits.
MET 11803 - Written exam. Counts 70% towards the final grade in MET 1180 Mathematics, 7,5 credits.

Examination support materials
Multiple-choice examination - All support materials plus calculator TEXAS INSTRUMENTS BA II Plus™ are allowed.

Written examination - Only TEXAS INSTRUMENTS BA II Plus™ are allowed.

Examination support materials at written examiniations are explained under examination information in the student portal @BI. Please note use of calculator and dictionary. https://at.bi.no/EN/Pages/Exa_Hjelpemidler-til-eksamen.aspx

Re-sit examination
Re-sit examination is offered every term.

Additional information