DRE 7017 Mathematics, Ph.D.

Programme
Finance; Economics

Responsible for the course
Eivind Eriksen

Department
Department of Economics

Term
According to study plan

ECTS Credits
4

Language of instruction
English

Introduction
Economic analysis is based on mathematical concepts and tools like functions and optimization. This intensive course is designed to enhance the mathematical knowledge of course participants in areas which are particularly relevant for doctoral studies of economics and finance.

The course is designed for students in the following programmes:
Ph.D. specialisation in Economics
Ph.D. specialisation in Finance

Learning outcome
After completing the course, the student will be familiar with basic mathematical tools for economic analysis. The student will have developed skills in solving relevant problems.

Prerequisites
Admission to a PhD Programme is a general requirement for participation in PhD courses at BI Norwegian Business School.

External candidates are kindly asked to attach confirmation of admission to a PhD programme when signing up for a course with the doctoral administration. Candidates can be allowed to sit in on courses by approval of the course leader. Sitting in on courses does not permit registration for courses, handing in exams or gaining credits for the course. Course certificates or confirmation letters will not be issued for sitting in on courses.

Compulsory reading
Books:
Simon, Carl P. and Lawrence Blume. 1994. Mathematics for economists. Norton
Sydsæter, Knut ... [et al.]. 2008. Further mathematics for economic analysis. 2nd ed. Financial Times/Prentice-Hall

Other:
During the course there may be hand-outs and other material on additional topics relevant for the course and the examination

Recommended reading

Course outline
The course will be based around the following topics:
- Sets and point set topology
- Vectors and linear algebra
- Real analysis in one and several variables
- Unconstrained and constrained optimization
- Correspondences and fixed points
- Differential equations and dynamical systems
- Control theory in continuous and discrete time

Computer-based tools
It's Learning. Mathematical software may be used during lectures for
illustration purposes.

Learning process and workload
There will be 20 teaching hours in the course. The course is taught through lectures and problem assignments.

Examination
3 hour written individual final exam. The final grade is pass/fail.

Examination code(s)
DRE 70171 written exam accounts for 100% of the final grade in the course DRE 7017.

Examination support materials
A bilingual dictionary and BI-approved exam calculator. Examination support materials at written examiniations
are explained under examination information in the student portal @bi. Please note use of calculator and
dictionary in the section on support materials.

Re-sit examination
Re-takes are only possible at the next time a course will be held. When the course evaluation has a separate
exam code for each part of the evaluation it is possible to retake parts of the evaluation. Otherwise, the whole
course must be re-evaluated when a student wants to retake an exam.

Additional information
Honour Code
Academic honesty and trust are important to all of us as individuals, and represent values that are encouraged and promoted
by the honor code system. This is a most significant university tradition. Students are responsible for familiarizing themselves
with the ideals of the honor code system, to which the faculty are also deeply committed.

Any violation of the honor code will be dealt with in accordance with BI's procedures for cheating. These issues are a serious
matter to everyone associated with the programs at BI and are at the heart of the honor code and academic integrity. If you
have any questions about your responsibilities under the honor code, please ask.