Financial Optimization

Programme course

6 credits

Finansiell optimering

TPPE61

Valid from:

Determined by
Board of Studies for Industrial Engineering and Logistics

Date determined
2017-01-25

Main field of study
Mathematics, Applied Mathematics, Industrial Engineering and Management

Course level
Second cycle

Advancement level
A1X

Course offered for
- Industrial Engineering and Management - International, M Sc in Engineering
- Industrial Engineering and Management, M Sc in Engineering
- Applied Physics and Electrical Engineering, M Sc in Engineering
- Mathematics, Master's programme
- Applied Physics and Electrical Engineering - International, M Sc in Engineering

Entry requirements
Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites
Introduction to Operations Researchand Mathematical Statistics, first course (or corresponding courses on other programs). The courses Financial Markets and Instruments, Financial Valuation Methodology , and Portfolio Management are desirable, but not necessary.

Intended learning outcomes
To gain insight of how financial decision problems can be solved with an optimization methodology. To give experience of how financial decision problems can be solved with optimization methods. After the course, the student shall:

- explain stochastic programming models
- be able to plan, design and implement financial optimization models (Asset Liability Management models) and evaluate these
- explain Mean-Variance model
- explain Value at Risk, Conditional Value at Risk and Hedging from an optimization perspective

Course content
Stochastic optimization. Mean-Variance model, Conditional Value at Risk and Hedging. Maximal smoothness of interest rate curves.

Teaching and working methods
The course consists of one or two projects, which are solved in a group. The course is not in the timetable. Lectures and guidance support the projects. The contents of the lectures are governed by the project's need. At the seminars the projects are presented and discussed.

Examination

PRA1	Project	6 credits	U, 3, 4, 5

Individually written report.

Grades
Four-grade scale, LiU, U, 3, 4, 5

Department
Institutionen för ekonomisk och industriell utveckling

Director of Studies or equivalent
Fredrik Persson

Examiner
Jörgen Blomvall

Course website and other links
http://www.iei.liu.se/prodek/blomvall/

Education components
Preliminary scheduled hours: 22 h
Recommended self-study hours: 138 h

Course literature
Kompletterande material.

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.