



COURSE SYLLABUS

Investeringar, risk och osäkerhet

Investments, Risk and Uncertainty

7.5 credits (7,5 högskolepoäng)

Course code: IY263I

Main field of study: Industrial Economics and Management

Disciplinary domain: Technology

Education level: Second cycle

Specialization: AIF - Second cycle, has second cycle course/s as entry requirements

Language of instruction: English

Applies from: 2022-08-29

Approved: 2022-03-01

1. Decision

This course is established by Dean 2022-02-02. The course syllabus is approved by Head of Department of Industrial Economics 2022-03-01 and applies from 2022-08-29.

2. Entry requirements

For admission to the course taken course in Finance and Investment Analysis 7,5 hp or equivalent is required.

3. Objective and content

3.1 Objective

The purpose of the course is to develop a deeper knowledge of the analysis of financial risk using financial derivatives, real options and portfolio choice theory. The course extends students' knowledge of how financial markets work and the relationship between capital markets and companies in economic value creation. The course also develops students' understanding of management of strategic business decisions under uncertainty. Another purpose is to introduce students to methodologies to assess financial risk using R programming.

3.2 Content

- Linear and non-linear risk management models
- Value-at-Risk (VaR), expected shortfall, coherent risk measures
- Introduction to extreme value theory
- Introduction to ARIMA, ARCH, GARCH
- Copulas and their types
- Option theory
- Dynamic investment analysis for real investments
- R programming

4. Learning outcomes

The following learning outcomes are examined in the course:

4.1 Knowledge and understanding

On completion of the course, the student will be able to:

- explain different types of financial derivatives
- explain the role of financial derivatives in risk management
- explain portfolio choice for different risk and return profiles
- demonstrate an understanding of different pricing models for financial and real investments
- demonstrate an understanding of the difference between the use of discrete and continuous models used in financial analysis

4.2 Competence and skills

On completion of the course, the student will be able to:

- estimate and interpret the central parameters in linear and non-linear models covered in the course
- use dynamic models for investment valuation under uncertainty

- use R programming to assess financial risk
- use financial derivatives and portfolio for financial risk management

4.3 Judgement and approach

On completion of the course, the student will be able to:

- explain and reflect upon how financial markets operate
- build models for financial analysis pertaining to risk and return
- manage financial uncertainty in different types of real investments

5. Learning activities

Learning activities consist of lectures, computer lab sessions, seminars and supervision. The course is examined on an ongoing basis throughout the various examination assignments.

6. Assessment and grading

Modes of examinations of the course

| Code | Module | Credits | Grade |
|------|-----------------------|-------------|-------|
| 2210 | Written assignment 1 | 1.5 credits | GU |
| 2220 | Written assignment 2 | 1.5 credits | GU |
| 2230 | On-campus Examination | 4.5 credits | AF |

The course will be graded A Excellent, B Very good, C Good, D Satisfactory, E Sufficient, FX Fail, supplementation required, F Fail.

The information before a course occasion states the assessment criteria and make explicit in which modes of examination that the learning outcomes are assessed.

An examiner can, after consulting the Disability Advisor at BTH, decide on a customized examination form for a student with a long-term disability to be provided with an examination equivalent to one given to a student who is not disabled.

7. Course evaluation

The course evaluation should be carried out in line with BTH:s course evaluation template and process.

8. Restrictions regarding degree

The course can form part of a degree but not together with another course the content of which completely or partly corresponds with the contents of this course.

9. Course literature and other materials of instruction

Luenberger, D. G. "Investment Science" (latest edition), Oxford University Press

McNeil, A. J., Frey, R., & Embrechts, P. (latest edition). Quantitative risk management: concepts, techniques and tools-revised edition. Princeton University Press.

Scientific articles, book chapter, reports and additional material of up to 500 pages.

10. Additional information

This course replaces the course IY2622