ME2313 Financial Mathematics, Business and Management 15.0 credits

Finansiell matematik, ekonomi och ledarskap

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

On 11/04/2019, the Dean of the ITM school has decided to establish this official course syllabus to apply from autumn term 2019 (registration number M-2019-0750).

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Industrial Management

Specific prerequisites

Mathematical courses:

SF2940 Probability Theory

SF2942 Portfolio Theory and Risk Management

SF2701 Financial Mathematics, Basic Course or SF2975 Financial Derivatives

At least 42 credits of specialisation specific mathematical courses (the above included)

At least 27 credits courses in Industrial Engineering and Management

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

The course intends to give the students a number of professional proficiencies that are needed to solve financial mathematics problems in a project with composition and complexity that require knowledge both in financial mathematics and industrial engineering for its solution and that require some kind of computer programming/computer models for its solution.

For grade E the student the student should, on completion of the course, be able to:

- apply theories and methods from earlier courses as well as use advanced theory and methods to analyse and solve problems in a well-defined financial mathematics field and demonstrate the ability to acquire supplementary knowledge to solve problems
- apply models of financial mathematics and/or models of corporate finance on a practical problem, using computer programming/computer models
- analyse, understand and handle differences between financial theory and financial practices
- demonstrate ability to organise, handle, participate and lead a complex project work with several participants that run for a long period of time and in collaboration with employers and co-workers.
- reflect, in written and oral form, on the relation between financial theory and financial practices and one's own role in the project and the influence on the group and the final result of the project.

For a higher grade, the student should, on completion of the course furthermore be able to:

- create a solution of a practical problem that a company has, by planning, designing, and carrying out an advanced solution to the problem that requires extensive practical knowledge in a delimited finance mathematics field
- explain how the financial sector is structured and which preconditions and requirements that are set on an individual company in this sector, in connection with the solution of the specific problem
- demonstrate great ability to organise, handle, participate and lead a complex project work with several participants that run for a long period of time and in collaboration with employers and co-workers.

Course contents

The course is carried out in project form. The project is carried out as a cooperation between the Department of industrial economics and organisation and an actor in the finance sector.

The emphasis for the project is in the finance mathematics field with projects that typically require some form of computer programming. The computer programming is done to build models and applications to solve actual problems that the companies have within the fields of finance and economics. Leadership issues deal with placing the problem and its solution in an organisational context and about making the group function and complete the project task and deliver the Project results on time and according to the specification of the company. The interaction with the project provider is important. Each participant should evaluate the members of his/her project group using an established template. The evaluation is sent to the examiner and is part of the examination.

The project is carried out in groups. A systematic investigation and examination methodology is applied. Problem formulation, and intermediate seminars are included, in addition to the final presentation that takes place in the form of one or two project reports and an oral presentation for the project provider. In certain cases, a complete computer model with user manual is included in the report . The company that provides the project decides the format of the final presentation at the company after having consulted the KTH supervisor. Furthermore, an individual reflecting report that deals with the work process, as well as an oral review of another project work, are included.

The nature of the project will define the contents of the course. The ambition is that the projects should be designed in consultation between students, the departments and the project provider from the the financial sector.

Examination

- SEM1 - Seminar, 3.0 credits, grading scale: P, F
- PRO2 - Project, 12.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH’s coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Examination of the seminar part (SEM1) consists of a number of seminars, guest lectures and study visits. The number of occasions varies from one year to another depending on the number and the types of projects in the course offering and the need. Attendance and active participation form of presentation of one's own project throughout the whole semester, as well as public review and discussion of projects of other groups on three occasions.

Passing the course requires

Attendance and active participation form of presentation of one's own project throughout the whole semester, as well as public review and discussion of projects of other groups on three occasions.

Furthermore, approved participation in other joint activities that are included in the course (e g seminars and guest lectures) is required, as well as an individual written reflecting report and an evaluation of group participants in his group.

All joint scheduled activities are regarded as compulsory. Absence should be announced in advance.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.