# Financial Model Implementation and Practice

Study Board of Market and Management Anthropology, Economics, Mathematics-Economics,

Environmental and Resource Management

**Course ID:**

**Course Title:**

Financial Model Implementation and Practice

**Teaching language:**

English

**ECTS value:**

5

**Responsible study board:**

Study Board of Market and Management Anthropology, Economics, Mathematics-Economics, Environmental and Resource Management

**Date of Approval:**

**Course Responsible:**


| Name | E-mail | Department |
|---|---|---|
| Mo Zhang | mo@sam.sdu.dk | Institut for Virksomhedsledelse og Økonomi |


**Offered in:** Odense

**Level:** Bachelor

**Offered in:** Summer School (Spring)

**Duration**: Intensive course

**Mandatory prerequisites:** None

**Recommendation prerequisites:**

The basic operations in spreadsheet program like Microsoft are required. The student must have an elementary background in mathematics, matrix algebra, statistics and econometrics. The student is familiar with simple optimization methods (e.g., first-order conditions and Lagrange optimization).

**Aim and purpose:**

The course is numerically intensive and requires a considerable amount of student input. This purpose of the course is that the students can implement some important financial models with extensive use of computer

software, for example, Excel/VBA, or other programming languages agreed between the instructor and student, and develop modelling skills for analyzing a variety of financial decision problems by using real-world data. The student obtains competencies to master modelling techniques such as regression analysis, optimization and binomial trees; and, the student can apply these modelling skills in specific financial contexts such as portfolio management, option pricing, sensitivity analysis in discounted cash flow models.

## Content:

The course is constructed to cover a wide variety of topics in financial modelling:

For example:

1. Corporate valuation in terms of Discounted Cash Flow models
2. Portfolio optimization problem in finance
3. Valuation of options
4. Financial Risk modelling

## Learning goals:

Demonstrate knowledge about the course's focus areas enabling the student to

- Explain the model choice for selected research topics.
- Explain the parameters, characteristics of selected empirical models.
- Understand basic simulation techniques.

Demonstrate skills, such that the student is able to:

- Implement theoretical models and numerical computation for enterprise valuation.
- Calculate the variance-covariance matrix and Find optimal portfolios.
- Apply option pricing models, e.g. the binomial model and alternative models.
- Measure financial risk with Value-at-risk and alternative models.

Demonstrate competences, such that the student is able to:

The student is able to

- Use software (for example, Excel/VBA, or alternative software agreed between the student and instructor) to skillfully implement financial models introduced in the course in order to make empirical financial analysis.
- Discuss the meaning of empirical results and the plausible values of its parameters.
- Compare the advantages and disadvantages of different models and argue his/her model choice for specific dataset.

## Literature:

Examples

- Benninga, Simon: "Financial modelling" The MIT press, newest edition.
- Reading package, and lecture notes.

## Teaching Method:

To enable the student to achieve the learning goals of the subject, the instruction is planned as following:

- The preparation package will be given two weeks before lecture starts to help the student to get familiar with the theories and models which will be used during lectures
- In-class lectures provide practical contents of the topics
- In-class exercises help students consolidate the knowledge and skills taught in the lectures
- Two consultation sessions provide students opportunities of discussing unclear topics and assist them to better apply the models with different settings.

## Workload:

Scheduled classes:

- Four hours of lectures per day (4x5) for 2 consecutive weeks
- Each four-hour teaching session mixes the lecture and in-class exercises
- The course will be conducted from the second week of August

The students' workload is expected to be distributed as follows:

Lectures: 40 hours

Preparation, lectures: 62 hours

Preparation, exam: 30 hours

Exam: 3 hours

Total: 135 hours

## Examination regulations:

## Written examination (with pc).

## Timing:

**Exam:** August

**Reexam:** September

***Form of examination***

Written in situ exam

**Censorship**

Second examiner: None

**Grading**

7-point grading scale

**Identification**

Student Identification Card - Exam number

**Language**

English

**Duration**

3 hours.

**Length**

No limitations

**Examination aids**

All exam aids allowed except for use of the internet. However, it is not allowed to communicate with anybody.

**Assignment handover**

In the examination room.

**Assignment handing**

Via SDUassignment in the course page in Blackboard

**ECTS value**

5

**Additional information**

The exam will be on the first Monday after two-week lectures.

The exam is carried out using own PC which must be able to access the university's wireless network.

Internet Access: The Internet may only be used to access the SDU Assignment upon submission.

A passed exam cannot be re-taken.

The exam tests the achievement of the goals for all the goals mentioned (cf. the goal description) by random check.

**Re-examination**

Reexam is in same exam term. Form of examination can be changed with short notice

## Teachers:


| *Name* | *E-mail* | *Department* |
|---|---|---|
| Mo Zhang | mo@sam.sdu.dk | Institut for Virksomhedsledelse og Økonomi |