

## Module Description

### MA9977: Applied Capital Markets (FIM)

#### TUM Department of Mathematics

<b>Module level:</b> Master	<b>Language:</b> German/English	<b>Module duration:</b> one semester	<b>Occurrence:</b> irregularly
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<b>Credits*:</b> 4	<b>Total number of hours:</b> 120	<b>Self-study hours:</b> 90	<b>Contact hours:</b> 30
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\* The number of credits can vary depending on the corresponding SPO version. The valid number is always indicated on the Transcript of Records or the Performance Record.

#### Description of achievement and assessment methods:

This module comprises a presentation (20%), a documented solution of a case study (40%) and a written exam (40%).

In a written exam (60 minutes) students have to answer multiple questions to show their knowledge of the rules and regulations of Eurex. By doing calculations on risk measures, prices, etc. students show that they can apply the quantitative methods under conditions comparable to the working environment of real market traders.

Using the provided documents the students summarize and briefly present the trade conventions at the EUREX Exchange. By these short presentations students demonstrate their ability to collect and summarize relevant information on their own and to communicate their results to others.

Within the scope of the case study the students analyze a real-world example that clearly shows the consequences, if the risks inherent in some financial products are ignored. With the help of this real-world example the students have to show that they understand the verified dealing with financial instruments.

At the end of the module the final grade is provided according to the weighting factors.

<b>Exam type:</b> written and oral	<b>Exam duration (min.):</b> 60 (written)	<b>Possibility of re-taking:</b> In the next semester: No At the end of the semester: Yes	<b>Homework:</b> No
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<b>Lecture:</b> No	<b>Conversation:</b> No	<b>Written paper:</b> No
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#### (Recommended) requirements:

MA9974 Investment Risk Management & Trading Seminar (recommended)

#### Contents:

This seminar provides insight into the basics of financial instruments. It treats the design and valuation of futures and options written on stocks, stock market indices, synthetic government bonds and short-term interest rates as well as their application in terms of portfolio hedging problems. In addition to this, it provides an introduction into the rules and regulations on the exchanges by referring to the Eurex Exchange Rules. Finally, it gives an example for the financial consequences caused by neglecting the inherent risk.

#### Study goals:

After successful completion of the module, the students are able to state the defining conventions and to evaluate futures and options written on stocks, stock market indices, synthetic government bonds and short-term interest rates. They can use these instruments to design complex trading strategies (e.g. butterflies) and to apply them for portfolio

hedging and market risk tracking. They can reproduce the Eurex Exchange Rules concerning the trading and the clearing of the available financial products as well as the Eurex market model. Furthermore, they are aware of the risk inherent in the considered financial products. Upon the completion of the case study, the students are able to understand and discuss in depth the reasons why (the risk management of some) global performing companies failed in the past. In addition, students will be able to deal with contrasting opinions on these matters and to work out and present a joint group solution.

**Teaching and learning methods:**

Interactive presentations and plenary discussions encourage the students to actively participate in the seminar. By working in groups the students will improve their collaboration and communication skills. A computer based trading simulation software especially designed for educational and scientific purposes challenges the students to transfer and apply their theoretical knowledge. Additionally, a practical training, when dealing with financial products (e.g. options, futures and fixed income derivatives), trading and hedging strategies, capital market features and rules, is aspired. During the case study the students are able to apply their theoretical and practical learnings to a real-world scenario. In doing so, they have to perform the required analyses (involving calculations).

**Media formats:**

Presentation slides, whiteboard, computer based trading simulation

**Literature:**

Material to understand mechanisms of Eurex:

- Eurex Trader Examination Tutorial Handbook
- Eurex Products Brochure
- Eurex System Training Trading
- Eurex Exchange Rules

Literature for theory of financial instruments:

- Hull, J.: Options, Futures and Other Derivatives

Literature for the Case Study:

- Zagst, R., Goldbrunner, J. and Schlosser, A.: Zu nah an der Sonne - Die schlimmsten Pleiten der Finanzgeschichte

**Responsible for the module:**

Zagst, Rudi; Prof. Dr.: [zagst@tum.de](mailto:zagst@tum.de)

**Courses (Type, SH) Lecturer:**

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For further information about this module and its allocation to the curriculum see:

<https://campus.tum.de/tumonline/wbModHb.wbShowMHBReadOnly?pKnotenNr=855602>

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