

Module Description

MA9974: Investment Risk Management & Trading Seminar (FIM)

TUM Department of Mathematics

Module level: Master	Language: English	Module duration: one semester	Occurrence: winter semester
Credits*: 6	Total number of hours: 180	Self-study hours: 120	Contact hours: 60

* 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:

The module evaluation is based on a written exam (counting 2/3) and an essay prepared in homework (counting 1/3). In the written exam (120 minutes), students have to remember and apply the concepts of option trading and hedging strategies under time restriction. They have to decide between different investment opportunities, calculate risk measures and formulate trading strategies under conditions comparable to the working environment of real market traders. In the essay, students have to present in a well-constructed manner the assignments developed during the instructor assisted tutorials. Topics include: comparison between diversification properties of hedge fund investments and traditional investments in stocks and bonds; comparison between different performance measures of different hedge fund strategies; non-Gaussian risk calculations (omegas, correlation breakdown, etc.); construction of optimal hedge fund investment. They have to demonstrate their in-depth understanding of these topics by discussing the concepts beyond pure calculations. Furthermore, they have to prove their ability to present their thoughts in a well-structured manner understandable by a wider audience.

Exam type: written	Exam duration (min.): 120	Possibility of re-taking: In the next semester: No At the end of the semester: No	Homework: No
Lecture: No	Conversation: No	Written paper: Yes	

(Recommended) requirements:

MA9972 - Discrete Time Finance (FIM) (recommended)

MA9973 - Continuous Time Finance (FIM) (recommended);

Some computer programming skills in some mathematical software, such as Matlab or R are required.

Contents:

This course treats the practical side of financial markets, in particular options trading (equity trading, options trading, hedging of derivatives, calculating Greeks, payoff diagrams, option valuation, risk management) and special aspects on hedge funds (introduction to Investments, risk profiles of different types of hedge fund strategies, quantitative methodologies to analyze fund return data).

Study goals:

After successful completion of the module, students have practical insight in working as a trader and are able to trade and hedge options and other derivatives. They can also construct and trade option strategies based on plain vanilla options. They are able to calculate quantities for risk management like the Greeks and understand their importance in

managing the risk of trading positions. Furthermore, they know about traditional and alternative investments and can specifically characterize hedge funds and hedge fund investment strategies. They understand quantitative methodologies for hedge fund data analysis like correlation and VaR analysis and are able to apply these to real market data.

Teaching and learning methods:

Lectures with beamer presentation and blackboard which are designed to be interactive and students are encouraged to actively participate both by asking questions as well as by answering questions asked by the instructor. In tutorials, students will work under instructor assistance on assignments, both written and computer based using real-world data sets. Furthermore, students will actively trade as market makers in stocks and options under real-world market conditions using a trading simulation software specifically designed for educational and scientific purposes.

Media formats:

Presentation slides, whiteboard, assignment sheets, data sets, programming software, computer based trading simulation

Literature:

Natenburg, S.: "Option Volatility and Pricing: Advanced Strategies and Techniques"

Responsible for the module:

Zagst, Rudi; Prof. Dr.: zagst@tum.de

Courses (Type, SH) Lecturer:

0000003157 Trading Seminar (FIM) (1SWS SE, WS 2016/17)

Lichtenstern A [L], Smith M

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

<https://campus.tum.de/tumonline/wbModHb.wbShowMHBReadOnly?pKnotenNr=961766>

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