

# Module Description

## General information:

Module number:	MA9972
Title (dt.):	Zeitdiskrete Finanzmathematik (FIM)
Title (en.):	Discrete Time Finance (FIM)
Module level:	MSc
Abbreviation:	DTF
Subtitle:	-
Duration:	1 semester
Occurrence - summer/winter:	Winter
Occurrence - regular/irregular:	Regular
Language:	German/English
Credits:	4

## Workload:

Contact hours:	45
Self-study hours:	75
Total hours:	120

## Achievement and assessment methods:

Description of achievement and assessment methods:	The module examination is based on a written exam. By answering questions in text form, students have to show their understanding of the concepts of discrete-time mathematical modeling of financial markets and their capability to apply these concepts. They have to analyze mathematical models of financial markets and solve given problems. Students have to determine whether markets contain arbitrage, replicate and price given financial derivatives and develop hedging strategies. The questions may include mathematical proofs and calculations.
Type of assessment:	Written
Duration of assessment (min):	60-90
Assessment retake:	

## Description:

(Recommended) prerequisites	
Content:	Single-Period Financial Markets, Multi-Period Financial Markets, Absence of Arbitrage and Completeness, The Binomial or Cox-Ross-Rubinstein Model, Pricing of Contingent Claims
Intended learning outcomes:	At the end of the module students are able to understand the fundamentals of mathematical finance in discrete time. They will understand the principles of arbitrage theory and will be able to price financial derivatives as well as hedge against their risk in single- and multi-period financial market models.
Teaching and learning methods:	Lectures with beamer presentation and mathematical proofs on the blackboard, exercise sheets with problems for preparation in homework, tutorials for discussion of solutions to exercise sheets
Media:	presentation slides, white board
Reading list:	S.R. Pliska: Introduction to Mathematical Finance: Discrete Time Models, Blackwell Publishers Inc., 2000. Shreve, S.E.: Stochastic calculus for Finance I: The Binomial Asset Pricing Model. Springer Finance, 2004. N.H. Bingham und R. Kiesel: Risk-Neutral Valuation: Pricing and Hedging Financial Derivatives, Springer Finance, 2004. J.C. Hull: „Optionen, Futures, und andere Derivative“, Pearson Studium, 2006 J.C. Hull: Options, Futures, and Other Derivatives, Prentice-Hall, 2006. P. Wilmott: Quantitative Finance, John Wiley & Sons, 2001.

**Responsible for module:**

First name:	Rudi, Prof. Dr.
Name:	Zagst
Email:	<a href="mailto:zagst@tum.de">zagst@tum.de</a>

**Lecturer:**

1. Lecturer:

First name:	Rudi, Prof. Dr.
Name:	Zagst
Email:	<a href="mailto:zagst@tum.de">zagst@tum.de</a>

2. Lecturer:

First name:	Markus
Name:	Wahl
Email:	<a href="mailto:markus.wahl@tum.de">markus.wahl@tum.de</a>

**Courses:**

1. Course:

Type:	Lecture
Name:	Discrete Time Finance
Weekly hours per semester:	2

2. Course:

Type:	Exercises
Name:	Discrete Time Finance
Weekly hours per semester:	1

**(Recommended) audience:**

1. Program:

Name:	MSc Finance & Information Management (FIM)
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