



University of
Zurich ^{UZH}

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Master of Science UZH ETH in Quantitative Finance

Computational Methods for Quantitative Finance: PDE Methods

Lecturer: Prof. Dr. Christoph Schwab

Credits (ECTS): 6.0

Course contents:

Review of option pricing, Wiener and Levy price process models, Deterministic, local and stochastic volatility models, Finite difference methods for option pricing, Relation to bi- and multinomial trees, European contracts, Finite difference methods for Asian, American and Barrier type contracts, Finite element methods for European and American style contracts, Pricing under local and stochastic volatility in Black-Scholes markets, Finite element methods for option pricing under Lévy processes, Treatment of integrodifferential operators, Stochastic volatility models for Levy processes, Techniques for multidimensional problems, Baskets in a Black-Scholes setting and stochastic volatility models in Black Scholes and Lévy markets, Introduction to sparse grid techniques.