

# Announcement SoSe 2021

## Lecture in Mathematical Finance

### Machine Learning in Finance

Prof. Dr. Blanka Horvath

**Area / Modulnr.:** Mathematical Finance / MA5732

**Course Structure:** Lecture: 2h Exercises: 1h

**Content:** This course is an introduction to Machine Learning (in particular Deep Learning) techniques used in the context of quantitative finance. To be able to complete the course, a basic knowledge of python and familiarity with general concepts of mathematical finance (such as pricing and hedging in stochastic financial models, as well as elements of stochastic analysis and arbitrage theory) is a recommended prerequisite.

**Audience:** MSc Mathematical Finance and Actuarial Science

**Prerequisite:** MA4405 (Stochastic Analysis), MA3702 (Continuous Time Finance), basic knowledge of python

**Literature:** **Goodfellow, Y. Bengio, A. Courville, MIT Press (2016):** Deep Learning  
**P. Bilokon, M. Dixon, I. Halperin, Springer (2020):** Machine Learning in Finance: From Theory to Practice  
**A. Savine, Wiley (2018):** Modern Computational Finance: AAD and Parallel Simulations  
**M. P. Deisenroth, A. A. Faisal, C. S. Ong, Cambridge University Press (2019):** Mathematics for Machine Learning  
**S. Skansi, Springer (2018):** Introduction to Deep Learning  
**C. C. Aggrawal, Springer (2018):** Neural Networks and Deep Learning  
**A. Mueller, S. Guido, O'Reilly(2019):** Introduction to Machine Learning with Python  
**Online resources:** <https://scikit-learn.org/stable/> and [https://github.com/amueller/introduction\\_to\\_ml\\_with\\_python](https://github.com/amueller/introduction_to_ml_with_python)

**Certificate:** Exam, 6 CP

**Location and Time:** see TUMonline

**Exercises:** see TUMonline