

Course title: Mathematics for New Technologies in Finance

| Course Basic Information | |
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| Academic Unit: (University/Department) | ETH Zürich, Department of Mathematics |
| Course title: | Mathematics for New Technologies in Finance |
| Level: | Master of Science UZH ETH in Quantitative Finance |
| Course Status: | Core MF |
| Year of Study: | Spring Semester |
| Number of Classes per Week: | 3h (lectures) + 1h (exercises) |
| ECTS Credits: | 4 ECTS |
| Time /Location: | According to the timetable in ETH course catalogue |
| Lecturer: | Prof. Dr. Josef Teichmann |
| Content | |
| Content of the course | Universal Approximation Theorems on path spaces, Neural Differential Equations driven by controls, Signature Transforms, Training via Bayesian Optimization as a dynamical system, Deep Hedging, Deep Portfolio Optimization, Deep Simulation, Generative Adversarial Networks and Robust Finance, Basics of deep robust Reinforcement Learning |
| Course's objectives: | Theoretical foundations and coding examples on cutting edge deep learning technology applied in financial industry. |
| The expected outcomes: | On successful completion of this module students should be able to understand and develop basic theory as well as advanced code for machine learning technology in finance. |