The purpose of the class is to introduce undergraduate and graduate students to the modern mathematical applications in financial industry.

The course will consist of a set of lectures given by financial industry professionals on the topics in Mathematical Finance and practical applications to their field of expertise.

Lectures will cover mathematical aspects of equity, fixed income and commodity derivatives, credit hybrids, emerging markets, counter party credit modeling, algorithms used for electronic trading and market prediction, numerical methods in finance, Value-at-Risk.

Broad familiarity with statistics, stochastic processes and PDE will be helpful (but not required). The lectures will be independent, and different lectures will use different mathematical subjects. Prior knowledge of economics or finance is not required but may be helpful for some lectures.

The class will have a final paper and a few problem sets will be given.

**Plan of the course**

2. September 17. Ken Abbot, "Risk Management"
4. October 1. Jian Sun, "Bond, swap and equity option convexity trading strategies"
5. October 15. Eric Pan, "Dynamic pricing control in FX spot market making"
6. October 22. Pantelis Tsoucas, "Filtering Methods with Applications in Finance"
8. November 5. Ivan Masyukov, "Regularized Pricing Models"
10. November 26. Denis Gorokhov, "HJM Model for Interest rates and Credit"
11. December 3. Stefan Andreev, "Pricing and hedging of quanto credit contingent claims"
12. December 10. Vasily Strela, Jake Xia, "Summary and Wrap up"

Prerequisites: Basic calculus, differential equations, linear algebra and either 18.100 (Analysis with proofs) or equivalent or 18.440 (Probability) or equivalent.

Grading: P/D/F

Literature:
[4] Liuren Wu and Peter Carr, Theory and evidence on the dynamic interactions between sovereign credit default swaps and currency options, Journal of Banking and Finance DOI:10.1016