MACF 491A (MAST 723/MAST 881X)
Topics in Math & Computational Finance II
Winter 2015

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Office Hours: To be announced.

Class Schedule: Mondays and Wednesdays, 16:15-17:30.


References:
3. Research papers to be specified.

Outline: This course is broadly concerned with portfolio optimization theory and methods. We shall consider the following topics in a rigorous framework:
- Review of market instruments and financial derivatives
- Risk and return
- Optimization review (Lagrange multipliers; Karush-Kuhn-Tucker Theorem, Quadratic optimization, linear and quadratic programming)
- Portfolio optimization: minimum variance portfolios, efficient frontier, capital market line, Sharpe ratios
- Security market line, capital asset pricing model
- Utility maximization: duality methods, dynamic programming.
- Risk measures: VaR, coherent risk measures
- Asset liability management
- Bond portfolio management and immunization
- Optimal liquidation: Almgren and Chris model
- Other topics (time permitting)

Course Evaluation: Weighted average of:
- Assignments (30%),
- Project (40%),
- Final Exam (30%).

Departmental website ➔http://www.mathstat.concordia.ca