15.455x Mathematical Methods for Quantitative Finance

Suggested Weekly Reading List

Optional Recommended Textbooks:

- Tsay, *Analysis of Financial Time Series* (3e), Wiley. (Tsay)
- Capinski and Zastawniak, *Mathematics for Finance*, Springer. (CZ)
- Olver, *Introduction to Partial Differential Equations* (2016), Springer. (Olver)
- Campbell, Lo, and MacKinlay, *Econometrics of Financial Markets* (1997), Princeton. (CLM)
- Lang, *Introduction to Linear Algebra* (2e), Springer (Lang)
- Axler, *Linear Algebra Done Right* (3e), Springer (Axler)

Week 1: Probability

n/a

Week 2: Introduction to discrete-time stochastic processes

Tsay, Chapter 2

Week 3: Time series models

CZ, Chapter 6

Week 4: Introduction to continuous-time stochastic processes

Tsay, Chapter 6.1-6.5

CLM, Chapter 9.1-9.2

Week 5: Itô calculus

Olver, Chapters 1, 8.1

Week 6: Continuous-time finance

CZ, Chapters 7-9

CLM, Chapter 9

Week 7: Linear algebra of asset pricing

Lang, Chapters 3-4

Axler, Ch. 3.B, 3.F

Week 8: Optimization

Non-textbook resource recommendations forthcoming

Week 9: Optimal decision making and optimal strategies

Non-textbook resource recommendations forthcoming