

THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

FINA690L Statistical Methods for Risk Management

Course Outline

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Course description

This course provides an introduction to financial risk management. Topics include how to measure market risks, statistical properties of returns and volatility, volatility modeling, Value at Risk (VaR), RiskMetrics, historical simulation, assessing VaR methods and stress testing. Students will learn how to use Excel spreadsheets to perform risk management tasks. Theories will be illustrated by practical examples in financial markets.

Tentative topics

1. Risk management fundamentals
2. Random variable and probability
3. Stylized facts of financial returns
4. Measures of market risk: volatility and Value at Risk (VaR)
5. Volatility estimation and modeling
6. Computing VaR
7. Correlation modeling
8. Portfolio risk
9. Backtesting
10. Stress testing

References

1. Christoffersen, P.F. (2003). *Elements of Financial Risk Management*, Academic Press.
2. Jorion, P. (2002). *Value at Risk: The New Benchmark for Managing Financial Risk*, McGraw-Hill.