THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

ISOM 4520 Statistics for Financial Risk Management

Course Outline, Spring 2020

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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, and assessing VaR methods. Students will learn how to use Excel spreadsheets and R to perform risk management tasks. Theories will be illustrated by practical examples in financial markets.

Tentative schedule

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

Grading

Assignments	25%
Midterm exam (7 April 2020)	30%
Final exam	45%

References

1. Christoffersen, P.F. (2012). *Elements of Financial Risk Management*, 2nd edition Academic Press.
2. Jorion, P. (2007). *Value at Risk: The New Benchmark for Managing Financial Risk*, McGraw-Hill.
3. Alexander J. McNeil, Rüdiger Frey, Paul Embrechts. (2005). *Quantitative Risk Management: Concepts, Techniques, and Tools*, Princeton University Press.