

PROBABILISTIC MODELS FOR FINANCE

(A.A. 2015-2016)

Program (preliminary):

Introduction to credit scoring.

Classification. Curve ROC and CAP.

Logistic model and discriminant analysis for credit scoring.

Introduction to mathematical finance.

Properties of market.

Probability: convergence.

Stochastic processes. Brownian motion.

Selection of portfolio. CAPM.

Discrete models for finance: model of Cox Ross e Rubinstein.

From CRR to Black Scholes model.

Volatility.

Black Scholes formula for pricing.

Introduction to models with stochastic volatility.

Simulation and Monte Carlo methods for finance.

Introduction to risk measures:

Value at Risk (VaR).

Coherence axioms.

Expected Shortfall (ES)

VaR and ES and diversification of portfolio.

Statistical software R will be used:

<http://www.r-project.org/>

References

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[3] P. Embrechts, R. Frey, A. McNeil, Quantitative Risk Management, , Ed. Princeton University Press

[4] Hull, C. J. Opzioni, futures e altri derivati. Pearson Prentice Hall, 2009

[5] Hull, C. J. Fondamenti dei mercati di futures e opzioni. Pearson-Prentice Hall, 2005

[6] Glasserman P. Monte Carlo Methods in Financial Engineering. Springer, 2003.

[7] Ross, S. M. Stochastic processes, second ed. Wiley Series in Probability and Statistics: Probability and Statistics. Wiley & Sons, New York, 1996.

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[9] Stanghellini, E. Introduzione ai metodi statistici per il Credit Scoring . Springer Italia, 2009.