**Computational finance (Paolo Brandimarte)**

**Aim**

In this short course, we illustrate and compare the application of different numerical methods to pricing European- and American-style options. The ideas we apply can be adopted to other financial problems, like risk measurement and policy evaluation. We use MATLAB as the environment of choice.

**Content**

* Discretization of stochastic processes.
* Option pricing by lattices and trees.
* Option pricing and risk measurement by Monte Carlo methods.
* Variance reduction and low-discrepancy sequences.
* Option pricing by finite differences.

**Bibliography**

* P. Brandimarte *Numerical Methods in Finance and Economics: A MATLAB-Based Introduction* (2nd ed.). Wiley, 2006.
* P. Brandimarte. *Handbook in Monte Carlo Simulation: Applications in Financial Engineering, Risk Management, and Economics*. Wiley, 2014.