INTEGRATED MASTER PROGRAM (IMP)

MEP Master of Economics and Politics
MF Master of Finance
MIE Master of Internet Economics

Course title	Computational Finance		
Instructors	JProf. Dr. Eva Lütkebohmert-Holtz Dr. Ernst August Frhr. v. Hammerstein	Semester	2nd
ECTS (credit points)	4	Contact hours (SWS)	2
Prerequisites	Principles of Finance Futures and Options (desirable)		
Learning target/ qualification	Introduction to the R programming environment and its application to calculate and visualize option prices, loss distributions, and risk measures.		
Content	In this course we first give a concise introduction to the R programming environment. With help of the provided tools, we then develop some programs for pricing vanilla options in binomial trees and exotic options via Monte Carlo methods. We also regard some aspects of hedging and convergence in this context. Further we discuss the implementation of risk measures and the sampling of loss distributions in elementary credit risk models.		
Exam type	90 min. written examination at the end of the semester		
Literature	Hull, J.C.: *Options, Futures, and other Derivatives*, 7th ed., Prentice Hall, 2009 Lai, T.L., Xing, H.: *Statistical Models and Methods for Financial Markets*, Springer, 2008 Seydel, R.U.: *Tools for computational finance*, 4th ed., Springer, 2009 Any introductory book to the R program, e.g. Braun, J., Murdoch, D.J.: *A first course in statistical programming with R*, Cambridge University Press, 2007 See also the documentation on the official R homepage		
Additional Information & Links	http://www.prim.uni-freiburg.de/lehre/ss-2012/computational-finance http://www.r-project.org/ (official R homepage)		