ECS550NFB Introduction to Numerical Methods using Matlab

Norwegian School of Economics

Date: 08.-12. June, 2015

Registration:
NHH PhD students can register by sending an email to phd@nhh.no. Non-NHH PhD students should send in a completed form where they apply for visiting status (“hospitant status”) for Introduction to Numerical Methods using Matlab (ECS550NFB). The form can be found at: http://www.nhh.no/no/studentsider/skjema.aspx.

For questions concerning participation or other administrative issues, please contact Dagny Kristiansen, department of Economics, NHH, email: dagny.kristiansen@nhh.no. The course is organized by prof. Fred Schroyen, NHH.

Description:
A brief introduction to a broad class of computational techniques to handle various challenges within Micro/Macroeconomics, Econometrics and Finance. Numerous examples will be presented along the way. The focus is on understanding the methods as well as on practical implementation.

Lecturer:
Dr. Lukas Laffers, Department of Mathematics, University of Matej Bel

Learning outcomes and competence:
After successfully completing the course students should be familiar with high-level programming in Matlab and have a solid overview of the main numerical methods used in economics and finance. Successful candidate will be acquainted with a broad portfolio of useful numerical methods and will understand their scope as well as their limitations.

Topics:
Introduction to Matlab Programming, Basics of Numerical methods, Selected topics within areas of Micro/Macroeconomics, Econometrics and Finance.
Schedule (tentative):

- Tuesday: (Numerical methods) Convex Optimization - Constrained / Unconstrained optimization, Linear Programming, Globally Convergent Optimization Methods
- Wednesday: (Macroeconomics) Newton Raphson method, Numerical Integration, Deterministic Dynamic Programming, Introduction to Dynare (software platform for handling DSGE and OLG economic models)
- Thursday: (Econometrics) Monte Carlo, Bootstrapping and Subsampling, Simulation based Inference, Cross-validation, Non-parametric Estimation
- Friday: (Microeconomics and Finance) Nash Equilibria in Multi-Player Games, Introduction to Derivatives' pricing.

Prerequisites:
Students should be familiar with intermediate level calculus, introductory statistics and basic econometrics.

Literature:
Selected parts of advanced textbooks:

Requirements for course approval:
Students with satisfactory performance in four assignments (Pass/Fail) will receive 5ECTS credits.

Computer Tools:
MATLAB