Syllabus

Computational Economics

Responsible:

Prof. Dr. Hans Fehr, Chair of Public Finance

Program:	**Type:**	**Term:**	**ECTS:**
Bachelor	Lecture & Exercise	Summer	5/6 CP

Contents & Objectives

This course introduces the numerical implementation of economic models. Students will first learn how to program in FORTRAN and to apply numerical methods for solving linear and non-linear equation systems. These methods are then applied in three areas: tax policy analysis with static general equilibrium models, portfolio choice analysis and option pricing, life-cycle decision making and overlapping generation models.

After finishing this course student are able to
(1) implement simple economic models on the computer using Fortran 90
(2) using Monte-Carlo techniques to find optimal portfolio structures and option prices,
(3) simulate simple reforms of the tax and transfers system,
(4) interpret the simulation results economically.

Prerequisites:

Students should bring along a strong willingness to specialize in programming (which implies that they will program a lot themselves).

Course Structure:

Week	**Content**
1-3	Introduction to Fortran 90:
4-5	Numerical solution techniques
6-7	Static general equilibrium analysis of tax policy
8-9	Optimal portfolio allocation and option pricing
10	Life-cycle model
11-12	Overlapping generations (OLG) model for savings and pension policy analysis

Literature: Hans Fehr and Fabian Kindermann (2018): Introduction to Computational Economics using Fortran, Oxford University Press.

Lecture notes will be provided to students.

Grading:

Grading will be based on the points reached in the six assignments which will be prepared by groups of not more than three students during the exercise classes. Tutors will help to prepare the assignments during the classes. Students have to explain their code to the tutors upon submission.

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