

Syllabus

Advanced Computational Economics			
Responsible:			
Professor Hans Fehr, Chair of Public Finance			
Program:	Type:	Term:	ECTS:
Master	Lecture & Exercise	Summer	5
Contents & Objectives:			
<p>This course provides students with state of the art techniques for quantitative macroeconomic research. They will learn the most prominent models in this field and familiarize with the relevant literature. Ideally at the end of the course, they will be able to develop their own ideas and conduct their own policy analysis using the techniques acquired. The course will consist of a series of lectures and exercise classes. The teaching sequence is divided into three parts:</p> <p>First, students will review programming in FORTRAN and applying numerical methods. Note that it is expected here that students have already some programming skills.</p> <p>The second part will be concerned with solution techniques to dynamic programming problems and will introduce the basics of the Ramsey model and the RBC model.</p> <p>In the last part focusses on reliable policy analysis in the stochastic life cycle model and the overlapping generations (OLG) model. Here we discuss recent literature that applies these models to analyze public policy reforms.</p>			
Prerequisites:			
<p>Students that attend this course should know about basic macroeconomics. As already said, some programming skills are required for this course. The BA course "Computational Economics" would be perfect, but also some background in Matlab or C++ programming is fine. In addition, they should bring along a strong willingness to specialize in programming (which implies that they will program a lot themselves).</p>			
Course Structure:			
Week	Content		
1-2	Introduction to FORTRAN 90		
3-4	Numerical solution techniques		
5-7	Introduction to dynamic programming		
8-9	Dynamic Macro I: Infinite horizon models		
10-11	Stochastic life cycle models		
12	Dynamic Macro II: Stochastic OLG model		
<p>Literature: Hans Fehr & Fabian Kindermann (2018): Introduction to Computational Economics using FORTRAN, Oxford University Press.</p> <p>Lecture notes will be provided.</p>			
Grading:			
<p>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.</p>			
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