

Master of Economics

Lecture Title:	Computational Methods		
Lecturer:	Tamás Papp		
Lecture Code:	017 903	ECTS:	3
Term:	September 2013	Contact hours:	20
Lecture Dates:	Sept 2 nd – 20 th , 2013		
Final Exam:	Sept 24 th , 2013	Frequency of lecture:	5 times per week
Prerequisites:			
Language of instruction:	English		
Contact information	Tamás Papp Institute for Advanced Studies Room A 309 Stumpergasse 56 1060 Wien		
	Telephone: 147	Email: tpapp@ihs.ac.at	
Office hours	By appointment		
Course website			
Learning Objectives: (What are the intended learning outcomes? Which skills will be acquired?)	General programming concepts and skills. Basic numerical techniques (solving linear and nonlinear equations, optimization, numerical integration etc), especially those that are used in economics.		
Content: (Which professional competence and which contents will be imparted?)	• Basics of computer programming, introduction to the R programming language. • Numerical differentiation, errors in floating point arithmetic. • Numerical linear algebra. • Nonlinear constrained and unconstrained optimization, univariate and multivariate methods. • Nonlinear systems of equations. • Numerical integration. • Function approximation. Various economic applications, including: computation of steady states, solving deterministic and simple stochastic models.		
Teaching Approach: (Description of the learning and teaching methods)	Lecture and group work		

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Workload: (Definition of workload (ECTS), divided in pre-modules (e.g. pre-readings), core-modules (contact hours), post-modules (e.g. case studies)):	
Required literature: (scripts, books, articles, cases, papers)	- Mario J. Miranda and Paul L. Fackler: Applied Computational Economics And Finance; Chapters 1–6 - Class notes - Software: only free software is used, available from www.r-project.org
Recommended literature: (books, articles, cases, papers)	Kenneth L. Judd: Numerical Methods in Economics; Chapters 1–7
Special features: (e.g. excursion, guest speaker):	
Mode of examination: (Mode of examinations and tests (e.g. oral or written examination, lecture, homework, papers, class participation)):	- Homeworks (cooperation is encouraged) <i>Midterm</i> and <i>final</i> examination Students are reminded that the use of somebody else's computer code without proper referencing is considered plagiarism and can lead to expulsion from the program.
Grading:	- Homeworks (20%) - Midterm examination (30%) - Final examination (50%) Cooperation is encouraged for homeworks, but students are required to give credit for help that they have received from a classmate, who may be awarded extra points.