M.Sc. Economics

Code:	017 905	**Type:**	MSc 2010 – 2012 2nd year, fall 2011

Title:	Dynamic Optimization II

Lecturer:	Michael Reiter

ECTS:	3	**Contact hours (per semester):**	10

Semester:	Fall 2011	**Frequency of the lecture:**	Once a week

Dates:	Sept 29 – Dec 1, 2011

Prerequisites:	Dynamic Optimization I

Learning objectives (What are the intended learning outcomes? Which skills will be acquired?):

The course will cover both the theory of dynamic programming and the practice of numerical dynamic programming. At the end of the course, the student should be able to solve, theoretically or numerically, the dynamic optimization problems that arise in economics. In addition, we deal with linearizations of dynamic systems around the steady state.

Content (Which professional competence and which contents will be imparted?):

Theory of dynamic programming

- Contraction property and convergence
- Stochastic Euler equations.
- Convex dynamic programming..

Numerical dynamic programming

- Iteration in value space and in policy space.
- Discrete methods
- Continuous approximations to the value function.
- Carroll's method of endogenous grid points.

Linearization around the steady state

- Theory
- Computer implementation: Sims' method

Applications

- Dynamic model of household labor supply
- Derivative pricing

Teaching approach (Description of the learning and teaching methods):

Lecture and group work.

Workload (Definition of workload (ECTS), divided in pre-modules (e.g. pre-readings), core-modules (contact hours), post-modules (e.g. case studies)):

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Language of instruction (Information on the language of teaching):

English

Obligatory literature (E.g. scripts, books, articles, cases, papers):

Daron Acemoglu: *Introduction to Modern Economic Growth*, Chapters 6 and 16
Christopher Carroll: *Solving Microeconomic Dynamic Stochastic Optimization Problems*
Christopher Sims: Solving Linear Rational Expectations Models

Additional literature (E.g. books, articles, cases, papers):

A detailed list will be provided in the course.

Mode of examination (Mode of the examinations and tests (e.g. oral or written examination, lecture, homework, papers, class participation):

The grade will be based on a combination of homework and individualized programming project and a written final exam.

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:

- Homework (20%)
- Programming project (30%)
- Final examination (50%)

Special features (E.g. excursion, guest speaker):

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Contact information:	**Office hours:**
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Course website:

http://ihs.ac.at/~mreiter/cm.html and https://cecnet.tuwien.ac.at/