

MASTER OF SCIENCE IN WEALTH MANAGEMENT

MAÎTRISE UNIVERSITAIRE EN GESTION DE PATRIMOINE

DYNAMIC METHODS IN ECONOMICS (S403100)

M. Carlo GHIGLINO

6 ECTS

Semester: Autumn

Teaching language: English

Objective

This course will provide an overview of dynamic systems and their application in economics. The first part is dedicated to discrete systems (difference equations), while the second part is concerned with continuous systems (differential equations).

Description

Dynamic equations in discrete time (Difference Equations)

Linear First-Order Difference Equations : General Solution, Steady State and Convergence

Nonlinear First-Order Difference Equations: Phase Diagram

Economic applications

Second-Order Linear Difference Equations

Simultaneous Systems of Linear Difference Equations

Simultaneous Systems of Nonlinear Difference Equations

Economic Applications

Dynamic Equations in continuous Time (Differential Equations)

Linear First-Order Differential Equations : General Solution, Steady State and Convergence

Nonlinear First-Order Differential Equations: Phase Diagram

Economic applications

Simultaneous Systems of Linear Differential Equations

Simultaneous Systems of Nonlinear Differential Equations

Economic Applications

Dynamic Optimization in continuous time

Optimal Control Theory (Maximum Principle, Hamiltonian)

Calculus of Variations

Bibliographie

Gandolfo, G. (1997), Economic Dynamics, Berlin, New York, Springer-Verlag.

Simon, C.P. and L. Blume (1994), Mathematics for Economists, New York, London, W.W. Norton

Assessment

Written exam

A partial exam can be taken during the semester. The bonus thus obtained will be added to the grade obtained for the final exam