UCL Faculté des sciences économiques, sociales et politiques

ESPO

ECON3340 Dynamical Methods in Economics

[30h]

Teacher(s): Raouf Boucekkine, Raouf Boucekkine (supplée null)
Language: english
Level: 3rd cycle course

Aims

This course is designed to provide the principal mathematical tools needed to properly handle the dynamic problems arising in economic modelling. Through a large set of applications to several economic disciplines (principally macroeconomics and finance), it is also aimed at discussing and clarifying the concepts and meth-ods' foundations as they are traditionally used in economics in order to come out with a unified rigorous ap-proach to dynamic economic systems.

Main themes

The course surveys and discusses a wide range of solution and stability methods on either discrete or continuous time deterministic and stochastic systems. It starts with differential and difference equations and then extends the analysis to systems of equations. Stochastic difference equations and systems are also studied. Existence and uniqueness theorems are stated for each class of systems. Stability and bifurcation methods are developed along the way. The last part of the course in devoted to the three branches of dynamic optimization (calculus of varia-tions, optimal control and dynamic programming) with several economic applications.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisite : Undergraduate mathematics courses
Evaluation : Written closed book exam
Support : Gondolfo S., Economic Dynamics, Springer-Verlag, 1988
Chiang A., Elements of Dynamic Optimization, McGraw-Hill, 1992.

Other credits in programs

ECGE3DA/EC Diplôme d'études approfondies en économie et gestion - Master(3.5 credits)
of Arts in Economics (sciences économiques)