UCLouvain

lecon2500

2026

Mathematics and Statistics for Economics

5.00 credits	30.0 h	Q1

This learning unit is not open to incoming exchange students!

Teacher(s)	Oikonomou Rigas ;Van Bellegem Sébastien ;
Language :	English
Place of the course	Louvain-la-Neuve
Prerequisites	Basic background in mathematics
Main themes	For the mathematics part, the themes of matrix algebra, functions, optimization, and difference/differential equations. For the statistics part: multivariate distributions and related concepts. The two parts are linked in particular by matrix algebra.
Learning outcomes	**At the end of this learning unit, the student is able to :** 1 The purpose is that students learn the most important mathematical and statistical tools needed for advanced courses in macroeconomics, microeconomics and econometrics. The course serves mostly to refresh students' knowledge in certain topics, and to ensure that all students taking the advanced courses have a common mathe-matical and statistical level.
Evaluation methods	STATISTICS is evaluated continuously, 3 to 4 times during the semester. MATHEMATICS : written exam during session
Teaching methods	Methods: Lectures and home works
Content	**MATHEMATICS** Matrix algebra (inverse, rank, derivatives, eigenvalues, diagonalization and factorization, quadratic forms). Met-ric and topological spaces, vector spaces. Real functions on Rn (continuity, concavity, differentiability, Taylor expansion, mean value theorem, implicit function theorem). Static optimization (constrained and uncon-strained). Difference and differential equations (steady states, stability). **STATISTICS** 0. Idealized statistics versus constructive analysis 1. Databases 2. Operations on a database 3. Conditional expectation 4. Introduction to induction
Bibliography	STATISTICS : Errett Bishop (1967). *Foundations of Constructive Analysis* . New York: McGraw-Hill. Andrei N. Kolmogoroff (1933). *Grundbegriffe der Wahrscheinlichkeitsrechnung* . Ergebnisse der Mathematik und ihrer Grenzgebiete, Band 2, Heft 3. Berlin: Julius Springer.
Faculty or entity in charge	ECON

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Economics: Econometrics	ETRI2M	5		
Master [60] in Economics : General	ECON2M1	5		
Master [120] in Economics: General	ECON2M	5		