Course Descriptions Bachelor 2013-2014

Course Title	Quantitative Methods III (IES)
Course Code	EBC2011
ECTS Credits	6,5
Assessment	None

Period

Period	Start	End	Mon	Tue	Wed	Thu	Fri
1	2-9-2013	25-10-2013			L	X/E	X/E

Level	Intermediate
Coordinator	Hans de Graaff For more information:h.degraaff@maastrichtuniversity.nl
Language of instruction	English
Goals	Learn advanced optimisation techniques and apply them to economic problems. Understand the concept of integral and learn some integration techniques. Learn how to solve some simple discrete as well as continuous dynamic systems and to analyse equilibrium points. Learn advanced multiple regression techniques. Learn some univariate as well as multivariate time series techniques. Apply multiple regression and time series techniques to economic problems using statistical software.
Description	The course QM3 is a continuation of the first year Economics course QM2 and contains mathematical and statistical subjects. The mathematics part will summarize and complete the subject-matter concerning static optimisation of functions. Additional techniques will be considered to optimize a nonlinear function with inequality constraints. Besides, we will study the subject of dynamic systems. Here, functions and relations depend on the time variable. In mathematics the basic elements of dynamics are difference and differential equations, which will be introduced. Applications can be found in macro-economics and the theory of economic growth. Closely related to differential equations are integrals, to which we will pay some attention as well. The statistics part of QM3 digs deeper into the regression model, already introduced in QM2. We will provide a more formal treatment of the regression model, while also introduce a number of new topics, including the problem of omitted variables bias, the testing of general linear parameter restrictions, and the large-sample (asymptotic) properties of regression. Most attention is devoted to the analysis of cross-section data. At the end, we will briefly discuss the analysis of time-series data, which involves a number of new and thorny problems. Unlike in QM2 where we studied assignments based on given Excel output, the emphasis will now be on active empirical assignments. You will generate empirical results by yourself, using the statistical package Eviews, which is used extensively in the economics profession and offers a wealth of features not available in Excel.
Literature	Mathematics: Sydsæter, Knut, and P. Hammond (2012), Essential Mathematics for Economic Analysis, 4th ed. Pearson Education, Harlow. Vermeulen, D. and H. de Graaff, Syllabus Dynamic Models. Statistics: Jeffrey M. Wooldridge (2013), Introductory Econometrics: a modern approach, 5th ed., Thomson South-Western.
Prerequisites	The courses Quantitative Methods I (EBC1005/1006/1007) and Quantitative Methods II (EBC 1033/1034/1035), taught at the University of Maastricht. In particular the following subjects should have been mastered: Mathematics: exponential and logarithmic functions, (partial) derivative and rules a.o. chain rule, optimisation of functions of one and two variables, Lagrange. Statistics: random variable, probability distributions, confidence interval, hypothesis testing, linear regression. An advanced level of English.
Teaching methods	PBL / Lecture / Assignment
Assessment methods	Participation / Written Exam
Evaluation in previous academic year	For the complete evaluation of this course please click http://iwio-sbe.maastrichtuniversity.nl/rapporten.asp?referrer=codeUM

This course belongs to the following programme / specialisation

Bachelor Economics and Business Economics Specialisation Economics and Management of Information	QE Electives
Bachelor Economics and Business Economics Specialisation International Economic Studies	Compulsory Courses
SBE Exchange Bachelor	Bachelor Courses
SBE Exchange Master	Bachelor Courses
SBE Non Degree Courses	Bachelor Courses