

Course Descriptions Exchange 2020-2021

Course Title Quantitative Methods III (IES)
 Course Code EBC2011
 ECTS Credits 6,5
 Assessment Whole/Half Grades

| Period | Start | End | Mon | Tue | Wed | Thu | Fri |
|--------|-----------|------------|-----|-----|-----|-----|-----|
| 1 | 31-8-2020 | 16-10-2020 | | | L | X | X |

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 PLEASE NOTE THAT THE INFORMATION ABOUT THE TEACHING AND ASSESSMENT METHOD(S) USED IN THIS COURSE IS WITH RESERVATION. THE INFORMATION PROVIDED HERE IS BASED ON THE COURSE SETUP PRIOR TO THE CORONAVIRUS CRISIS. AS A CONSEQUENCE OF THE CRISIS, COURSE COORDINATORS MAY BE FORCED TO CHANGE THE TEACHING AND ASSESSMENT METHODS USED. THE MOST UP-TO-DATE INFORMATION ABOUT THE TEACHING/ASSESSMENT METHOD(S) WILL BE AVAILABLE IN THE COURSE SYLLABUS.
 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:
 Vermeulen, D. and H. de Graaff, Syllabus Dynamic Models and Syllabus Optimization.
 Jansen, M. and H. de Graaff, Syllabus Integration.

Statistics:
 Jeffrey M. Wooldridge, Introductory Econometrics: a modern approach, 5th ed. or higher, Thomson South-Western. ISBN : 9781111534394 (also as eBook, see www.cengagebrain.co.uk).

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

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|---|---|
| Bachelor Economics and Business Economics - Economics | Year 2 Compulsory Course(s) |
| Bachelor Economics and Business Economics - Emerging Markets | Year 2 Elective Course(s) |
| Bachelor Economics and Business Economics - Emerging Markets | Year 3 Elective Course(s) |
| Bachelor Economics and Business Economics - Economics and Management of Information | Year 2+3 Quantitative Economics Elective(s) |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj Accounting |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj Finance |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj Inf Mgmt |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj Marketing |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj Org |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj SCM |
| Bachelor Economics and Business Economics - International Business Economics | Year 3 QE Elec(s) - Maj Strategy |
| Bachelor International Business - Emerging Markets | Year 3 Elective Course(s) |
| Bachelor International Business | Year 3 QE Elec(s) - Maj Accounting |
| Bachelor International Business | Year 3 QE Elec(s) - Maj Finance |
| Bachelor International Business | Year 3 QE Elec(s) - Maj Inf Mgmt |
| Bachelor International Business | Year 3 QE Elec(s) - Maj Marketing |
| Bachelor International Business | Year 3 QE Elec(s) - Maj Org |
| Bachelor International Business | Year 3 QE Elec(s) - Maj SCM |
| Bachelor International Business | Year 3 QE Elec(s) - Maj Strategy |
| SBE Exchange Bachelor | Bachelor Exchange Courses |
| SBE Exchange Master | Bachelor Exchange Courses |
| SBE Non Degree Courses | Bachelor Courses |