Course Descriptions Bachelor 2016-2017

Course Title	Quantitative Methods I
Course Code	EBC1007
ECTS Credits	6,5
Assessment	Pass / Fail

Period

Period	Start	End	Mon	Tue	Wed	Thu	Fri
1	5-9-2016	28-10-2016	L	X		L	X

Level	Introductory
Coordinator	Dirk Tempelaar For more information:d.tempelaar@maastrichtuniversity.nl
Language of instruction	English
Goals	Active mastery and knowledge of basic mathematical and statistical techniques.
Description	QM I is the first introduction to methodological topics that are quantitative in nature: mathematics, statistics and computer science. In mathematics, we will repeat and extend students' knowledge about functions and equations. Questions that play a role in this course are: How to translate a given problem into a mathematical model? Most of these problems are questions for a maximum or minimum value or for the significance of the problem - mathematically, the existence of a solution. How to find maximum and minimum values of a function of 1 and 2 variables? We will make use of derivatives and partial derivatives in order to formulate equations and conditions for extreme values. In statistics, we will focus on the following topics: Methods of Data collection, and types of data; Descriptive statistics: describing important characteristics of populations or samples by numerical methods as mean, median, mode (measures of central tendency) and variance and standard deviations (measures of spread), and by graphical methods, like a histogram, bar chart or Box-and-Whiskers display; Probability theory, as an introduction to random variables; Discrete random variables and the most important discrete probability distribution: the Binomial distribution; Continuous random variables and two continuous probability distributions: the Uniform and the Normal distribution; Sampling distributions, as a first step to the topic that will prevail the QM statistics agenda from now on: inferential statistics, or inductive reasoning. Understanding why large samples provide so much more information than small samples is an important element of this first step. The construction of confidence intervals in estimating unknown population parameters and Hypothesis testing in the simplest case of one population, and concepts as null and alternative hypothesis, type I and type II errors and the p-value of a hypothesis test. With regard to computing skills, training will be offered in several of the applications that are relevant for your study, and the assignments and projects you are expected to perform. Examples of such applications are: Windows, Word, Internet Explorer, Outlook (Email), Excel (spreadsheet), and the Blackboard, electronic learning environment. The main aim of QM I is to achieve that all students, irrespective of their prior education, master the topics mentioned above, and in addition to that, master these topics in an active rather than passive manner. Practical work in different formats, like e.g. projects, will serve that last aim. The aim to level off prior quantitative knowledge of all incoming students implies that required efforts to pass this course will vary with your prior mathematical education. Students that did not have math as a major subject in their secondary education are advised to take summer classes in advance. SUBJECT TO CHANGE
Literature	Sharpe, Norean D., De Veaux, Richard D., & Velleman, Paul F. (2015), Business Statistics, 3rd ed., New York: Pearson Education International. ISBN-10: 0321925831. ISBN-13: 9780321925831. In a bundle with: MyStatLab Student Access Kit. Vermeulen, Dries and de Graaff, Hans: Mathematics for Quantitative Methods I, reader together with the SOWIESO e-Learning tool.
Prerequisites	Math secondary school at "minor" level.
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 Fiscal Economics	Year 1 Compulsory Courses