Course Outline

Course number	RBA201				
Course title	Mathematics for Social Sciences				
Credit points	3 ECTS (2 CP)				
Total hours	30				
Lecture hours	15				
Seminar and other hours	15				
Course level	Bachelor				
Prerequisites	None				
Category	**Mandatory**	**X**	Restricted elective		Free elective

COURSE RESPONSIBLE

Name	*Academic degree*	*Academic position*
Prof. Dr. Dr. h.c. Dirk Linowski	PhD	Lecturer

COURSE ABSTRACT

The course covers the basic mathematical processes and techniques currently used in the fields of business and finance. It intends to provide the basic skills of linear algebra as of calculus such that the student is enabled to treat linear equation systems and to formulate and solve simple optimimization problems.

COURSE OBJECTIVES

Presenting mathematics as a tool to describe economic, financial and social trends in an effective and universally accessible way;

Providing students the analytical skills in order to comfortably approach the study of formalised disciplines such as Microeconomics, Macroeconomics, Business and Finance;

GRADING CRITERIA

Criteria	Weighting
Exam	100%

COURSE PLAN – MAIN SUBJECTS

No.	*Main subjects*	*Planned hours*
1	Algebra	5
2	Equations	5
3	Vectors and Matrices and applications with Excel	6
4	The Nature of optimization problems	4
5	Univariate Calculus	6

| 6 | Multivariate calculus | 2 |
| 7 | Anti-Calculus | 2 |

COURSE PLAN – SESSIONS

Session	Session subjects and readings	Lecture/seminar
1	Numbers, operations, integer powers, rules of algebra	L/S
2	Fractions, percentages, fractional powers, intervals and absolute values	L/S
3	Simple equations, parameters, quadratic equations	L/S
4	Linear and non-linear equations	L/S
5	Revision, Q&A	L/S
6	Vectors and matrices: definitions and operations	L/S
7	Quadratic matrices, inverse matrices, determinants	L/S
8	Solving equation systems with MS-Excel	L/S
9	Intro optimization: Restricted vs. unrestricted problems	L/S
10	Lagrange multipliers. An example of a non-linear problem solved with MS-Excel	L/S
11	Sequences, series and functions	L/S
12	Derivatives of univariate functions, minima and maxima	L/S
13	Derivatives of multivariate variate functions	L/S
14	Intro Anti-Calculus	L/S
15	Exercise Anti-calculus, Q&A	L/S

COURSE LITERATURE

No.	Author, title, publisher
1	K. Sydsæter, P. Hammond, "Essential Mathematics for Economic Analysis", Pearson 2012