

SUBJECT: **Mathematics**

HOURS: 30 lecture +30 classes

ECTS:6

Name/title of the author:	Marta Kornafel, PhD
Course Description:	This course covers the standard topics of higher mathematics, including basic concepts and techniques of linear algebra and calculus. The course is focused on applications of the presented theory to practical economic problems.
Learning Outcomes (Goals and Objectives of the course):	<ol style="list-style-type: none">1. To provide students with basic concepts and techniques of higher mathematics, including basic concepts and techniques of linear algebra (matrices, determinants, simultaneous equations) and calculus (limits, derivatives, investigation of function, integration, functions of several variables).2. To transfer knowledge and skills in linear algebra and mathematical analysis and their applications to the simple economic models and investigation.3. To develop the ability of abstract and critical thinking, and of drawing the logical conclusions.
Entrance qualifications:	Knowledge and skills from standard school mathematics, in particular: <ul style="list-style-type: none">• arithmetic operations and algebraic manipulations,• graphs and properties of elementary functions (linear, quadratic, polynomials, rational, logarithmic, exponential),• solving of elementary equations and inequalities (listed above).
Course Content:	<ol style="list-style-type: none">1. Elements of logic and set theory2. Relations and mappings3. Metric space and sequences4. Calculus of function of one variable (limit, continuity, derivative with applications, economic applications)5. Integral calculus (indefinite and definite integrals, improper integrals, applications in economics).6. Algebra of matrices7. Systems of linear equations8. Input-output analysis9. Functions of several variables (relative and constrained extrema, the least squares method, economic applications)
Assessment policy (examination):	Classes: middle-semester tests + activity Lecture: final exam (descriptive+test) Final grade is the weighted arithmetic mean of the results from classes and final exam.
Course materials/bibliography:	<ol style="list-style-type: none">1. Handouts delivered by lecturer2. Anthony M., Biggs N., <i>Mathematics for Economics and Finance: Methods and Modelling</i>, Cambridge University Press 19963. Binmore K., Davies J., <i>Calculus: Concepts and Methods</i>, Cambridge University Press 2002
Methods of Instruction:	Lectures, problem sessions, e-learning