# DESCRIPTION AND SYLLABUS

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| Name of the subject in Hungarian: | Calculus for Business and Economics |
| Name of the subject in English: | Calculus for Business and Economics |
| Credit value of the subject: | 7 |
| The code of the subject in the electronic study system: | BN-CALBEC-07-KG |
| Classification of the subject: | Obligatory |
| Language of instruction (in case of non-Hungarian courses): | English |
| Institute or department responsible for the subject: | Institute of Methodology |
| Course type and number of contact hours: | Lecture + Practical, class per week: 2+2, class per semester: 0+0 |
| Mode of study: (Full-time / Part-time): | Full-time training |
| The semester in which the subject is open for registration: | 2022/2023 1st semester |
| Prerequisite(s): | - |

## THE PURPOSE OF THE SUBJECT, LEARNING OUTCOMES:

The basic purpose of the course unit is that the students can recognize, understand the elementary rules and correlations of mathematical concepts, and apply them in their everyday life to make fertile decisions, construct analyses and produce valuable ideas. To achieve these skills, the primary goal is to ensure friendly and inspirative atmosphere, different level of problems designed to individual competences as well as modern computational environment using multiplex mathematical softwares.
Students finishing the course will be able to explain, distinguish, and analyze the outcome of particular quantitative problems. Moreover, various optimization problems, trends between certain variables, and probabilities of dependent or independent events will be included in their portfolio.

## SUMMARY OF THE CONTENT OF THE SUBJECT

We would like to strength the students' ability to solve quantitative problems in business and economics by using freely available software packages (GeoGebra, Photomath, WolframAlpha, etc.). The main topics to be covered: analysis of single and bi-variate functions, limits, extrema, and area. Optimization: graphical and computational study of various optimization problems such as routing, sullpy chain management, critical path analysis, scheduling. Tha basics of probability theory: sampling design, Bernoulli trials, conditional probabilities, Bayes' rule, mathematical paradoxes.

## STUDENT'S TASKS AND PLANNED LEARNING ACTIVITIES:

The students are active members of the class. During the lectures there are online quiz questions. Thus students knowledge at these games will be beneficial at the final test. Seminars involve individual and team work as well. The students should solve different problems by using the methods learnt before or creating they own situation that fits to a specific matharmatical problem.

## EVALUATION OF THE SUBJECT:

The evaluation of the course unit is based on gamification method. This includes the continuous activity during the semester as well as the completion of the assigned works and mid-term exams. The students might get extra points by participating in the online voting quiz at lectures.
At the seminars, the maximum score is 50 pts from which 10 pts can be achieved by assigned work at the classes and 20-20pts at mid-term exams. Minimal level is 25 pts.
The lecture ends with an end-term exam for 30 pts. 20 pts can be realized during the lectures week after week by submitting home work. Extra points can be obtained by participating the

KAHOOT quiz. Students must have at least 25 pts to have a successful semester.
The final result consists the points from seminars and lectures and the grading is as follows

       0-49 pts fail (1)
       50-62 pts pass (2)
       63-75 pts satisfactory (3)
       76-88 pts good (4)
       89-100 pts excellent (5)

Students having outstanding results at the end of the semester might get an evaluation in written format that could be part of her/his portfolio.

Offered grade can be given: No.

**OBLIGATORY READING LIST:**

- Jacques, Ian,: *Mathematics for economics and business.* , 2015
- Mendenhall, William: *Introduction to probability and statistics.* Brooks/Cole, Cengage Learning, 2009
- Jacques: Mathematics for Economics and Business, 5 Ed, Prentice Hall, 2006

**RECOMMENDED READING LIST:**

- Huettenmueller, Rhonda: *Precalculus demystified.* McGraw-Hill Professional, 2012
- A. Bluman: Business Math Demystified, McGraw-Hill Education, 2006