Subject name: **Probability Theory**

Lecturer: Dr. Mátyás Barczy
Subject code: MMNKEN61E and MMNKEN61G (MMNK61E and MMNK61G)
Semester: 2
Course type: Lecture+Practice
Number of class/week: 3+2
Subject credit: 7
Prerequisites: -
Requirement: Exam+ Lecturer's signature

Method of teaching:

Lecture's schedule: Friday 8-11, Vályi Gyula room, Bolyai Institute.
Practice's schedule: Friday 12-14, Vályi Gyula room, Bolyai Institute.

Assessment, method of examination:

The lecture part and practice part can be completed only together, i.e., it is not possible to complete only the lecture part or only the practice part.

Requirements for completing the course:

- There will be two midterm tests during the semester. The first test will be on 14th March 2024, and the second one will be on 23rd May 2024. Both tests start at 12:00 and end at 13:40. Anyone can retake or make up for only one of the two tests at the first week of the exam period. Note that if you retake any of the tests, then your original test will no longer count into your final grade. One can get 35 points for the test on 14th March and 45 points for the test on 23rd May, altogether 80 points.

- Everybody will get exercises as homework on 21th March, 2025. The submission deadline is 25th April, 2025. One can get altogether 20 points for the solutions of the exercises.

- The two midterm tests and the homework are altogether maximum 100 points. For students whose points are in the interval [55,65), I offer an examination mark satisfactory (2); whose points are in [65,90), I offer an examination mark average (3); whose points are in [90,100], I offer an examination mark good (4). This way you can be exempted from the exam.

- Those students who do not accept the examination mark offered may take an exam during the examination period. Students who were not offered an examination mark may also take an exam during the examination period. In these cases, the maximum 100 points obtained during the two midterm tests and the

homework will also be counted in their final grade. At the exam one can get 100 points. Altogether one can get maximum 200 points, and the final grade is calculated according to the following table:

fail (mark 1): [0%, 50%),
satisfactory (mark 2): [50%, 60%),
average (mark 3): [60%, 70%),
good (mark 4): [70%, 86%),
excellent (mark 5): [86%, 100%].

Those topics in measure theory that we refer in the Probability Theory course should be known and may be asked in the two midterm tests and at the exam as well.

Lecturer's signature will be given automatically to those students who get at least mark 2 at the exam.

Educational tools, recommended literature:

R. B. Ash: Probability and Measure Theory, 2nd edition, 2000, Academic Press.

K. B. Athreya, S. N. Lahiri: Measure Theory and Probability Theory, 2006, Springer.

Barczy M., Pap Gy.: Valószínűségelmélet (in Hungarian),
URL: https://www.math.u-szeged.hu/~barczy/oktatas_barczy.html

Barczy M., Pap Gy.: Valószínűségelmélet előadáskövető fóliák (in Hungarian),
URL: https://www.math.u-szeged.hu/~barczy/oktatas_barczy.html

M. Barczy, G. Pap: Probability Theory Lecture Slides,
URL: https://www.math.u-szeged.hu/~barczy/oktatas_barczy_angol.html

Barczy M., Pap Gy.: Valószínűségszámítás 2. példatár (in Hungarian),
URL: https://www.math.u-szeged.hu/~barczy/oktatas_barczy.html

P. Billingsley: Probability and Measure, 3rd edition, 1995, John Wiley & Sons, New York.

Bognárné J., Mogyoródi J., Prékopa A., Rényi A., Szász D.: Valószínűségszámítási feladatgyűjtemény, Tankönyvkiadó, Budapest 1971, Typotex, Budapest, 2001.

Csörgő S.: Fejezetek a valószínűségelméletből, 2010, Polygon Kiadó, Szeged.

A. Klenke: Probability Theory, 3rd edition, 2020, Springer.

A. N. Shiryaev: Probability-1, Probability-2, 3rd editions, 2016 and 2019, Springer.