

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: Wednesday 8-11, Vályi Gyula room, Bolyai Institute.

Practice's schedule: Tuesday 8-10, 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 26th March 2024, and the second one will be on 14th May 2024. Both tests start at 8:00 and end at 9:40. Anyone can retake or make up for the tests on 21st May 2024 between 8:00 and 10:00, when you will be given questions from the entire semester. Note that if you retake any of the tests, then your original test(s) will no longer count into your final grade. One can get 60 points for the tests on 26th March and 14th May, and 120 points for the test on 21st May.
- Everybody should make a 15-minutes long presentation on a topic related to the semester's material. The topic of the presentation must be agreed with the lecturer in advance (before the start of the work). One can get 20 points for the presentation. The presentations will take place between 8:00 and 11:00 on 15th May 2024.
- Based on the results of the midterm tests and the presentation (altogether maximum 140 points), each student will receive a mid-semester mark, which may be accepted as an examination mark in case it is good (mark 4) 70--86% or excellent (mark 5) 86--100%.
- Those who do not accept or are not entitled to accept a mid-semester mark as an examination mark may take an exam during the examination period, but the

maximum 120 points obtained during the two midterm tests will also be counted in their final grade. At the exam one can get 120 points. In this case, altogether one can get maximum 240 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,

URL: https://www.math.u-szeged.hu/~barczy/oktatas_barczy.html

Barczy M., Pap Gy.: Valószínűségelmélet előadáskövető fóliák,

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

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.