

Subject information

Subject: Probability and Statistics

Code: BAI0190

Semester: 2023/24/2

Lecturer: Richárd Grünwald

Type: Theoretical and practical

Classes/week: 2+2

Credit: 6

Place and time of theoretical class: D5 University of Nyíregyháza, Monday 12:00 – 13:30

Place and time of practical class: B225 University of Nyíregyháza, Wednesday 12:00 – 13:30

Outline

Event algebra, probability, probability space. Conditional probability, law of total probability, Bayes' theorem, independence of events. Random variables, probability distribution function. Discrete distribution, common discrete probability distributions. Probability density function, common absolutely continuous probability distributions. Expected value, variance, moments. Independence of random variables. Markov- and Chebyshev inequalities. Laws of large numbers, central limit theorem. Statistical sample, sampling. Empirical distribution, empirical distribution function, empirical estimations. Estimation methods: method of moments, maximum-likelihood estimation. Basic concepts of statistical hypothesis testing. Classical tests for parameters of the normal distribution: u -, t -, and F -test. Chi-square tests for discrete goodness-of-fit, homogeneity, and independence testing.

Requirements

Obtaining an exam grade from the course is necessary, which can be achieved during the examination period. However, the grade can also be obtained as an offered grade, which you can get during the semester as follows: the result of **both** optional mid-term tests reaches 20% **and** the average of the two tests reaches 40%. Additional grade thresholds:

	–	39%	fail (1)
40%	–	54%	pass (2)
55%	–	69%	satisfactory (3)
70%	–	84%	good (4)
85%	–		excellent (5).

The first optional test can be taken on April 10, 2024 and the second on May 22, 2024 during the practical class, that is, in room B225 from 12:00 to 13:30. Therefore, those who do not obtain or accept the offered grade must take the exam during the examination period. The dates and locations of the exams will be announced at least three weeks before the end of the semester in Neptun. The above grade thresholds apply to the exams as well. The examiner may deny the opportunity to write the exam to students who cannot prove their identity with a valid photo ID before the exam. Apart from a pocket calculator or a two-line calculator, only aids issued by the examiner can be used during the exam. The test and exam papers may deviate from the sample paper, if any, to any extent.

Ethical standards

For all matters not specifically pointed out by the lecturer, the Code of Studies and Examinations of University of Nyíregyháza is authoritative. It should be stressed that this also applies to the rules on absences from practical classes.

Supporting materials

All materials related to the subject can be found in the *Probability and Statistics - 23/24/2 (BAI0190)* course on Moodle. The enrollment key was sent via Neptun message.

Recommended literature

1. NARAYAN C. GIRI, *Introduction to Probability and Statistics (Second Edition, Revised and Expanded)*, Marcel Dekker, Inc., New York–Basel–Hong Kong, 1993.
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Contacts

Inn hour: B241 University of Nyíregyháza, Monday 9:30 – 10:00
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