Tárgytematika / Course Description
Statistics

MENB_AVTA019

Tárgyfelelős neve / Teacher's name: Dr. Gombkötő Nóra
Félév / Semester: 2024/25/2
Beszámolási forma / Assesment: Vizsga
Tárgy heti óraszáma / Teaching hours(week): 2/2/0
Tárgy féléves óraszáma / Teaching hours(sem.): 0/0/0

OKTATÁS CÉLJA / AIM OF THE COURSE

Studying statistics helps to get objective information. It means acquiring a methodological toolkit that can be used as an experter in science and social science analysis, and in decision-making. Students learn how to evaluate farming phenomena on the basis of figures in agricultural production. They can analyze the environmental factors, and phenomena of rural society and they are able to analyze data generated during the production and testing of food products.

Students will be able to

- extract information from the objective: collect technical and economic information, records and supplies,
- perform analytical tasks by applying statistical methods,
- understand and utilize databasis for decision-making.

TANTÁRGY TARTALMA / DESCRIPTION

Lectures:

1. Introduction to Statistics (what is statistics, importance of statistics, definitions of statistics, key terms, examples of statistical problems, source of data).
2. Descriptive Statistics 1 - Displaying Data (grouping of data and its role in analysis, series and tables: formal, editing information, graphical illustration as a means of cognition, methods of displaying magnitudes, dynamics, compositions, quantitative and territorial distributions, relationships).
3. Descriptive Statistics 2 - Measures of the Center of the Data (mean, median, mode).
4. Descriptive Statistics 3 - Measures of the Spread of the Data.
5. Ratios (calculation of statistical indices; calculation of distribution, dynamic, territorial and intensity ratios and their role in the analysis).
6. Analysis of Time Series (characterization of components of time series; determining the long-term trend with free hand curve method, with moving average method, and with least square method; conclusions based on calculations, prediction).

7. Test 1
8. Sampling (sampling error and non-sampling error, sampling procedure, sampling method).
9. Statisical Estimates (essence of representative observation, its main characteristics, the related analysis of variance).
10. Hypothesis Testing with One Sample
11. Hypothesis Testing with Two Samples
12. F-Distribution and One Way ANOVA (method and role of variance analysis in evaluation of experiments).
13. Linear Regression and Correlation (analysis of stochastic regularities by linear regression analysis for two variables; the process of correlation analysis and short description of applicable methods; measuring relationship between variables with correlation coefficient; testing the significance of the correlation coefficient; prediction).
14. Test 2

Seminars:
Solving the tasks of theoretical material, in all cases the interpretation of the results obtained: the pursuit of the processing (classification) methods, table editing, graphic representation; ratios; mean value; standard deviation; heterogeneous population differentiation; statistical analysis of temporal changes of different phenomena, the implementation of the trend calculation methods; correlation, regression calculations and determinations; sampling; statistical estimates; statistical tests used to evaluate the experimental results, analysis of variance. The processed data are examples of water management, agriculture and environmental factors bind, to help interpret the phenomena of the conclusions.

SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESMENT'S METHOD

Requirement of the signature: attending at least 70% of the seminars or completing and uploading to the Moodle system the solved 'Excerces'.

During the semester, students write two tests that contains key terms and exercises. The topic of the first test is the topic of the first 6 lesson and the topic of the second test is the topic of the second 6 lesson. The final scores are the average scores of the two tests. Students may get recommended grades in this way. In the examination period written exams may be done. The structure of the written exam is very similar to the structure of the test, with the difference that it contains the topic of the whole semester. (Depending on the evolution of the epidemiological situation, the oral exam can also take place online)

KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

Illowsky, B., Dean, S. 2018. Introductory Statistics. Online textbook, OpenStax, Houston https://openstax.org/details/books/introductory-statistics

AJÁNLOTT IRODALOM / RECOMMENDED MATERIAL

Lane, D. M. 2013. Introduction to Statistics: An Interactive eBook. https://books.apple.com/us/book/introduction-to-