

## Tárgytematika / Course Description

### Statistics

MENB\_AVTA019

**Tárgyfelelős neve /**

**Teacher's name:** dr. Mezei Katalin

**Félév / Semester:** 2019/20/2

**Beszámolási forma /**

**Assesment:** Vizsga

**Tárgy heti óraszám /**

**Teaching hours(week):** 2/2/0

**Tárgy féléves óraszám /**

**Teaching hours(sem.):** 0/0/0

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### OKTATÁS CÉLJA / AIM OF THE COURSE

#### 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.

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### TANTÁRGY TARTALMA / DESCRIPTION

#### Lectures:

1. Statistical concepts and subject matter, history and connection to other sciences. Statistical activity.
2. Grouping of data and its role in analysis. Series and tables: formal, editing information.
3. Graphical illustration as a means of cognition. Methods of displaying magnitudes, dynamics, compositions, quantitative and territorial distributions, relationships.
4. Calculation of statistical indices. Calculation of distribution, comparison, performance and intensity ratios and their role in the analysis.
5. The role of mean values. Characteristics of calculated mean values (arithmetic, harmonic, geometric, square), their use in the analysis. Modus, median.
6. The concept of scattering, its judgment, the basic methods and indicators of its measurement. Types of empirical distributions.
7. Methods for measuring the change in production value (value indices) and deductible conclusions.
8. Comparison of multitudes using standardization-based index calculation. Evaluation of the information provided by the indices.
9. Characterization of components of time series. Determining the long-term trend with moving averages and analytic functions. Conclusions based on calculations, extrapolation (forecasting).
10. Types of stochastic relationships. The process of correlation analysis and short description of applicable methods. Measuring the tightness of the relationship between variables with correlation calculation.
11. Analysis of stochastic regularities by regression analysis for two variables (linear and non-linear methods). Calculation (by hand and by machine), deductible conclusions.

12. Essence of representative observation, its main characteristics, the related analysis of variance. Sampling methods, practical solutions. Statistical estimates.
  13. Statistical hypothesis testing. Method and role of variance analysis in evaluation of experiments.
  14. Hungarian statistical legislation and their application in practice. Statistical information system and its operation.
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## **SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESSMENT'S METHOD**

### **Seminars:**

Presentations related to 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; rate; mean value of each type; scattering metrics; heterogeneous population differentiation; practical solution to the index calculation; 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.

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## **KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL**

### **References**

<http://www.statsoft.com/textbook/> - Elektronikus statisztikai tankönyv I.(angol)

<http://davidmlane.com/hyperstat/index.html> - Elektronikus statisztikai tankönyv II.(angol)

<http://www.ksh>