UNIVERSITY OF WARMIA AND MAZURY
Faculty of Agriculture and Forestry

Course description

**01S1-SMR** **MATHEMATICAL STATISTICS IN AGRICULTURE** **ECTS: 2.5**

**HOURS PER SEMESTER/WEEK:** LECTURES: -/-; CLASSES: 30/2

**COURSE CONTENTS**
**LECTURES:** -

**CLASSES:** A repetition of basic concepts of probability and statistics. Descriptive analysis of environmental data based on sample statistics. Random variables and their distributions. Parameter estimation and significance tests. The concept of correlation - the Pearson and the Spearmann correlation coefficient. ANOVA assumptions and mathematical model. The experimental setup and the ANOVA model. Significance tests in the analysis of variance and the comparison of the object means. Data transformation. Multiple regression. Methods of modeling and multivariate testing. Nonparametric tests. Statistical analysis of environmental data from the sample. Random environment variables. Estimation and testing. Regression analysis and simple correlation. ANOVA of the CRD system. ANOVA of the RBD system. ANOVA of multivariate systems. Interpretation of cooperation. Statistical inference. Tests for differences between means. Multiple regression and multidimensional methods. Nonparametric tests.

**EDUCATIONAL PURPOSE:** Developing statistical knowledge. Getting to know the specificity of the use of mathematical statistics methods in agriculture.

**LEARNING OUTCOMES**
**Knowledge.** The student has an extensive knowledge of mathematical statistics, including the use of basic statistical methods in practice, adapted to the specificity of conducting experiments with understood agriculture.
**Skills.** The student independently and comprehensively analyzes the problems affecting agricultural production and the quality of agricultural products thanks to the knowledge experimental methods and practical application of methods of statistical analysis of results from agricultural experiments and the method of interpretation of the results of analyzes.
**Social competences.** The student is able to think and act in an entrepreneurial manner thanks to the methodological awareness of the perception of agricultural production - practical use of statistics in experimental work.

**TEACHING FORMS AND METHODS**
**Lectures.** -.
**Classes.** Practical exercises: presentation method, case study.

**FORM AND CONDITIONS FOR VERIFICATION OF LEARNING OUTCOMES**
**Lectures.** -.
**Classes.** Colloquium practical - credit with grade.

**BASIC LITERATURE**
1) Harvey Motulsky. Intuitive Biostatistics.2018. Oxford University Press.

**ADDITIONAL LITERATURE**
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**THE TEACHER/S CONDUCTING THE CLASSES:**
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