Biometrics (3MI09NAK08B)
BSc in Horticulture

Number of hours per semester: 39 (1 lecture+2 practice/week)
Credits: 3
Language: Hungarian/English
Prerequisites: Basic mathematics and informatics
Course type: mandatory
Department: Department of Biometrics and Agricultural Informatics
Course leader: Dr. Ladányi Márta

Course description: During the semester, students receive training in basic statistical methods, knowledge of which is essential in their agricultural studies. Students gain theoretical and practical skills to design and evaluate experiments in horticultural science. Free and open access R statistical software (RGui surface) and its complementary R package called Commander are used during the semester. Statistical methods are discussed with several applications in biometrics in a practical and interactive way. Seminars are organized in a computer laboratory.

Discussed topics:
• Basic concepts of statistics (statistical sampling, independence, descriptive statistics, frequency etc.)
• Estimations (point and interval estimations of parameters of normal distributions)
• Hypothesis testing (null hypothesis against alternative hypothesis, type I and type II error, statistical tests, confidence level, critical range, critical value, test power, test function and decision)
• Non-parametric tests of distributions: Chi-square tests of homogeneity, goodness-of-fit and independency
• Parametric hypothesis tests for variances (Chi-square, Fisher's, Bartlett's tests, requirements, evaluation and interpretation)
• Parametric hypothesis tests for expectation (Student's, Welch's, requirements, evaluation, interpretation)
• One-way and two-way ANOVA models and their applications
• Correlation and regression analysis, linear, linear and non-linear models, regression diagnostics

Assessment, grading: Grades are given upon a student project report submitted at the end of the semester.
Learning outcomes: After having completed the course, students will be able to manage and evaluate simple experimental observations, moreover, to report the results in a suitable manner. They can apply their skills in creating their thesis as they learn how to present and reason their findings and conclusions professionally.

Course lecturers: Dr. Ladányi Márta associate professor, László Anna lecturer, Reiczigel Zsófia lecturer