UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

Applied Informatics

Educational subject description sheet

Basic information

Field of study Food quality managment and analysis	**Education cycle** 2022/23
Speciality -	**Subject code** ND000000NZJS.MI4BO.0095.22
Organizational unit The Faculty of Biotechnology and Food Science	**Lecture languages** english
Study level Second-cycle (engineer) programme	**Mandatory** optional
Study form Full-time	**Block** major subjects (conducted) in foreign languages
Education profile General academic	**Disciplines**
	Subject related to scientific research No
	Subject shaping practical skills Nie

Teacher responsible for the subject	Wojciech Łaba
Other teachers conducting classes	Wojciech Łaba

Period	**Examination**	**Number of ECTS points**
Semester 3	graded credit **Activities and hours** laboratory classes: 30	2.0

Goals

C1	The subject of the course is the application of statistical analysis software, in particular the Statistica package, for processing scientific research data.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	software for analyzing experimental data, in particular the Statistica package	NZ_P7S_WG04	performing tasks
W2	fundamentals of statistical tests and tools to analyze the results of scientific research	NZ_P7S_WG06	performing tasks
Skills – Student can:			
U1	properly select and use statistical tests to correctly draw statistical conclusions	NZ_P7S_UW06	performing tasks
U2	use the tools included in the Statistica package to plan the experimental setup and to analyze the data	NZ_P7S_UW06	performing tasks
U3	is able to use professional terminology in a foreign language	NZ_P7S_UK09	performing tasks
Social competences – Student is ready to:			
K1	critical assessment of popular and scientific content	NZ_P7S_KK01	active participation

Balance of ECTS points

Activity form	Activity hours*	
laboratory classes	30	
class preparation	30	
Student workload	**Hours** 60	**ECTS** 2.0
Workload involving teacher	**Hours** 30	**ECTS** 1.0
Practical workload	**Hours** 30	**ECTS** 1.0

* hour means 45 minutes

Study content

No.	Course content	Activities
1.	1. Overview of the Statistica Advanced Package, input data organization, descriptive statistics, charts 2. Checking the conditions for using parametric tests, basic statistics 3. Development of the results of 1-factor experiments in the Statistica program 4. Analysis of variance in the Statistica program, one-way experiments 5. Data transformation 6. Analysis of variance in the Statistica program, two-factor experiments 7. Analysis of variance in the Statistica program, two-factor experiments 8. Using the Statistica program to analyze qualitative data (ordinal scale), examples of nonparametric tests, 9. Use of the Statistica program for the analysis of qualitative data (nominal scale), multi-division tables 10. Correlation and simple linear regression in the Statistica program 11. Non-linear regression 12. Using the Statistica program for planning and analysis of experiments - introduction, simple linear models, bivalent plans, blocks 13. Planning of experiments - Plackett-Burman screening design 14. Planning of experiments - trivalent plans, model according to Box-Behnken 15. Experiment planning - process optimization: central composite design	laboratory classes

Course advanced

Teaching methods:

classes, computer lab/laboratory

Activities	Examination methods	Percentage in subject assessment
laboratory classes	active participation, performing tasks	100%

Entry requirements

information technology, mathematics, mathematical statistics

Literature

Obligatory

1. Rabiej M.: Statystyka z programem Statistica, wyd. Helion, Gliwice 2012
2. Data Science Textbook, Tibco: https://docs.tibco.com/data-science/textbook

Optional

1. Stanisz A.: Przystępny kurs statystyki z zastosowaniem Statistica PL na przykładach z medycyny; Tom 1. Statystyki podstawowe, StatSoft, Kraków 2006
2. Stanisz A.: Przystępny kurs statystyki z zastosowaniem Statistica PL na przykładach z medycyny; Tom 2. Modele liniowe i nieliniowe, StatSoft, Kraków 2007

Kierunkowe efekty uczenia się

Kod	Treść
NZ_P7S_KK01	Critical assessment of received content and updating of knowledge, as well as, self-improvement in the field of bearing profession
NZ_P7S_UK09	Use a foreign language at B2 + level of the European Training Description System and to a higher degree use a specific terminology
NZ_P7S_UW06	Select and properly apply statistical methods in quality management, food analysis and enterprise cost analysis
NZ_P7S_WG04	Rules of planning scientifc experiments and ways to verify analytical methods and quality food management systems
NZ_P7S_WG06	Advanced statistical methods used in quality management systems and in the planning and optimization of experiments and the calculations of scientific research results