



Applied Informatics
Educational subject description sheet

Basic information

Field of study Food quality management and analysis		Education cycle 2024/25	
Speciality -		Subject code ND000000NZJS.MI4.0095.24	
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 Semester 3	Examination graded credit	Number of ECTS points 2.0	
	Activities and hours laboratory classes: 30		

Goals

C1	The subject of the course is the application of statistical analysis software, in particular the Statistica package, for processing scientific research data
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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_WG03	performing tasks
W2	fundamentals of statistical tests and tools to analyze the results of scientific research	NZ_P7S_WG03	performing tasks
Skills - Student can:			
U1	properly select and use statistical tests to correctly draw statistical conclusions	NZ_P7S_UW04	performing tasks
U2	use the tools included in the Statistica package to plan the experimental layout and to analyze the data	NZ_P7S_UW04	performing tasks
U3	use relevant professional terminology in English	NZ_P7S_UK07	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 package, input data organization, descriptive statistics, charts 2. Verifying the conditions for using parametric tests, basic statistics 3. Development of the results of 1-factor experiments in the Statistica package 4. Analysis of variance in the Statistica package, one-way experiments 5. Data transformation 6. Analysis of variance in the Statistica package, two-factor experiments 7. Using the Statistica software to analyze qualitative data (ordinal scale), examples of nonparametric tests, 8. Use of the Statistica software for the analysis of qualitative data (nominal scale), multi-division tables 9. Correlation and simple linear regression in the Statistica software 11. Stepwise regression, non-linear regression 10. Multidimensional analyses, principal component analysis 12. Application of the Statistica software 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, Box-Behnken design, central composite design 15. Automated Neural Networks in Statistica	laboratory classes

Course advanced

Teaching methods:

computer lab/laboratory, classes

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.: Analizy statystyczne z programami Statistica i Excel, wyd. Helion, Gliwice 2018
2. Data Science Textbook, Tibco: <https://docs.tibco.com/data-science/textbook>
3. TIBCO Statistica Quick Reference, Software Release 13.3, June 2017: <https://docs.tibco.com/products/tibco-statistica/archive>

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	The graduate is ready to critically evaluate information from various sources and seek expert opinions in solving professional problems
NZ_P7S_UK07	The graduate is able to use a foreign language at the B2 + level of the European Framework of Reference for Education using specialist terminology
NZ_P7S_UW04	The graduate can apply IT tools and statistical methods in planning experiments and developing research results as well as analyzing enterprise costs
NZ_P7S_WG03	The graduate knows and understands the principles of planning and optimizing experiments and developing scientific results using advanced statistical methods and IT tools