



Applied Informatics
Educational subject description sheet

Basic information

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|---|---|---|--|
| Field of study Food quality management and analysis | | Education cycle 2023/24 | |
| Speciality - | | Subject code ND000000NZJS.MI4BO.0095.23 | |
| 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 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 (Advanced Academic 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 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. Stepwise regression, 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, according to Box-Behnken design, central composite design 15. Automated Neural Networks in Statistica | 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.: 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 |