# University of Silesia in Katowice

| 1. | Field of study | Computer Science |
|---|---|---|
| 2. | Faculty | Faculty of Science and Technology |
| 3. | Academic year of entry | 2021/2022 (summer term) |
| 4. | Level of qualifications/degree | second-cycle studies |
| 5. | Degree profile | general academic |
| 6. | Mode of study | full-time |

**Module:** intelligent data processing

**Module code:** W4-IN-S2-20-F-IPD

**1. Number of the ECTS credits:** 4

| 2. Learning outcomes of the module | | | |
|---|---|---|---|
| code | description | learning outcomes of the programme | level of competence (scale 1-5) |
| M_001 | Is aware of the possibilities offered by intelligent data processing, especially in the context of large data sets. | K_K02 | 1 |
| M_002 | Has knowledge of the basics of artificial intelligence, including fuzzy logic and fuzzy inference | K_W02 | 2 |
| | | K_W04 | 3 |
| | | K_W09 | 2 |
| M_003 | Has knowledge of data mining in the context of detecting dependencies and patterns (e.g. rules) in data as well as atypical data. | K_W02 | 1 |
| | | K_W04 | 2 |
| | | K_W08 | 2 |
| | | K_W09 | 4 |
| M_004 | Has knowledge of the basics of artificial neural networks and so-called Deep learning. | K_W02 | 2 |
| | | K_W04 | 2 |
| | | K_W08 | 2 |
| | | K_W09 | 3 |
| M_005 | Is able to implement or manually perform calculations and operations of fuzzyfication, fuzzy inference and defuzzyfication | K_U03 | 3 |
| | | K_U07 | 2 |
| | | K_U08 | 2 |
| | | K_U09 | 3 |
| M_006 | Is able to apply the selected algorithm of rule induction (e.g. decision trees, association rules) for any data set or detection of unusual cases. | K_U01 | 1 |

| | | | | |
|---|---|---|---|---|
| | | | K_U03 | 3 |
| | | | K_U08 | 2 |
| | | | K_U09 | 3 |
| M_007 | Can use a dedicated tool to create a neural network model and interpret learning results of the created model for any data set. | | K_U03 | 3 |
| | | | K_U07 | 2 |
| | | | K_U08 | 2 |
| | | | K_U09 | 3 |

| 3. Module description | |
|---|---|
| Description | The goal is to introduce the student to methods of data mining, classification tasks, clustering and rule induction process. It also includes the basics of fuzzy inference or deep learning with elements of neural networks. |
| Prerequisites | |

**4. Assessment of the learning outcomes of the module**

| code | type | description | learning outcomes of the module |
|---|---|---|---|
| W_001 | exam (test) | Knowledge verification based on the content presented in the lecture. The exam consists of both open and closed theory questions. | M_001, M_002, M_003, M_004, M_005, M_006, M_007 |
| W_002 | Project reports | Developing projects with reports for them within a specified period as a verification of the skills acquired in solving problems. | M_001, M_005, M_006, M_007 |

**5. Forms of teaching**

| code | form of teaching | | | required hours of student's own work | | assessment of the learning outcomes of the module |
|---|---|---|---|---|---|---|
| | type | description (including teaching methods) | number of hours | description | number of hours | |
| Z_001 | lecture | Transferring the content of education in verbal form using audiovisual means and other written teaching aids | 15 | Preparation for the exam | 15 | W_001 |
| Z_002 | laboratory classes | Preparing students to solve tasks with an indication of the methodology of the procedure, an indication of the order of performed activities. | 30 | Students independently solve tasks assigned to the laboratory, prepare reports for their projects. | 60 | W_002 |