| 1. | Field of study | Computer Science |
|---|---|---|
| 2. | Academic year of entry | 2017/2018 (summer term), 2018/2019 (summer term) |
| 3. | Level of qualifications/degree | second-cycle studies |
| 4. | Degree profile | general academic |
| 5. | Mode of study | full-time |

## Module: Selected methods of data mining

**Module code:** 08-IN-IIN-S2-WMED

**1. Number of the ECTS credits:** 2

**2. Learning outcomes of the module**

| code | description | learning outcomes of the programme | level of competence (scale 1-5) |
|---|---|---|---|
| WMED -U_7 | Using analysis of variance can (test F) asses data community on the basis of sample distribution. | K_2_A_I_U01<br>K_2_A_I_U04<br>K_2_A_I_U05<br>K_2_A_I_U07<br>K_2_A_I_U08 | 1<br>1<br>1<br>3<br>1 |
| WMED -U_8 | Can reduce data space dimension. | K_2_A_I_U07<br>K_2_A_I_U13<br>K_2_A_I_U17<br>K_2_A_I_U18 | 3<br>1<br>3<br>2 |
| WMED -W_1 | Has basic knowledge in the field of spectrum analysis. Knows assumptions of direct and inverse discreet Fourier transform. | K_2_A_I_W01<br>K_2_A_I_W03 | 3<br>3 |
| WMED -W_2 | Has basic knowledge in the field of DCT, DST, Walsh and Haar transforms. | K_2_A_I_W08<br>K_2_A_I_W17<br>K_2_A_I_W18 | 2<br>3<br>3 |
| WMED -W_3 | Has basic knowledge concerning application rules of the specific transformations in engineering practice. | K_2_A_I_W17 | 1 |
| WMED -W_4 | Has knowledge concerning principles of two dimensional transformations use taking into account uses in image processing. Knows basic image morphological transformations. | K_2_A_I_W01<br>K_2_A_I_W15<br>K_2_A_I_W17 | 2<br>3<br>1 |

| | | | |
|---|---|---|---|
| WMED -W_5 | Knows principles of lossy and lossless image compression. | K_2_A_I_W01<br>K_2_A_I_W03<br>K_2_A_I_W17 | 1<br>1<br>1 |
| WMED -W_6 | Knows basics of Fishera and PCA statistical inference. | K_2_A_I_W01<br>K_2_A_I_W03 | 1<br>1 |
| WMED-K_10 | Can present opinions and conclusions concerning theoretical and practical aspects of image compression and statistic inference. | K_2_A_I_K03<br>K_2_A_I_K06 | 1<br>1 |
| WMED-K_9 | Can execute a group task concerning morphological operations on digital image in order to bring out its qualities in a specific program. Can lossy and lossless compress images realizing the task in the fixed time. | K_2_A_I_K01<br>K_2_A_I_K03<br>K_2_A_I_K06 | 1<br>1<br>1 |

| **3. Module description** | |
|---|---|
| **Description** | Aim of classes in this module is preparing the students to solve tasks connected with the issue of image processing and methods of statistic inference. As a result, it leads to deepening of knowledge in the field of mathematical foundations of image processing and analysis of multidimensional data. |
| **Prerequisites** | |

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

| code | type | description | learning outcomes of the module |
|---|---|---|---|
| WMED -w_1 | Credit | Solving tasks of content, one after each section discussed during lecture. | WMED -W_1, WMED -W_2, WMED -W_3, WMED -W_4, WMED -W_5, WMED -W_6 |
| WMED -w_2 | Control tests | Tests and quizzes connected with the current topic of laboratory class and checking theoretical knowledge of the lecture. | WMED -U_7, WMED -U_8 |
| WMED -w_3 | Programming works in MATLAB environment | Documenting, elaborating and verifying results of tasks solved during laboratory classes. | WMED -U_7, WMED -U_8, WMED-K_10, WMED-K_9 |

**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 | |
| WMED _fs_1 | lecture | Educational content presented in traditional form and with use of audiovisual aids. | 10 | Familiarizing with lecture content and individual verification of laboratory class of programming in MATLAB environment solutions. | 5 | WMED -w_1 |
| WMED _fs_2 | laboratory classes | Detailed checking of preparation to solve | 30 | Solving tasks of subsequent subjects | 15 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | tasks taking into account methodology of proceedings. Testing correctness of solutions. Presenting principles of project documenting. | | together with analysis of the already existing solutions. Comparing obtained results in various groups. Optimization of the program code. Presenting solutions together with analysis of the already existing ones. Evaluation of the group work. | | WMED -w_2, WMED -w_3 |