## MODULE DESCRIPTION

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|---|---|
| Module code | **Z-0351** |
| Module name | **Podstawy informatyki** |
| Module name in English | **The Fundamentals of Informatics** |
| Valid from academic year | **2016/2017** |

## A. MODULE PLACEMENT IN THE SYLLABUS

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|---|---|
| Field of study | **Management and Production Engineering** |
| Level of education | **1st degree**<br>*(1st degree / 2nd degree)* |
| Studies profile | **General**<br>*(general / practical)* |
| Form and method of conducting classes | **Full-time**<br>*(full-time / part-time)* |
| Specialisation | **All** |
| Unit conducting the module | **Department of Applied Computer Science and Applied Mathematics** |
| Module co-ordinator | **Jan Sztechman, PhD** |
| Approved by: | |

## B. MODULE OVERVIEW

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|---|---|
| Type of subject/group of subjects | **Major**<br>*(basic / major / specialist subject / conjoint / other HES)* |
| Module status | **Compulsory**<br>*(compulsory / non-compulsory)* |
| Language of conducting classes | **English** |
| Module placement in the syllabus - semester | **2nd semester** |
| Subject realisation in the academic year | **Summer semester**<br>*(winter / summer)* |
| Initial requirements | **No requirements**<br>*(module codes / module names)* |
| Examination | **No**<br>*(yes / no)* |
| Number of ECTS credit points | **3** |

| Method of conducting classes | Lecture | Classes | Laboratory | Project | Other |
|---|---|---|---|---|---|
| **Per semester** | **15** | | **24** | | |

## C. TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

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| **Module target** | A student ought to acquire skills as regards creating simple calculation programs in an algorithmic language, structured programming, solving mathematical and statistical problems together with a graphic representation of the results of calculations. |

| Effect symbol | Teaching results | Teaching methods *(l/c/l/p/other)* | Reference to subject effects | Reference to effects of a field of study |
|---|---|---|---|---|
| **W_01** | A student has knowledge of the languages and types of programming, the elements of algorithmics and coding in a programming language. | l/lab | K_W05 | T1A_W03<br>S1A_W06 |
| **W_02** | A student has basic knowledge of processing economic data. | l/lab | K_W04 | T1A_W03<br>S1A_W06 |
| **W_03** | A student has basic knowledge of operating systems and application software. | l | K_W04 | T1A_W03<br>S1A_W06 |
| **U_01** | A student is able to code simple algorithms in a programming language. | l/lab | K_U07 | T1A_U01<br>T1A_U07<br>T1A_U08 |
| **U_02** | A student can solve simple problems concerning mathematical analysis, algebra, the basics of statistics; a student can present the results of calculations in a graphical form using a package for mathematical and statistical calculations. | l/lab | K_U14 | T1A_U07<br>T1A_U08<br>T1A_U09 |
| **K_01** | A student is able to improve and master the acquired knowledge as well as skills concerning computer studies. | l/lab | K_K01 | T1A_K01 |

## Teaching contents:

1. Teaching contents as regards lectures

| Lecture number | Teaching contents | Reference to teaching results for a module |
|---|---|---|
| 1 | Programming in the Python language. List data structures. Using list data structures in computer programs. | W_01 |
| 2 | Programming in the Python language. Defining and calling functions in a computer program. | W_01<br>W_02 |
| 3 | Programming in the Python language. Text files processing. Same examples computer program. | W_01<br>W_02 |
| 4 | Computer-aided engineering works – introduction to the MathCad program. Calculating function value – tabulating. Determining derivatives and definite integrals. | W_02<br>W_03 |
| 5 | Matrix calculations. Programming palette in the MathCad system. Data entry from text files. Solving equations and systems of equations. | W_02<br>W_03 |
| 6 | Symbolic computation in the MathCad program. | W_02<br>W_03 |
| 7 | A computer system, an operating system, a program and programming languages, application software of computers. | W_03 |
| 8 | Obtaining a credit (reserve). | |

2. Teaching contents as regards classes

| Class number | Teaching contents | Reference to teaching results for a module |
|---|---|---|
| | | |

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|---|---|---|
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| | | |

3. Teaching contents as regards laboratory classes

| Laboratory class number | Teaching contents | Reference to teaching results for a module |
|---|---|---|
| 1 | Programming in the Python language. Defining and procesing of list date structures. | W_01<br>U_01 |
| 2 | Programming in the Python language. Applying list data structures to numerical data processing. | W_01<br>U_01 |
| 3 | Programming in the Python language. Defining and calling functions in a computer program. Test No 1 - the laboratory range 1-2 (10 scores) | W_01<br>U_01 |
| 4 | Programming in the Python language. Text files processing | W_01<br>U_01<br>K_01 |
| 5 | Programming in the Python language. Text files processing - continuation. | W_01<br>W_02<br>U_01<br>K_01 |
| 6 | Programming in the Python language. Test No 2 (at a computer) - the laboratory range 3-5 (20 scores) | W_01<br>W_02<br>U_01<br>K_01 |
| 7 | MathCad application software – environment, saving arithmetic expressions, defining and tabulating a function, creating charts. Calculating derivatives in a point and calculating definite integrals. | W_01<br>U_01 |
| 8 | Operations on vectors and matrices. Developing the results of measures. Co-operation of the MathCad program with text files. | W_03<br>U_02<br>K_01 |
| 9 | Solving equations, systems of equations, and inequalities. | W_03<br>U_02 |
| 10 | Programming elements. Symbolic computations. | W_03<br>U_02<br>K_01 |
| 11 | Test No 3 (at a computer) - the laboratory range 7-10 (20 scores) | W_03<br>U_02<br>K_01 |
| 12 | Obtaining a credit for laboratory classes. | |

4. The characteristics of project assignments

## The methods of assessing teaching results

| Effect symbol | Methods of assessing teaching results<br>*(assessment method, including skills – reference to a particular project, laboratory assignments, etc.)* |
|---|---|
| **W_01** | A final test on lectures; a student's independent problem-solving during laboratory classes; skills tests during laboratory classes. |
| **W_02** | A final test on lectures; a student's independent problem-solving during laboratory classes; skills tests during laboratory classes. |
| **W_03** | A final test during the lecture. |
| **U_01** | Tests during laboratory classes. |
| **U_02** | Tests during laboratory classes. |
| **K_01** | Observing a student's individual work during the classes. |

## D. STUDENT'S INPUT

| ECTS credit points | | |
|---|---|---|
| | **Type of student's activity** | **Student's workload** |
| 1 | Participation in lectures | **15** |
| 2 | Participation in classes | |
| 3 | Participation in laboratories | **24** |
| 4 | Participation in tutorials (2-3 times per semester) | **6** |
| 5 | Participation in project classes | |
| 6 | Project tutorials | |
| 7 | Participation in an examination | |
| 8 | | |
| 9 | **Number of hours requiring a lecturer's assistance** | **45** *(sum)* |
| 10 | **Number of ECTS credit points which are allocated for assisted work** *(1 ECTS point=25-30 hours)* | **1.6** |
| 11 | Unassisted study of lecture subjects | **15** |
| 12 | Unassisted preparation for classes | |
| 13 | Unassisted preparation for tests | |
| 14 | Unassisted preparation for laboratories | **15** |
| 15 | Preparing reports | |
| 15 | Preparing for a final laboratory test | **5** |
| 17 | Preparing a project or documentation | |
| 18 | Preparing for an examination | |
| 19 | | |
| 20 | **Number of hours of a student's unassisted work** | **35** *(sum)* |
| 21 | **Number of ECTS credit points which a student receives for unassisted work** *(1 ECTS point=25-30 hours)* | **1.4** |
| 22 | **Total number of hours of a student's work** | **80** |
| 23 | **ECTS points per module** *1 ECTS point=25-30 hours* | **3** |
| 24 | **Work input connected with practical classes** *Total number of hours connected with practical classes* | **50** |
| 25 | **Number of ECTS credit points which a student receives for practical classes** (1 ECTS point=25-30 hours) | **2** |

## E. LITERATURE

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|---|---|
| Literature list | 1. Paleczek W., *Mathcad 12, 11, 2001i, 2001,2000 w algorytmach*, Akademicka Oficyna Wydawnicza Exit, 2005.<br>2. Wirth N., *Algorytmy+struktury danych=programy*, WNT.<br>3. Lutz M., Ascher D., *Python. Wprowadzenie*, Helion. |
| Module website | kis.tu.kielce.pl |