**Description of the education / subject module (syllabus)**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Subject name: | | Software Engineering | | | | | | | **ECTS** | | **4** |
| Subject name in english: | | Software Engineering | | | | | | | | | |
| Field of study: | | **Big Data Analytics** | | | | | | | | | |
|  | |  | | | | | | | | | |
| Lecture language: | | angielski | | | | Study level: | | I degree study | | | |
| Form of studies: | 🗷 full-time  🞎 non full-time | Class status: | 🗷basic  🞎 directional | ⌧ mandatory  🞎 to choose | | Semester number: ……1….. | | ⌧ Winter semester 🞎 Sommer semester | | | |
|  |  | Academic year from which the description applies (year): | | | | 2019/2020 | Catalouge number: | **ZIM-IE-BDA-2S-01Z-5** | | | |
|  | | | | | | | | | | | |
| Coordinator of subject : | |  | | | | | | | | | |
| Lecturer: | |  | | | | | | | | | |
| Faculty for which the subject is implemented | |  | | | | | | | | | |
| Realization unit: | |  | | | | | | | | | |
| Goals of the subject, full description of the subject: | | Lecture topics:  Fifteen lectures are planned. These include the presentation of concepts of the software engineering and tools in this field. The following lectures will be presented: IT project management methods, quality issues, methods and tools for creating software (CASE), UML diagrams and issues related to software testing, from program debugging to acceptance testing.  Subjects of laboratory exercises: The use of knowledge from lectures to write and test applications, including the stage of negotiations. The laboratory group of students works together during classes on the implementation of the project. | | | | | | | | | |
| Didactic forms, number of hours | | 1. Lectures: 15 hours; 2. Laboratory exercises: 30 hours. | | | | | | | | | |
| Didactic methods: | | Lecture, discussion, numerical exercises (time estimation for IT project realization), drawing UML diagrams, code creation via CASE tools, group work on the project depending on skills of the group | | | | | | | | | |
| Formal requirements/ introductory subjects | | Object-oriented programming, basics of probability and statistics, basics of mathematics, general knowledge about computer techniques | | | | | | | | | |
| Educational outcomes: | | Knowledge:  Student:   |  | | --- | | knows the problems related to  quality management, | | knows the basics of knowledge management, and maintenance of the systems | | knows the basic CASE tools, | | knows the most commonly used  UML diagrams, knows how to write documentation of the project | | knows the methods of debugging and  testing applications, | | | | Skills:  Student:   |  | | --- | | can manage the quality of an IT project, | | Is able to estimate the time of project implementation using the Gantt chart and PERT charts, | | Is able to use UML diagrams and CASE tools, can write a code as well as unit and integration test | | can write a unit and integration test, | | can correctly find the most common errors in the code, | | Is able to perform system and acceptance tests. | | | | | | Competitions:  ……………………..  …………………….. | |
| The way of verifying the effects of education: | | Colloquium and evaluation of a part of the project carried out during the laboratory | | | | | | | | | |
| Form of documentation of the learning outcomes achieved: | | Reports from the next stages of the project implementation Colloquium from the lecture, evaluation of the entire project | | | | | | | | | |
| Elements and weights affecting the final grade: | | **2 grades of work on the project: A1 i A2, one grade from the colloquium: B, project grade: C, final grade K = ((A1 + A2) + (2\*B) + C)/5 or equivalent** | | | | | | | | | |
| Place of the work: | | Lectures - auditorium, laboratory exercises - computer laboratory | | | | | | | | | |
| Bibliography:  1.Krzysztof Sacha, Software Engineering Techniques: Design for Quality  2. Butchter Paul, Debug It! – Find, Repair & Prevent Bugs in Your Code  3. Ian Sommefield, Software Engineering  4. Software Engineering, https://www.tutorialspoint.com/software\_engineering/ | | | | | | | | | | | |
| COMMENTS:  Mark scale (from lowest to highest : 2; 3; 3.5; 4; 4.5; 5.  K value assignment:  Grade 2, if K < 2.75. Grade 3, if K >= 2.75 and K <3.5. Grade 3.5, if K >= 3.5 and K <3.75. Grade 4, if K >=3.75 and K < 4.5. Grade 4.5, if K >= 4.5 and K < 4.75. Grade 5 if K >= 4.75. | | | | | | | | | | | |

Quantitative indicators characterizing the module / object:

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| --- | --- |
| Estimated total number of student work hours (contact and own work) necessary to achieve the assumed learning outcomes 18) - on this basis, complete the ECTS field : | **100 h** |
| The total number of ECTS points that a student obtains in classes requiring direct participation of academic teachers :  The total number of ECTS points that the student receives as part of practical classes, such as laboratory classes, design, etc.: | **2 ECTS** |

Table of compliance of the directional learning outcomes with the effects of the subject:

|  |  |  |  |
| --- | --- | --- | --- |
| Effect category: | The learning outcomes: | Reference to effects for the education program in the field | The impact of classes on the directional effect \*) |
| Knowladge 1 | knows the basic CASE tools, knows the most commonly used UML diagrams, knows how to write documentation of the project | K\_W08/P7S\_WG | 3 |
| Knowladge 2 | knows the problems related to quality management, knows the basics of knowledge management and maintenance of the systems | K\_W12/P7S\_WG | 2 |
| Knowladge 3 | knows the methods of debugging and testing applications, | K\_W06/P7S\_WG | 1 |
| Skills 1 | Is able to estimate the time of project implementation using the Gantt chart and PERT charts, Is able to use UML diagrams and CASE tools, can write a code as well as unit and integration test, | K\_U13/P7S\_UW, K\_U14/P7S\_UW | 3 |
| Skills 2 | can manage the quality of an IT project, can correctly find the most common errors in the code, Is able to perform system and acceptance tests. | K\_U15/P7S\_UW | 2 |

\*)

3 – Advanced and with details,

2 – meaningful,

1 – basic,