#### card of course

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| Subject name | **A team project of an IT system** |

**1. the placement of the subject in the study system**

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| 1.1. Field of study | **Computer science** |
| 1.2. Form and path of study | **Full-time/Part-time** |
| 1.3. Level of education | **First-cycle studies** |
| 1.4. Study profile | **Practical** |
| 1.5. Specialty | **-** |
| 1.6. Subject Coordinator | **Dr inż. Monika Kaczorowska** |

**2. general characteristics of the subject**

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| --- | --- |
| 2.1. Belonging to a subject group | **Directional/Practical** |
| 2.2. Number of ECTS | **5** |
| 2.3. Language of lectures | **English** |
| 2.4. Semesters in which the subject is taught | **V** |
| 2.5.Criteria for selecting course participants | **-** |

1. **learning outcomes and course delivery**
   1. **Subject Objectives**

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| **No.** | **Subject Objectives** |
|
| C1 | Practical application of knowledge and skills acquired during studies in the field of: software engineering, databases, programming. |
| C2 | Indication of methods for preparing project documentation in the life cycle of an IT system. |
| C3 | Learning effective ways of cooperation and problem solving in a team project. Acquiring skills, planning teamwork and executing tasks by students, familiarizing them with the functions of a manager and members of the executive team. |
| C4 | Acquiring practical knowledge of contemporary IT system design and the requirements placed on modern systems. |
| C5 | Creating a project of a selected IT system in a team using specialist software under the supervision of the tutor and with a clear division of roles and responsibilities of students in the team. |
| C6 | To familiarize students with the leading tools used in the design of IT systems, both commercial and open- source . |

* 1. **Subject-specific learning outcomes, divided into knowledge , skills and competences , with reference to the directional learning outcomes**

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| **No.** | **Description of subject  learning outcomes** | | **Reference to  directional effects**  **learning (symbols)** | **Method of implementation (mark "X")** | | | |
| **ST** | | **NST** | |
| **Classes at the University** | **Activities on  the platform** | **Classes at the University** | **Activities on  the platform** |
| After passing the course, the student knows and understands **the knowledge** | | | | | | | |
| W1 | issues of using database systems in the design of an IT system, and issues of designing the structure of a database | INF\_W17  INF\_W20  INF\_W21 | |  | X |  | X |
| W2 | the essence of the problem of teamwork, as well as the specifics of the division of tasks and work in a group |  | X |  | X |
| W3 | scope of IT system documentation |  | X |  | X |
| W4 | issues related to design, programming and architecture of systems in selected IT applications and has knowledge of " user experience ”, knows the principles of correct human computer interface design |  | X |  | X |
| After passing the course, the student is **able** to: | | | | | | | |
| U1 | plan, participate and distribute tasks in teams; can define the scope of the project and the individual tasks to be performed | INF\_U07 INF\_U08 INF\_U09 INF\_U10 INF\_U12 INF\_U15 INF\_U16 INF\_U21 | | X |  | X |  |
| U2 | Define the scope and conduct a preliminary analysis of proposed design solutions and engineering initiatives appropriate to the project | X |  | X |  |
| U3 | analyze existing IT tools in terms of their usefulness in team project work | X |  | X |  |
| U4 | adapt to changing requirements of the environment and work environment in the area of IT system design, present and analyze diverse views and lead discussions on them | X |  | X |  |
| U5 | create an IT software project using both an object-oriented and structural approach, while maintaining data security principles | X |  | X |  |
| After completing the course, the student is ready to take part in **social competences.** | | | | | | | |
| K1 | demonstrating creativity, as well as logical and entrepreneurial thinking and action while working | INF\_K03  INF\_K04 | | X |  | X |  |
| K 2 | taking responsibility for one's actions and carrying out duties on time | X |  | X |  |

**3.3. Forms of teaching and their number of hours - Full-time studies (ST), Part-time studies (NST)**

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| **Path** | **Lecture** | **Exercises** | **Design** | **Workshop** | **Laboratory** | **Seminar** | **Lecturer** | **Classes conducted using distance learning methods and techniques in the form of a lecture** | **Other** | **ECTS points** |
| **ST** |  |  | 40 |  |  |  |  | 20 |  | 5 |
| **NST** |  |  | 15 |  |  |  |  | 10 |  | 5 |

**3.4. Content of education** (separately for each form of classes: (W, ĆW, PROJ, WAR, LAB, LEK, OTHER). It should be marked (X) how the given content will be implemented (classes at the university or classes on the e-learning platform conducted using distance learning methods and techniques)

**TYPE OF CLASS: LECTURE**

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| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Content of the course** | **Reference to subject-specific learning outcomes** | **Method of implementation (mark "X")** | | | |
| **ST** | | **NST** | |
| **Classes at the University** | **Activities on  the platform** | **Classes at the University** | **Activities on  the platform** |
| **1.** | Objective and scope of the subject. Typical project topics. Basic concepts, discussion of implementation and design issues. Basic elements in the construction of an information system. | **W1-W4** |  | **X** |  | **X** |
| **2.** | Organization of the IT system development process. The role of documentation. | **W2, W3** |  | **X** |  | **X** |
| **3.** | The role of the IT system in the enterprise. From the need for computerization to the specification of requirements for the IT system. | **W1-W4** |  | **X** |  | **X** |
| **4.** | Content of IT system documentation for the design phase. | **W3** |  | **X** |  | **X** |
| **5.** | Content of the IT system documentation for the implementation phase. | **W3** |  | **X** |  | **X** |
| **6.** | The Role of UML in Information Systems Design. A Review of Typical UML Diagrams and Their Applications. | **W3, W4** |  | **X** |  | **X** |
| **7.** | The data layer of an IT system. | **W1, W4** |  | **X** |  | **X** |
| **8 .** | User interface of an information system. | **W4** |  | **X** |  | **X** |
| **9.** | Summary of classes and discussion of grades. |  |  | **X** |  | **X** |

**TYPE OF CLASS: PROJECT**

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| **No.** | **Content of the course** | **Reference to subject-specific learning outcomes** | **Method of implementation (mark "X")** | | | |
| **ST** | | **NST** | |
| **Classes at the University** | **Activities on  the platform** | **Classes at the University** | **Activities on  the platform** |
| **1.** | Discussing the contents of the IT system project. Defining the purpose and scope of the designed IT systems. | **U1, U3, K1** | **X** |  | **X** |  |
| **2.** | Practical familiarization with software supporting the creation of an IT system project. Students' selection of appropriate work tools and project topics. | **U4, K2** | **X** |  | **X** |  |
| **3.** | Dictionary of customer terminology and IT system architecture. Practical analysis of customer requirements and matching expectations to the IT system offer. | **U2** | **X** |  | **X** |  |
| **4.** | Processes performed by the IT system. Creation of diagrams concerning the functionality, architecture and data layer of the IT system. | **U4, U5** | **X** |  | **X** |  |
| **5.** | Sketch of an interface design for an IT system. | **U5, K2** | **X** |  | **X** |  |
| **6.** | Implementation model of the created IT system, methods of verifying the correct operation of the IT system in the enterprise, methods of early error detection. | **U5** | **X** |  | **X** |  |
| **7.** | Checking the completeness of the IT system design. | **U5, K1** | **X** |  | **X** |  |
| **8.** | Summary of classes and discussion of grades. |  | **X** |  | **X** |  |

**3.5. Methods of verifying learning outcomes** (indication and description of methods of conducting classes and verification of achievement of learning outcomes and method of documentation)

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| --- | --- | --- | --- |
| **Subject Effects** | **Teaching methods** | **Methods of verifying learning outcomes** | **Documentation methods** |
| **KNOWLEDGE** | | | |
| **W1-W4** | lecture, discussion, project preparation | Lecture credit: written work on content related to the topics included in the syllabus | A graded written assignment |
| **SKILLS** | | | |
| **U1-U5** | discussing problems to be solved, working in a group, preparing a project of an IT system, reporting on the progress of work on projects during classes | Project completion:  IT system project in a group . Detailed guidelines regarding the scope of work are provided to students during classes by the instructor. Each student will report on their participation in each stage of project preparation and present their conclusions. Additionally, the instructor will engage in a discussion with the group, asking additional questions to check whether the student actively participated in preparing the work. This will allow for verification of the contribution and commitment of each student to the work, as well as the level of cooperation between students. | assessed project |
| **SOCIAL COMPETENCES** | | | |
| **K1-K2** | discussing problems to be solved, working in a group, preparing a project of an IT system, reporting on the progress of work on projects during classes | Project completion:  IT system project in a group . Detailed guidelines regarding the scope of work are provided to students during classes by the instructor. Each student will report on their participation in each stage of project preparation and present their conclusions. Additionally, the instructor will engage in a discussion with the group, asking additional questions to check whether the student actively participated in preparing the work. This will allow for verification of the contribution and commitment of each student to the work, as well as the level of cooperation between students. | assessed project |

**3.6. Assessment criteria for the achieved learning outcomes**

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| **Learning effect** | **For a grade of 3 or " zal ."**  **the student knows and understands/is able to/is ready to** | **For a grade of 3.5, the student knows and understands/is able to/is ready to** | **For a grade of 4, the student knows and understands/is able to/is ready to** | **For a grade of 4.5, the student knows and understands/is able to/is ready to** | **For a grade of 5, the student knows and understands/is able to/is ready to** |
| W | 51-60% of knowledge indicated in learning outcomes | 61-70% of knowledge indicated in learning outcomes | 71-80% of knowledge indicated in learning outcomes | 81-90% of knowledge indicated in learning outcomes | 91-100% of knowledge indicated in learning outcomes |
| U | 51-60% of skills indicated in learning outcomes | 61-70% of skills indicated in learning outcomes | 71-80% of skills indicated in learning outcomes | 81-90% of skills indicated in learning outcomes | 91-100% of skills indicated in learning outcomes |
| K | 51-60% of skills indicated in learning outcomes | 61-70% of skills indicated in learning outcomes | 71-80% of skills indicated in learning outcomes | 81-90% of skills indicated in learning outcomes | 91-100% of skills indicated in learning outcomes |

**3.7. Literature**

**Basic**

1. Vliet Hans van, Software engineering: Principles and practice, John Wiley, Chichester, 2008
2. Michał Śmiałek, Kamil Rybiński, "Inżynieria oprogramowania w praktyce. Od wymagań do kodu z językiem UML", Helion, 2023
3. Krzysztof Sacha, "Inżynieria oprogramowania", PWN, 2010

**Supplementary**

1. Zdzisław Szyjewski, "Metodyki zarządzania projektami informatycznymi", Placet, 2004
2. Michael J. Hernandez, "Projektowanie baz danych dla każdego. Przewodnik krok po kroku. Wydanie IV", Helion, 2022
3. Techniczna dokumentacja języka UML: https://www.omg.org/spec/UML/2.5.1/About-UML

**4. Student workload - ECTS points balance**

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| --- | --- | --- |
| **Types of student activity** | **Student Load** | |
| **ST** | **NST** |
| **Classes requiring direct contact between the student and the academic teacher at the university premises** | **60** | **25** |
| Classes included in the study plan | 60 | 25 |
| **Student's own work** | **65** | **100** |
| Ongoing preparation for classes, preparation of project work/presentations/etc. | 30 | 50 |
| Preparation for passing classes | 35 | 50 |
| **TOTAL STUDENT HOURLY LOAD** | **125** | **125** |
| **Number of ECTS points** | **5** | **5** |

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| Last change date | 30/09/2024 |
| The changes were introduced | INF Education Quality Team |
| The changes were approved | Arkadiusz Gwarda, M.A. |