#### card of course

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| Subject name | Database Administration |

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 |

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| 1. 5. Specialty | Databases |
| 1.6. Subject Coordinator | Dr inż. Kamil Żyła |

2. General characteristics of the subject

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| 2.1. Belonging to a subject group | Optional/practical |
| 2.2. Number of ECTS | 4 |
| 2.3. Language of lectures | English |
| 2.4. Semesters in which the subject is taught | IV |
| 2.5.Criteria for selecting course participants | For students who have chosen the Databases specialization |

1. Learning outcomes and course delivery
   1. Subject Objectives

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| No. | Subject Objectives |
|
| C1 | Learning typical management activities performed on relational and document databases |
| C2 | Querying and Managing Data in Relational and Document Databases |
| C3 | Acquiring skills in creating permissions, roles and users (MySql, PostgreSql, MongoDB) |
| C4 | Acquiring backup skills. |
| C5 | Acquiring database administration skills |

* 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 | Database architecture | INF\_W03  INF\_W04 |  | X |  | X |
| W2 | Securing databases against unauthorized users |  | X |  | X |
| W3 | What are backup copies? |  | X |  | X |
| W4 | Installing, updating and downloading additional libraries from the terminal |  | X |  | X |
| W5 | The specifics of the relational and document data model and the specifics of administering a relational and document database |  | X |  | X |
| After passing the course, the student is **able** to: | | | | | | |  |
| U1 | Perform typical management activities on a relational and documentary database in the scope of: multi-user access to the database, transferring data from/to the database, organizing the work of the database | INF\_U01 INF\_U08 INF\_U12 INF\_U14 | X |  | X |  |
| U2 | select data and manage data (add, delete, modify) in a relational and document database | X |  | X |  |
| U3 | Install and update databases | X |  | X |  |
| U4 | Administer databases | X |  | X |  |
| U5 | Design databases with database protection in mind | X |  | X |  |
| After completing the course, the student is ready to take part in **social competences.** | | | | | | |
| K1 | Critically evaluate the quality of your work and look for alternative solutions | INF\_K01 INF\_K06 | X |  | X |  |
| K2 | Using knowledge of database administration in technical and social discourse | 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** |  |  |  |  | 30 |  |  | 20 |  | 4 |
| **NST** |  |  |  |  | 15 |  |  | 10 |  | 4 |

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. | MySql - Database Architecture | W1, W5 |  | X |  | X |
| 2. | Scripts used for database administration | W4 |  | X |  | X |
| 3. | Creating roles and permissions | W2 |  | X |  | X |
| 4. | Database backup and recovery | W3 |  | X |  | X |
| 5. | Postgresql - Database Architecture | W1, W5 |  | X |  | X |
| 6. | Scripts used for database administration | W4 |  | X |  | X |
| 7. | MongoDB - Database Architecture | W1, W5 |  | X |  | X |
| 8. | Summary of classes and discussion of grades |  |  | X |  | X |

TYPE OF CLASS: LABORATORY

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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. | Organizing the work of a relational database. Multi-user access to a relational database. | U1, U3, U4, U5, K1, K2 | X |  | X |  |
| 2. | Selecting data and managing data in a relational database. Moving data from/to a relational database. | U2, K1, K2 | X |  | X |  |
| 3. | Organizing the work of the document database. Multi-user access to the document database. | U1, U3, U4, U5, K1, K2 | X |  | X |  |
| 4. | Selecting data and managing data in the document database. Transferring data from/to the document database. | U2, K1, K2 | X |  | X |  |
| 5. | 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-W5 | Lecture with the use of multimedia presentation, discussion | Exam – passing the lecture | A test script that is the basis for the exam |
| SKILLS | | | |
| U1-U5 | group work, project preparation | Lab credit - The task consists of designing and creating a relational and document database, agreed with the instructor, and then filling it with sample data. The database is then subject to management operations, data operations, and multi-user access. Students document the scope of work and database operations performed in a written paper (and optional accompanying files) | Graded task |
| SOCIAL COMPETENCES | | | |
| K1-K2 | group work, project preparation | Lab credit - The task consists of designing and creating a relational and document database, agreed with the instructor, and then filling it with sample data. The database is then subject to management operations, data operations, and multi-user access. Students document the scope of work and database operations performed in a written paper (and optional accompanying files) | Graded task |

3.6. Assessment criteria for the achieved learning outcomes

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| Learning effect | For a grade of 3 or "pass."  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. Recommended reading

**Basic**

1. Grippa Vinicius M., Kuzmichev Sergey, “MySQL. Jak zaprojektować i wdrożyć wydajną bazę danych. Wydanie II”, Helion, 2022.
2. Bradshaw Shannon, Brazil Eoin, Chodorow Kristina, „Przewodnik po MongoDB. Wydajna i skalowalna baza danych”, Helion, 2020.

**Supplementary**

1. Dokumentacja dokumentowej bazy danych MongoDB: https://www.mongodb.com/
2. Dokumentacja relacyjnej bazy danych MySQL: https://www.mysql.com/

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** | **50** | **25** |
| Classes included in the study plan | 50 | 25 |
| **Student's own work** | **50** | **75** |
| Ongoing preparation for classes, preparation of project work/presentations/etc. | 25 | 35 |
| Preparation for passing classes | 25 | 40 |
| **TOTAL STUDENT HOURLY LOAD** | **100** | **100** |
| **Number of ECTS points** | **4** | **4** |

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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. |