#### card of course

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| Subject name | Non-relational databases |

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 | - |
| 1.6. Subject Coordinator | Dr Barbara Gocłowska |

2. General characteristics of the subject

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| 2.1. Belonging to a subject group | Optional/practical |
| 2.2. Number of ECTS | 6 |
| 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 | Acquiring competence in designing and building non-relational databases. |
| C2 | Acquiring competence in using and managing data in non-relational databases. |
| C3 | Acquiring competence in using non-relational databases when building software. |

* 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 | ways of collecting data in non-relational databases | INF\_W03 INF\_W04 INF\_W20 |  | X |  | X |
| W2 | techniques for selecting and manipulating data in non-relational databases |  | X |  | X |
| W3 | issues of using a non-relational database when building software |  | X |  | X |
| After passing the course, the student is **able** to: | | | | | | |
| U1 | design and prepare a non-relational database for operation | INF\_U02 INF\_U14 INF\_U19 | X |  | X |  |
| U2 | enter data into a non-relational database, modify it, delete it and select it | X |  | X |  |
| U3 | use a non-relational database when building software | X |  | X |  |
| After completing the course, the student is ready to take part in **social competences.** | | | | | | |
| K1 | appropriate setting of priorities during the implementation of a programming task | INF\_K04 | 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 ………………. | Other | **ECTS points** |
| **ST** |  |  |  |  | 40 |  |  | 20 |  | 6 |
| **NST** |  |  |  |  | 15 |  |  | 10 |  | 6 |

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. | Non-relational databases – application areas, advantages and implementation barriers. | W1, W3 |  | X |  | X |
| 2. | Nonrelational database architecture. | W1, W2, W3 |  | X |  | X |
| 3. | Security of non-relational databases. | W1, W3 |  | X |  | X |
| 4. | Contemporary nonrelational database systems. | W1, W3 |  | X |  | X |
| 5. | Creating data structures in a nonrelational database. | W3 |  | X |  | X |
| 6. | Data management in a non-relational database. | W2 |  | X |  | X |
| 7. | Selecting data from a non-relational database. | W2 |  | X |  | X |
| 8. | Using non-relational databases in software development. | W1, W2 |  | X |  | X |
| 9. | 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. | Introduction to classes, setting up the work environment. | U1, U3, K1 | X |  | X |  |
| 2. | Designing the structure of a non-relational database. Preparing the database for work. | U3, K1 | X |  | X |  |
| 3. | Practical use of data manipulation mechanisms. | U2 | X |  | X |  |
| 4. | Practical use of data selection mechanisms. | U2 | X |  | X |  |
| 5. | Writing software code that uses a non-relational database. | U3 | X |  | X |  |
| 6. | 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 | A written paper containing content related to the topics included in the syllabus - credit for lectures | A graded written assignment |
| SKILLS | | | |
| U1-U4 | lecture, discussion, project preparation | Project credit: completion of a project in the field of non-relational databases, concerning the program content listed in the syllabus. Detailed guidelines regarding the scope of work are provided to students during classes by the instructor . | About the appreciated project |
| SOCIAL COMPETENCES | | | |
| K1-K2 | lecture, discussion, project preparation | Project credit: completion of a project in the field of non-relational databases, concerning the program content listed in the syllabus. Detailed guidelines regarding the scope of work are provided to students during classes by the instructor. | Rated project |

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. Literature

**Basic**

1. Guy Harrison, "NoSQL, NewSQL i BigData. Bazy danych następnej generacji", Helion, 2019.
2. Shannon Bradshaw, Brazil Eoin, Chodorow Christina, Przewodnik po MongoDB. Wydajna i skalowalna baza danych, Helion, Gliwice, 2020
3. https://www.mongodbtutorial.org/

**Supplementary**

1. Banker Kyle, Bakkum Peter, MongoDB w akcji, Helion, Gliwice, 2017

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** | **90** | **125** |
| Ongoing preparation for classes, preparation of project work/presentations/etc. | 45 | 65 |
| Preparation for passing classes | 45 | 60 |
| **TOTAL STUDENT HOURLY LOAD** | **150** | **150** |
| **Number of ECTS points** | **6** | **6** |

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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. |