

## Subject card

|                                             |                                                                                                                                                                                               |                                                          |                                         |                                     |                                                                                                             |            |     |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------|------------|-----|
| Subject name and code                       | Industrial applications, PG_00155309                                                                                                                                                          |                                                          |                                         |                                     |                                                                                                             |            |     |
| Field of study                              | Informatics                                                                                                                                                                                   |                                                          |                                         |                                     |                                                                                                             |            |     |
| Date of commencement of studies             | October 2024                                                                                                                                                                                  |                                                          | Academic year of realisation of subject |                                     | 2026/2027                                                                                                   |            |     |
| Education level                             | Bachelor's studies                                                                                                                                                                            |                                                          | Subject group                           |                                     | Obligatory subject group in the field of study<br>Subject group related to practical vocational preparation |            |     |
| Mode of study                               | full-time studies                                                                                                                                                                             |                                                          | Mode of delivery                        |                                     | at the university                                                                                           |            |     |
| Year of study                               | 3                                                                                                                                                                                             |                                                          | Language of instruction                 |                                     | Polish                                                                                                      |            |     |
| Semester of study                           | 5                                                                                                                                                                                             |                                                          | ECTS credits                            |                                     | 4.0                                                                                                         |            |     |
| Learning profile                            | practical                                                                                                                                                                                     |                                                          | Assessment form                         |                                     | credit                                                                                                      |            |     |
| Conducting unit                             | Institute of Mathematics -> Faculty of Mathematics, Physics and Informatics -> Rector                                                                                                         |                                                          |                                         |                                     |                                                                                                             |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                            |                                                          | dr Jakub Neumann                        |                                     |                                                                                                             |            |     |
|                                             | Teachers                                                                                                                                                                                      |                                                          |                                         |                                     |                                                                                                             |            |     |
| Lesson types                                | Lesson type                                                                                                                                                                                   | Lecture                                                  | Tutorial                                | Laboratory                          | Project                                                                                                     | Seminar    | SUM |
|                                             | Number of study hours                                                                                                                                                                         | 30.0                                                     | 0.0                                     | 30.0                                | 0.0                                                                                                         | 0.0        | 60  |
|                                             | E-learning hours included: 0.0                                                                                                                                                                |                                                          |                                         |                                     |                                                                                                             |            |     |
| Learning activity and number of study hours | Learning activity                                                                                                                                                                             | Participation in didactic classes included in study plan |                                         | Participation in consultation hours |                                                                                                             | Self-study | SUM |
|                                             | Number of study hours                                                                                                                                                                         | 60                                                       |                                         | 0.0                                 |                                                                                                             | 40.0       | 100 |
| Subject objectives                          | The aim of the course is to familiarize students with techniques, technologies, tools, solutions and design patterns characteristic of high-performance and scalable enterprise applications. |                                                          |                                         |                                     |                                                                                                             |            |     |

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|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Learning outcomes                                        | Course outcome                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Subject outcome                                                                                                                                                                                    | Method of verification                                                                                                        |
|                                                          | [INFL3_U03] is able to work in a team of IT specialists, including being able to manage his/her time, make commitments and meet deadlines, communicate using various techniques in the professional environment, including the use of dedicated tools                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | can implement an IT project in the form of a multi-layer Spring/ SpringBoot application within the declared time, using dedicated tools                                                            | [SU2] presentation/project/paper/ report                                                                                      |
|                                                          | [INFL3_U04] can create, run and test programs using dedicated tools and design patterns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | can create, run and test multi-layer Spring/SpringBoot applications, using appropriate design patterns using an integrated development environment, HTTP API testing tools and database inspection | [SU2] presentation/project/paper/ report<br>[SU5] implementation of a problem task<br>[SU6] demonstration of practical skills |
|                                                          | [INFL3_K01] knows the limitations of their own knowledge and understands the need for further education                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | understands the need for further education in the field of dynamically developing enterprise application techniques and technologies                                                               | [SK1] oral statement/conversation/ discussion<br>[SK5] implementation of a problem task                                       |
|                                                          | [INFL3_K02] can precisely formulate questions to deepen his/ her own understanding of a given topic or to find missing elements of reasoning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | can precisely formulate questions using a professional language related to multi-layer applications, in particular domain modeling and object-relational mappings, defining HTTP REST API          | [SK1] oral statement/conversation/ discussion<br>[SK8] observation of student's independent or team work                      |
|                                                          | [INFL3_W07] has knowledge of designing, developing, testing, implementing and maintaining web applications and their security                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | has knowledge in the design, development, testing and deployment of multi-layer Spring/ SpringBoot framework applications and their security                                                       | [SW1] oral statement/ conversation/discussion<br>[SW5] implementation of a problem task                                       |
|                                                          | [INFL3_U09] is able to - in accordance with the given specification - design and implement IT system                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | can create a multi-layer application using the Spring/ SpringBoot framework using advanced Object Relational Mapping techniques and HTTP REST API                                                  | [SU2] presentation/project/paper/ report<br>[SU5] implementation of a problem task<br>[SU6] demonstration of practical skills |
| Subject contents                                         | <ul style="list-style-type: none"><li>• features of enterprise applications, multi-layer monolithic applications</li><li>• concepts of the Spring framework, the concept of Dependency Injection, the Inversion of Control container</li><li>• introduction to SpringBoot</li><li>• Spring/SpringBoot application development environment</li><li>• presentation layer of industrial applications, HTTP REST pattern on the example of the Spring Web project and a web application according to the Server Side Rendering pattern</li><li>• Java Object mappings JSON format</li><li>• designing, testing and documenting HTTP API applications</li><li>• domain modeling and Object-Relational Mapping on the example of the Spring project</li><li>• deployment of industrial applications</li></ul> |                                                                                                                                                                                                    |                                                                                                                               |
| Prerequisites and co-requisites                          | Passed course Programowanie obiektowo-funkcyjne"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                    |                                                                                                                               |
|                                                          | Passed course Protokoły sieci web                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                    |                                                                                                                               |
| Assessment methods and criteria                          | Subject passing criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Passing threshold                                                                                                                                                                                  | Percentage of the final grade                                                                                                 |
|                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 60.0%                                                                                                                                                                                              | 50.0%                                                                                                                         |
|                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 70.0%                                                                                                                                                                                              | 50.0%                                                                                                                         |
| Recommended reading                                      | Basic literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Spring in Action, aut. Craig Walls, ISBN 9781617297571                                                                                                                                             |                                                                                                                               |
|                                                          | Supplementary literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Spring w praktyce, aut. Willie Wheeler, Joshua White, ISBN 9788324681846                                                                                                                           |                                                                                                                               |
|                                                          | eResources addresses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Basic<br><a href="https://spring.io/guides">https://spring.io/guides</a> - Documentation and guides of Spring framework                                                                            |                                                                                                                               |
| Example issues/ example questions/ tasks being completed |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                    |                                                                                                                               |
| Work placement                                           | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                    |                                                                                                                               |

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