

## Subject card

|                                             |                                                                                                                                                                                                                                                                                                                                               |                                                          |                                                                                                                                                                                                                                   |                                     |                                                                                                                      |            |     |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------|-----|
| Subject name and code                       | Web Applications 1, PG_00207598                                                                                                                                                                                                                                                                                                               |                                                          |                                                                                                                                                                                                                                   |                                     |                                                                                                                      |            |     |
| Field of study                              | Informatics                                                                                                                                                                                                                                                                                                                                   |                                                          |                                                                                                                                                                                                                                   |                                     |                                                                                                                      |            |     |
| Date of commencement of studies             | October 2026                                                                                                                                                                                                                                                                                                                                  |                                                          | Academic year of realisation of subject                                                                                                                                                                                           |                                     | 2027/2028                                                                                                            |            |     |
| Education level                             | Bachelor's studies                                                                                                                                                                                                                                                                                                                            |                                                          | Subject group                                                                                                                                                                                                                     |                                     | Obligatory subject group in the field of study<br>Subject group related to scientific research in the field of study |            |     |
| Mode of study                               | part-time studies                                                                                                                                                                                                                                                                                                                             |                                                          | Mode of delivery                                                                                                                                                                                                                  |                                     | at the university                                                                                                    |            |     |
| Year of study                               | 2                                                                                                                                                                                                                                                                                                                                             |                                                          | Language of instruction                                                                                                                                                                                                           |                                     | Polish                                                                                                               |            |     |
| Semester of study                           | 3                                                                                                                                                                                                                                                                                                                                             |                                                          | ECTS credits                                                                                                                                                                                                                      |                                     | 5.0                                                                                                                  |            |     |
| Learning profile                            | academic                                                                                                                                                                                                                                                                                                                                      |                                                          | Assessment form                                                                                                                                                                                                                   |                                     | credit                                                                                                               |            |     |
| Conducting unit                             | Institute of Informatics -> Faculty of Mathematics, Physics and Informatics -> Rector                                                                                                                                                                                                                                                         |                                                          |                                                                                                                                                                                                                                   |                                     |                                                                                                                      |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                                                                                                                                                            |                                                          | mgr Mateusz Miotk                                                                                                                                                                                                                 |                                     |                                                                                                                      |            |     |
|                                             | Teachers                                                                                                                                                                                                                                                                                                                                      |                                                          |                                                                                                                                                                                                                                   |                                     |                                                                                                                      |            |     |
| Lesson types                                | Lesson type                                                                                                                                                                                                                                                                                                                                   | Lecture                                                  | Tutorial                                                                                                                                                                                                                          | Laboratory                          | Project                                                                                                              | Seminar    | SUM |
|                                             | Number of study hours                                                                                                                                                                                                                                                                                                                         | 20.0                                                     | 0.0                                                                                                                                                                                                                               | 20.0                                | 0.0                                                                                                                  | 0.0        | 40  |
|                                             | 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                                                                                                                                                                                                                                                                                                                         | 40                                                       |                                                                                                                                                                                                                                   | 0.0                                 |                                                                                                                      | 85.0       | 125 |
| Subject objectives                          | The goal of the course is to familiarize students with the most important aspects of web application development, with a focus on the use of database servers and the Node.js runtime environment.                                                                                                                                            |                                                          |                                                                                                                                                                                                                                   |                                     |                                                                                                                      |            |     |
| Learning outcomes                           | Course outcome                                                                                                                                                                                                                                                                                                                                |                                                          | Subject outcome                                                                                                                                                                                                                   |                                     | Method of verification                                                                                               |            |     |
|                                             | [INFOL3_U06] is able to select and apply appropriate IT methods and tools to solve complex problems, is able to use acquired knowledge by appropriately selecting sources and information derived from them, and perform evaluation, critical analysis, and synthesis of this information                                                     |                                                          | Is able to design and develop a web application by selecting an appropriate data model.                                                                                                                                           |                                     | [SU4] test/exam - oral or written<br>[SU5] implementation of a problem task                                          |            |     |
|                                             | [INFOL3_W08] knows and understands advanced concepts in the field of network technologies, including communication protocols, security and construction of network applications                                                                                                                                                               |                                                          | Knows and understands the key advantages of relational and document-based data models.<br><br>Is familiar with and understands REST server architecture and the key principles of building secure and efficient web applications. |                                     | [SW4] test/exam - oral or written<br>[SW5] implementation of a problem task                                          |            |     |
| Subject contents                            | <ul style="list-style-type: none"><li>JavaScript and the Node.js runtime environment</li><li>Principles of creating and using RESTful APIs</li><li>Creating Web application servers using Express.js</li><li>Using database servers from Node.js – tools and libraries</li><li>Design and implementation of the examination project</li></ul> |                                                          |                                                                                                                                                                                                                                   |                                     |                                                                                                                      |            |     |

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|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Prerequisites and co-requisites                                | <ul style="list-style-type: none"><li>acquaintance with the relational model and SQL language</li></ul> |                                                                                                                                                                                                                                                                                                                           |                               |
| Assessment methods and criteria                                | Subject passing criteria                                                                                | Passing threshold                                                                                                                                                                                                                                                                                                         | Percentage of the final grade |
|                                                                | exam                                                                                                    | 51.0%                                                                                                                                                                                                                                                                                                                     | 75.0%                         |
|                                                                | project                                                                                                 | 51.0%                                                                                                                                                                                                                                                                                                                     | 25.0%                         |
| Recommended reading                                            | Basic literature                                                                                        | <ul style="list-style-type: none"><li>E. Brown, Web Development with Node and Express, 2nd Edition, O'Reilly Media, 2019.</li><li>S. Brandshaw, E. Brazil, K. Chodorow, MongoDB: The Definitive Guilde, O'Reilly Media, 2020.</li><li>S. Springer, Node.js: The Comprehensive Guide, Rheinwerk Computing, 2022.</li></ul> |                               |
|                                                                | Supplementary literature                                                                                | <ul style="list-style-type: none"><li>F. Dogilo, REST API Development with Node.js, Apress, 2018.</li><li>D. Herron, Node.js Web Development, Fifth Edition, Apress, 2020.</li><li>A. Mend, Learning Node.js Development, Packt Publishing, 2018</li></ul>                                                                |                               |
|                                                                | eResources addresses                                                                                    |                                                                                                                                                                                                                                                                                                                           |                               |
| Example issues/<br>example questions/<br>tasks being completed |                                                                                                         |                                                                                                                                                                                                                                                                                                                           |                               |
| Work placement                                                 | Not applicable                                                                                          |                                                                                                                                                                                                                                                                                                                           |                               |

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