

## Subject card

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                |                                     |         |                                                                              |     |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------|------------------------------------------------------------------------------|-----|
| Subject name and code                       | Web Network Technologies, PG_00179346                                                                                                                                                                                                                                                                                                                                                                                                      |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                |                                     |         |                                                                              |     |
| 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>Optional subject group     |     |
| 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                                                                                                                                                                                                                                                                                                                                                                                   |                                     |         | 5.0                                                                          |     |
| Learning profile                            | practical                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                          | Assessment form                                                                                                                                                                                                                                                                                                                                                                                |                                     |         | exam                                                                         |     |
| Conducting unit                             | Institute of Informatics -> Faculty of Mathematics, Physics and Informatics -> Rector                                                                                                                                                                                                                                                                                                                                                      |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                |                                     |         |                                                                              |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                          | dr hab. Wiesław Pawłowski                                                                                                                                                                                                                                                                                                                                                                      |                                     |         |                                                                              |     |
|                                             | 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                                 |         | 0.0                                                                          | 60  |
| Subject objectives                          | The purpose of the course is to familiarize students with the technologies used to create websites and web applications. By far the most thoroughly discussed technologies and methodologies are those using JavaScript - both on the client and server side. The opportunity to learn more thoroughly and to apply the discussed issues in practice is provided by the laboratory, especially the individual project performed during it. |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                |                                     |         |                                                                              |     |
| Learning outcomes                           | Course outcome                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                          | Subject outcome                                                                                                                                                                                                                                                                                                                                                                                |                                     |         | Method of verification                                                       |     |
|                                             | [INFL3_W06] has knowledge of operating systems, network technologies including basic web communication protocols                                                                                                                                                                                                                                                                                                                           |                                                          | Student is aware of the role and importance of standards related to the Web environment. Understands the architecture of the Web and the capabilities and uses of the HTTP communication protocol that is fundamental to its operation.                                                                                                                                                        |                                     |         | [SW4] test/exam - oral or written<br>[SW2] presentation/project/paper/report |     |
|                                             | [INFL3_W07] has knowledge of designing, developing, testing, implementing and maintaining web applications and their security                                                                                                                                                                                                                                                                                                              |                                                          | Student knows the basic methods of creating and principles of modern interactive web applications. Is able to use JavaScript in creating user interface and logic of web applications. Is capable of creating solutions that offer REST architecture compliant services. Knows how to create web applications using Node.js server environment and selected tools for building user interface. |                                     |         | [SW4] test/exam - oral or written<br>[SW2] presentation/project/paper/report |     |

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|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Subject contents                                               | <ul style="list-style-type: none"><li>• Overview of basic concepts - servers and clients, web architecture - from static sites to web applications.</li><li>• Tools for structuring and presenting web content.</li><li>• JavaScript - characteristics, object-oriented mechanisms, asynchronous programming.</li><li>• Document Object Model - characteristics, use of mechanisms offered by DOM API.</li><li>• HTTP protocol - architecture, authentication and authorization methods, use for developing REST services, basic security mechanisms.</li><li>• Advanced use of client-side and server-side JavaScript (Vue.js, Node.js)</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                               |
| Prerequisites and co-requisites                                | <ul style="list-style-type: none"><li>• Knowledge of modeling and object-oriented programming principles.</li><li>• Ability to efficiently navigate in Windows and Linux operating system environments.</li><li>• Knowledge and ability to use relational model of databases in practice, ability to use SQL language.</li></ul>                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                               |
| Assessment methods and criteria                                | Subject passing criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Passing threshold                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Percentage of the final grade |
|                                                                | laboratory tasks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 51.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 10.0%                         |
|                                                                | exam project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 51.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 90.0%                         |
| Recommended reading                                            | Basic literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"><li>• David Gourley, Brian Totty, Marjorie Sayer, Sailu Reddy, Anshu Aggarwal, HTTP: The Definitive Guide, O'Reilly, 2002.</li><li>• Chuck Musciano, Bill Kennedy, HTML &amp; XHTML: The Definitive Guide, 6th Edition, O'Reilly, 2006.</li><li>• David Flanagan, JavaScript: The Definitive Guide: Master the World's Most-Used Programming Language, 7th Edition, O'Reilly Media, 2020.</li><li>• Douglas Crockford, JavaScript: The Good Parts, O'Reilly, 2008.</li></ul> |                               |
|                                                                | Supplementary literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                               |
|                                                                | eResources addresses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                               |
| Example issues/<br>example questions/<br>tasks being completed |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                               |
| Work placement                                                 | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                               |

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