



## Subject card

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                          |                                         |                                     |                   |            |     |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------|-------------------------------------|-------------------|------------|-----|
| Subject name and code                       | Team research project I, PG_00071289                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                          |                                         |                                     |                   |            |     |
| Field of study                              | Informatics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                          |                                         |                                     |                   |            |     |
| Date of commencement of studies             | October 2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                          | Academic year of realisation of subject |                                     | 2025/2026         |            |     |
| Education level                             | second-cycle studies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                          | Subject group                           |                                     |                   |            |     |
| Mode of study                               | Part-time studies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                          | Mode of delivery                        |                                     | at the university |            |     |
| Year of study                               | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                          | Language of instruction                 |                                     | Polish            |            |     |
| Semester of study                           | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                          | ECTS credits                            |                                     | 3.0               |            |     |
| Learning profile                            | general academic profile                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                          | Assessment form                         |                                     | assessment        |            |     |
| Conducting unit                             | Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                          |                                         |                                     |                   |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                          | prof. dr hab. inż. Bogdan Wiszniewski   |                                     |                   |            |     |
|                                             | Teachers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                          | prof. dr hab. inż. Bogdan Wiszniewski   |                                     |                   |            |     |
| Lesson types                                | Lesson type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Lecture                                                  | Tutorial                                | Laboratory                          | Project           | Seminar    | SUM |
|                                             | Number of study hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.0                                                      | 0.0                                     | 0.0                                 | 18.0              | 0.0        | 18  |
|                                             | E-learning hours included: 0.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                          |                                         |                                     |                   |            |     |
|                                             | Additional information:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                          |                                         |                                     |                   |            |     |
|                                             | Version of the course for part-time studies, level 2 (master's degree).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                          |                                         |                                     |                   |            |     |
|                                             | <b>Student project team works under the supervision of a project supervisor:</b> students within the project team complete tasks according to a pre-defined schedule, developed in cooperation with the project supervisor. Each student team member has a clearly defined role and scope of responsibilities, allowing for the effective utilization of the diverse competencies and skills of team members. The team's work is organized and systematic, in accordance with applicable standards for R&D projects involving industrial research and development. In accordance with the developed schedule, the project supervisor provides substantive support, monitors progress through milestones, and acts as an external stakeholder in resolving any issues encountered. The course starts from a <b>specialized training with an expert in computer science research methods</b> . The training familiarizes project team members with the principles of systematic literature review, planning and conducting experiments, practical problem-solving using active research methodology, research data analysis, and reporting and publishing research results. The training concludes with a written qualification test, designed to verify the team members' competencies and predispositions to fulfill specific roles within a team implementing an R&D project. The test results also allow the supervisor to optimally organize the project team and assign appropriate roles to individual members. |                                                          |                                         |                                     |                   |            |     |
| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 18                                                       |                                         | 3.0                                 |                   | 54.0       | 75  |
| Subject objectives                          | <p>Students will develop a solution to a R&amp;D problem that exhibits (as defined by the OECD) characteristics of a:</p> <ul style="list-style-type: none"><li>• design innovation, demonstrating a new or improved IT product relative to existing ones, or</li><li>• process innovation, demonstrating a new or significantly improved business process relative to previously known processes;</li></ul> <p>The research hypothesis is verified using a significant experimental component (computer simulations, high-performance computing, machine learning methods, etc.). Students learn to apply appropriate analytical and design methods, including risk management, and develop collaborative research team skills. The course prepares students for future work in a research team and teaches them how to meet deadlines within a set timeline while developing skills in developing and presenting research results.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                          |                                         |                                     |                   |            |     |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning outcomes               | Course outcome                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Subject outcome                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Method of verification                                                                                                                                                                                |
|                                 | [K7_W101] is able to make an in-depth identification of key objects and phenomena related to the field of study, as well as theories that describe them and applicable analytical and design methods                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | The student utilizes advanced research techniques to verify a given research thesis. He/she is able to apply the knowledge acquired in his/her field of study appropriately, taking into account practical, experimental, and theoretical aspects. The student is able to select and assemble an appropriate set of tools.                                                                                                                                                                                                                | [SW1] Assessment of factual knowledge<br>[SW2] Assessment of knowledge contained in presentation<br>[SW3] Assessment of knowledge contained in written work and projects                              |
|                                 | [K7_K101] acknowledges the importance of knowledge related to the field of study in solving cognitive and practical problems, critically assessing the information obtained                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | The student can effectively utilize knowledge acquired during the received university education. Using the acquired skills, he/she can solve a research problem, and is able to design an experiment to verify the validity of the given thesis.                                                                                                                                                                                                                                                                                          | [SK1] Assessment of group work skills<br>[SK2] Assessment of progress of work<br>[SK3] Assessment of ability to organize work<br>[SK5] Assessment of ability to solve problems that arise in practice |
|                                 | [K7_U101] is able to formulate complex research problems and adopts appropriate methods, obtaining innovative solutions, cooperating with other people, both as a leader and a team member                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | When carrying out tasks related to research topics, the student demonstrates a correct methodology for conducting experiments. He/she realizes and understands the need for multi-pronged analysis of obtained results. He/she correctly conducts verification procedures and effectively utilizes them to determine the parameters of unknown elements being studied. He/she actively collaborates within the research team, acting as a leader or team member, communicating effectively, and completing tasks efficiently and on time. | [SU2] Assessment of ability to analyse information<br>[SU4] Assessment of ability to use methods and tools<br>[SU5] Assessment of ability to present the results of task                              |
| Subject contents                | <p>Course content – project</p> <ol style="list-style-type: none"> <li>1. Specialized training in computer science research methods</li> <li>2. Research problem analysis (literature, feasibility study)</li> <li>3. Task schedule (roles, required documentation)</li> <li>4. Solution strategy</li> </ol> <p>At the end of the first semester of the project, students prepare a report in a format agreed upon with the project supervisor, containing a specification of the basic requirements (including acceptance criteria) for the planned solution and its technical specification. The team also prepares a poster summarizing the project's achievements to date.</p>                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                       |
| Prerequisites and co-requisites | <p>Students are expected to possess basic understanding of theoretical (knowledge) and practical (skills) concepts covered in their previous studies, demonstrate teamwork skills and effective interpersonal communication. Critical analysis of literature and data, as well as understanding of the principles of writing research reports and presenting results, are also important. Furthermore, students are expected to demonstrate openness to interdisciplinary collaboration and consultation with experts, demonstrate sufficient English proficiency to analyze scientific literature available in global repositories, regularly participate in seminars and project meetings, and demonstrate initiative in independently solving research problems.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                       |
| Assessment methods and criteria | Subject passing criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Passing threshold                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Percentage of the final grade                                                                                                                                                                         |
|                                 | 1. Qualification test                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 50.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 40.0%                                                                                                                                                                                                 |
|                                 | 2. Baseline requirements and detailed task schedule (report part 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 50.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 25.0%                                                                                                                                                                                                 |
|                                 | 3. Technical specification of the solution (report part 2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 50.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 25.0%                                                                                                                                                                                                 |
|                                 | 4. Attendance at the project status meetings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 50.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 5.0%                                                                                                                                                                                                  |
|                                 | 5. Project poster                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 50.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 5.0%                                                                                                                                                                                                  |
| Recommended reading             | Basic literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Wysocki R.: Effective Project Management: Traditional, Agile, Extreme, Seventh Edition, John Wiley & Sons, Inc., 2014                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                       |
|                                 | Supplementary literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Recommended by the project supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                       |

|                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                | eResources addresses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>Basic</p> <p><a href="https://www.gov.pl/web/ncbr/zarzadzanie-projektem-br">https://www.gov.pl/web/ncbr/zarzadzanie-projektem-br</a> - National Centre for Research and Development, R&amp;D project management</p> <p><a href="https://www.projectmanager.com/pm-templates">https://www.projectmanager.com/pm-templates</a> - (PM) ProjectManager: Free project management templates,</p> <p><a href="https://about.gitlab.com/solutions/education/">https://about.gitlab.com/solutions/education/</a> - GitLab: Open source DevOps platform for software lifecycle management</p> <p><a href="https://www.atlassian.com/">https://www.atlassian.com/</a> - JIRA: AI-powered project management and issue-tracking tool developed by Atlassian, designed for teams to plan, track, and release software, bugs, and tasks.</p> <p><a href="https://discord.com/">https://discord.com/</a> - Discord: A free communication platform (text, audio, video) supporting online teamwork.</p> <p><a href="https://www.gov.pl/web/nauka/ujednolicony-wykaz-czasopism-naukowych">https://www.gov.pl/web/nauka/ujednolicony-wykaz-czasopism-naukowych</a> - Ministry of Science and Higher Education, list of scientific journals and conferences</p> |
| Example issues/<br>example questions/<br>tasks being completed | <p>Detailed requirements are set by the project supervisor, accordingly to the specific nature of the problem being solved (auxiliary milestones included in the task schedule), assuming the following <b>critical milestones</b>:</p> <ul style="list-style-type: none"> <li>• <b>SRR (Specification requirements review)</b>, in the 8th week of semester 2 (semester I of the course), in which the RB (requirements baseline) document, as part 1 of the final report should be delivered; it describes the project goal, schedule, functional, non-functional and system requirements, acceptance criteria and risks;</li> <li>• <b>CDR (Critical design review)</b>, in the 15th week of semester 2 (semester I of the course), in which the TS (technical specification) document as part 2 of the final report should be delivered; it describes the solution method (architecture), its basic components, data flow, assumptions made, accepted constraints, and agreed implementation techniques.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Practical activities within the subject                        | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

Document generated electronically. Does not require a seal or signature.