



## Subject card

|                                             |                                                                                                                                                                                                                                                                                                                                   |                                                          |                                                                                                                                                                                                                                                                                |                                     |                                                                                              |            |     |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------|------------|-----|
| Subject name and code                       | , PG_00058866                                                                                                                                                                                                                                                                                                                     |                                                          |                                                                                                                                                                                                                                                                                |                                     |                                                                                              |            |     |
| Field of study                              | Nanotechnology, Nanotechnology                                                                                                                                                                                                                                                                                                    |                                                          |                                                                                                                                                                                                                                                                                |                                     |                                                                                              |            |     |
| Date of commencement of studies             | February 2027                                                                                                                                                                                                                                                                                                                     |                                                          | Academic year of realisation of subject                                                                                                                                                                                                                                        |                                     | 2027/2028                                                                                    |            |     |
| Education level                             | second-cycle studies                                                                                                                                                                                                                                                                                                              |                                                          | Subject group                                                                                                                                                                                                                                                                  |                                     | Optional subject group<br>Subject group related to scientific research in the field of study |            |     |
| Mode of study                               | Full-time studies                                                                                                                                                                                                                                                                                                                 |                                                          | Mode of delivery                                                                                                                                                                                                                                                               |                                     | at the university                                                                            |            |     |
| Year of study                               | 2                                                                                                                                                                                                                                                                                                                                 |                                                          | Language of instruction                                                                                                                                                                                                                                                        |                                     | English                                                                                      |            |     |
| Semester of study                           | 3                                                                                                                                                                                                                                                                                                                                 |                                                          | ECTS credits                                                                                                                                                                                                                                                                   |                                     | 1.0                                                                                          |            |     |
| Learning profile                            | general academic profile                                                                                                                                                                                                                                                                                                          |                                                          | Assessment form                                                                                                                                                                                                                                                                |                                     | assessment                                                                                   |            |     |
| Conducting unit                             | Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology                                                                                                                                                                               |                                                          |                                                                                                                                                                                                                                                                                |                                     |                                                                                              |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                                                                                                                                                |                                                          | dr hab. inż. Agnieszka Witkowska                                                                                                                                                                                                                                               |                                     |                                                                                              |            |     |
|                                             | Teachers                                                                                                                                                                                                                                                                                                                          |                                                          | dr hab. inż. Agnieszka Witkowska                                                                                                                                                                                                                                               |                                     |                                                                                              |            |     |
| Lesson types                                | Lesson type                                                                                                                                                                                                                                                                                                                       | Lecture                                                  | Tutorial                                                                                                                                                                                                                                                                       | Laboratory                          | Project                                                                                      | Seminar    | SUM |
|                                             | Number of study hours                                                                                                                                                                                                                                                                                                             | 0.0                                                      | 0.0                                                                                                                                                                                                                                                                            | 0.0                                 | 0.0                                                                                          | 15.0       | 15  |
|                                             | 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                                                                                                                                                                                                                                                                                                             | 15                                                       |                                                                                                                                                                                                                                                                                | 2.0                                 |                                                                                              | 8.0        | 25  |
| Subject objectives                          | The Student is able to prepare and present a diploma presentation and actively participate in scientific discussion.                                                                                                                                                                                                              |                                                          |                                                                                                                                                                                                                                                                                |                                     |                                                                                              |            |     |
| Learning outcomes                           | Course outcome                                                                                                                                                                                                                                                                                                                    |                                                          | Subject outcome                                                                                                                                                                                                                                                                |                                     | Method of verification                                                                       |            |     |
|                                             | [K7_W03] has knowledge of current development trends and the latest discoveries in the fields of physics, chemistry, technology, and applications of nanostructures                                                                                                                                                               |                                                          | By preparing a diploma presentation, participating in the presentations of group members and discussions on the presented content, the student gains knowledge about current developments and the latest discoveries in the field of nanotechnology and materials engineering. |                                     | [SW2] Assessment of knowledge contained in presentation                                      |            |     |
|                                             | [K7_U01] is able to formulate hypotheses, plan and conduct experimental research, critically analyze results, verify hypotheses, draw conclusions, and formulate well-founded opinions within nanotechnology and related physical and natural sciences. Recognizes economic and non-technical aspects of the activities performed |                                                          | The student is able to analyze the problem posed in the diploma project and to develop a concept for its solution/implementation based on independently obtained and developed information from the literature, databases and other available sources (available in English).  |                                     | [SU2] Assessment of ability to analyse information                                           |            |     |
|                                             | [K7_U07] has advanced skills in disseminating knowledge and communicating the results of own research in the form of oral presentations or written works in Polish and English                                                                                                                                                    |                                                          | The student has the ability to prepare a report in English on the results of his/her own research and an oral presentation showing the progress achieved at each stage of the diploma project.                                                                                 |                                     | [SU5] Assessment of ability to present the results of task                                   |            |     |

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| Subject contents                                               | Course content – seminar<br>1. Main elements of public/oral presentation of the results of scientific work.<br><br>2. The main rules of understandable information transfer and the most common mistakes that should be avoided when preparing and presenting seminars.<br><br>3. The main elements of the diploma exam.<br><br>4. Preparation of the MSc diploma presentation and public/oral presentation of the diploma seminar.<br><br>5. Presentation of typical questions that may appear on the MSc exam. |                                                                                                                                                                                                                           |                               |
| Prerequisites and co-requisites                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                           |                               |
| Assessment methods and criteria                                | Subject passing criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Passing threshold                                                                                                                                                                                                         | Percentage of the final grade |
|                                                                | Classes and consultations participation                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 50.0%                                                                                                                                                                                                                     | 20.0%                         |
|                                                                | Preparing and presentation of diploma seminar                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 100.0%                                                                                                                                                                                                                    | 80.0%                         |
| Recommended reading                                            | Basic literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | [1] Liam Lusk 2012 Presentation Skills: How To Make A Great Presentation, Published by L.Lusk, Kindle Edition<br><br>[2] Nicholas Walliman 2011 Research Methods, The Basics, Taylor & Francis Group, London and New York |                               |
|                                                                | Supplementary literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Scientific literature and specialist reports related to the diploma project.                                                                                                                                              |                               |
|                                                                | eResources addresses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                           |                               |
| Example issues/<br>example questions/<br>tasks being completed | 1. Optimization of dealloying process in the formation of porous nanoparticles of gold<br><br>2. Non-stoichiometric electrodes with exsolved catalytically active oxide nanoparticles<br><br>3. Optimization of the fuel cell manufacturing process through the use of 3D printing<br><br>4. Quantum-chemical investigations of the generations of reactive oxygen species by titanium dioxide                                                                                                                   |                                                                                                                                                                                                                           |                               |
| Practical activites within the subject                         | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                           |                               |

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