



## Subject card

|   |  |  |   |                                     |  |            |     |
|---|--|--|---|-------------------------------------|--|------------|-----|
| Subject name and code                       | Principles of General Technology, PG_00058229  |  |   |                                     |  |            |     |
| Field of study                              | Biotechnology  |  |   |                                     |  |            |     |
| Date of commencement of studies             | October 2023   |  | Academic year of realisation of subject   |                                     | 2023/2024  |            |     |
| Education level                             | second-cycle studies   |  | Subject group   |                                     | Obligatory subject group in the field of study   |            |     |
| Mode of study                               | Full-time studies  |  | Mode of delivery  |                                     | at the university  |            |     |
| Year of study                               | 1  |  | Language of instruction   |                                     | Polish   |            |     |
| Semester of study                           | 1  |  | ECTS credits  |                                     | 1.0  |            |     |
| Learning profile                            | general academic profile   |  | Assessment form   |                                     | assessment   |            |     |
| Conducting unit                             | Department Of Chemistry And Technology Of Functional Materials -> Faculty Of Chemistry -> Wydział Politechniki Gdańskiej   |  |   |                                     |  |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor   |  | dr hab. inż. Anna Schmidt   |                                     |  |            |     |
|   | Teachers   |  | dr hab. inż. Andrzej Nowak  |                                     |  |            |     |
| Lesson types and methods of instruction     | Lesson type  | Lecture  | Tutorial  | Laboratory                          | Project  | Seminar    | SUM |
|   | Number of study hours  | 15.0   | 0.0   | 0.0                                 | 0.0  | 0.0        | 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   |   | 1.0                                 |  | 9.0        | 25  |
| Subject objectives                          | Knowledge of basic concepts in the field of technology. The ability to describe the process using a schematic diagram and mass balance.  |  |   |                                     |  |            |     |
| Learning outcomes                           | Course outcome   |  | Subject outcome   |                                     | Method of verification   |            |     |
|   | [K7_W08] has a profound knowledge of methods of obtaining biotechnological products, possibilities and limitations related to the design of biotechnological processes, understands the specificity of the biotechnological industry, both in terms of organization, management and economic analysis  |  | The student knows examples of biotechnological processes using various renewable raw materials. He can determine their usefulness.  |                                     | [SW3] Assessment of knowledge contained in written work and projects<br>[SW2] Assessment of knowledge contained in presentation<br>[SW1] Assessment of factual knowledge |            |     |
|   | [K7_U10] is able to use knowledge about possibilities, aims and limitations of biotechnology to develop, design and obtain products and biotechnological processes in the area of his/her specialization   |  | The student independently assesses the strengths and weaknesses of biotechnological processes related to his specialization.  |                                     | [SU3] Assessment of ability to use knowledge gained from the subject<br>[SU2] Assessment of ability to analyse information<br>[SU1] Assessment of task fulfilment        |            |     |
| Subject contents                            | Principles of green engineering. Chemical technology as applied science. The genesis of a new technological process. Basic raw materials and auxiliary materials in production. Chemical concept of the method. Technological concept of the method. Unit processes. Schematic and technological scheme. Mass and heat balance of the process. Technological principles. Examples of biotechnological processes. |  |   |                                     |  |            |     |
| Prerequisites and co-requisites             | Knowledge of chemical and biotechnological equipment.  |  |   |                                     |  |            |     |
| Assessment methods and criteria             | Subject passing criteria   |  | Passing threshold   |                                     | Percentage of the final grade  |            |     |
|   |  |  | 60.0%   |                                     | 100.0%   |            |     |
| Recommended reading                         | Basic literature   |  | 1. Marek Adamczak, Włodzimierz Bednarski, Jan Fiedurek, Fundamentals of industrial biotechnology, 1st edition, Polish Scientific Publishers PWN, Warsaw 2020<br>2. Jerzy Piotrowski, Józef Szarawara, Theoretical foundations of chemical technology, 1st edition, Scientific and Technical Publishers, Warsaw 2010 |                                     |  |            |     |

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|  | Supplementary literature   | <ol style="list-style-type: none"> <li>1. Włodzimierz Bednarski, Arnold Reys, Food Biotechnology, 2nd edition, Polish Scientific Publishers PWN, WNT, Warsaw, 2020</li> <li>2. Bjorn Kristiansen, Colin Ratledge, Translator: Stanisław Bielecki, Aleksander Chmiel, Andrzej Konowicz, Fundamentals of biotechnology, 1st edition, Polish Scientific Publishers PWN, Warsaw 2013</li> </ol> |
|  | eResources addresses   | <p>Adresy na platformie eNauczanie:</p> <p>Podstawy Technologii Ogólnej (II) - Moodle ID: 34177</p> <p><a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34177">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34177</a></p>  |
| Example issues/<br>example questions/<br>tasks being completed | <ol style="list-style-type: none"> <li>1. On the basis of the drawing showing the technological diagram of the process, a schematic diagram should be drawn.</li> <li>2. Based on a verbal description of the technological process, draw a technological and schematic diagram.</li> <li>3. Prepare a mass balance based on the technological description.</li> <li>4. By analyzing the technological description of the process, make a judgment about compliance with the requirements of green engineering principles and technological principles.</li> </ol> |   |
| Work placement   | Not applicable   |   |

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