

## Subject card

|                                             |                                                                                                                                                                                                                                                                                                                 |                                                          |                                                                                                                            |                                     |                                                                                              |            |     |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------|------------|-----|
| Subject name and code                       | Bioinorganic chemistry, PG_00171090                                                                                                                                                                                                                                                                             |                                                          |                                                                                                                            |                                     |                                                                                              |            |     |
| Field of study                              | Chemical Business, Chemistry                                                                                                                                                                                                                                                                                    |                                                          |                                                                                                                            |                                     |                                                                                              |            |     |
| Date of commencement of studies             | October 2024                                                                                                                                                                                                                                                                                                    |                                                          | Academic year of realisation of subject                                                                                    |                                     | 2025/2026                                                                                    |            |     |
| Education level                             | postgraduate studies                                                                                                                                                                                                                                                                                            |                                                          | Subject group                                                                                                              |                                     | Optional subject group                                                                       |            |     |
| Mode of study                               | full-time studies                                                                                                                                                                                                                                                                                               |                                                          | Mode of delivery                                                                                                           |                                     | at the university                                                                            |            |     |
| Year of study                               | 2                                                                                                                                                                                                                                                                                                               |                                                          | Language of instruction                                                                                                    |                                     | Polish                                                                                       |            |     |
| Semester of study                           | 3                                                                                                                                                                                                                                                                                                               |                                                          | ECTS credits                                                                                                               |                                     | 2.0                                                                                          |            |     |
| Learning profile                            | academic                                                                                                                                                                                                                                                                                                        |                                                          | Assessment form                                                                                                            |                                     |                                                                                              |            |     |
| Conducting unit                             | Katedra Chemii Bionieorganicznej -> Faculty of Chemistry -> Rektor                                                                                                                                                                                                                                              |                                                          |                                                                                                                            |                                     |                                                                                              |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                                                                                                                              |                                                          | prof. dr hab. Mariusz Makowski                                                                                             |                                     |                                                                                              |            |     |
|                                             | Teachers                                                                                                                                                                                                                                                                                                        |                                                          |                                                                                                                            |                                     |                                                                                              |            |     |
| Lesson types                                | Lesson type                                                                                                                                                                                                                                                                                                     | Lecture                                                  | Tutorial                                                                                                                   | Laboratory                          | Project                                                                                      | Seminar    | SUM |
|                                             | Number of study hours                                                                                                                                                                                                                                                                                           | 30.0                                                     | 0.0                                                                                                                        | 0.0                                 | 0.0                                                                                          | 0.0        | 30  |
|                                             | E-learning hours included: 0.0                                                                                                                                                                                                                                                                                  |                                                          |                                                                                                                            |                                     |                                                                                              |            |     |
|                                             | Additional information:<br>Lecture with multimedia presentation                                                                                                                                                                                                                                                 |                                                          |                                                                                                                            |                                     |                                                                                              |            |     |
| 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                                                                                                                                                                                                                                                                                           | 30                                                       |                                                                                                                            | 10.0                                |                                                                                              | 20.0       | 60  |
| Subject objectives                          | to make students familiar with problems occurring at the border of chemical, biological and medical sciences introduction of basic and specialized information from biochemistry (in particular information about the role played in living organisms by bioelements, ions of selected metals, metal compounds) |                                                          |                                                                                                                            |                                     |                                                                                              |            |     |
| Learning outcomes                           | Course outcome                                                                                                                                                                                                                                                                                                  |                                                          | Subject outcome                                                                                                            |                                     | Method of verification                                                                       |            |     |
|                                             | [CHEMMU2_W05] Has extended knowledge in the field of the specialisation studied.                                                                                                                                                                                                                                |                                                          | A student uses the terminology and chemical symbolism associated with the role of bio-inorganic chemistry                  |                                     | [SW4] test/exam - oral or written                                                            |            |     |
|                                             | [CHEMMU2_K01] Knows the limitations of her/his own knowledge; understands the need for further education and can inspire other people to do so.                                                                                                                                                                 |                                                          | Observation of the student in terms of the ability to search for scientific studies of the issues discussed in the classes |                                     | [SK4] test/exam - oral or written<br>[SK8] observation of student's independent or team work |            |     |
| Subject contents                            | the lecture will discuss contents consistent with the latest scientific trends concerning bioinorganic chemistry                                                                                                                                                                                                |                                                          |                                                                                                                            |                                     |                                                                                              |            |     |
| Prerequisites and co-requisites             | basic knowledge of inorganic and coordination chemistry                                                                                                                                                                                                                                                         |                                                          |                                                                                                                            |                                     |                                                                                              |            |     |

|                                                                |                                                                                                             |                                                                                                                                                                   |                               |
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| Assessment methods and criteria                                | Subject passing criteria                                                                                    | Passing threshold                                                                                                                                                 | Percentage of the final grade |
|                                                                | written exam with open-ended questions (assignments) 8-20 questions, each graded 1 point                    | 50.0%                                                                                                                                                             | 100.0%                        |
| Recommended reading                                            | Basic literature                                                                                            | L. Stephen, B. Jeremy Podstawy chemii bionieorganicznej<br>R. M. Roat-Malone Bioinorganic Chemistry: A Short Course<br>E. Ochiai Bioinorganic Chemistry: a survey |                               |
|                                                                | Supplementary literature                                                                                    | Bioinorganic Chemistry and Applications scientific journal                                                                                                        |                               |
|                                                                | eResources addresses                                                                                        | Adresy na platformie eNauczanie:                                                                                                                                  |                               |
| Example issues/<br>example questions/<br>tasks being completed | What is a sodium-potassium pump? Indicate the number of ions exchanged during normal operation of the pump. |                                                                                                                                                                   |                               |
| Work placement                                                 | Not applicable                                                                                              |                                                                                                                                                                   |                               |

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