



## Subject card

|   |   |  |          |                                     |   |            |     |
|---|---|--|----------|-------------------------------------|---|------------|-----|
| Subject name and code                       | Instrumental methods in analytical chemistry, PG_00048991   |  |          |                                     |   |            |     |
| Field of study                              | Corrosion   |  |          |                                     |   |            |     |
| Date of commencement of studies             | February 2023   | Academic year of realisation of subject  |          |                                     | 2023/2024   |            |     |
| 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                               | 1   | Language of instruction  |          |                                     | Polish  |            |     |
| Semester of study                           | 2   | ECTS credits   |          |                                     | 4.0   |            |     |
| Learning profile                            | general academic profile  | Assessment form  |          |                                     | assessment  |            |     |
| Conducting unit                             | Department of Analytical Chemistry -> Faculty of Chemistry  |  |          |                                     |   |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor  | prof. dr hab. inż. Piotr Konieczka   |          |                                     |   |            |     |
|   | Teachers  |  |          |                                     |   |            |     |
| Lesson types and methods of instruction     | Lesson type   | Lecture  | Tutorial | Laboratory                          | Project   | Seminar    | SUM |
|   | Number of study hours   | 15.0   | 0.0      | 30.0                                | 0.0   | 0.0        | 45  |
|   | 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   | 45   |          | 10.0                                |   | 45.0       | 100 |
| Subject objectives                          | The analytical process, instrumental analytical methods (direct and indirect methods); theoretical basis and description of selected instrumental analytical techniques (spectroscopic techniques; chromatographic techniques and related, electroanalytical techniques). |  |          |                                     |   |            |     |
| Learning outcomes                           | Course outcome  | Subject outcome  |          |                                     | Method of verification  |            |     |
|   | K7_K01  | Understands the need to teach  |          |                                     | [SK5] Assessment of ability to solve problems that arise in practice<br>[SK2] Assessment of progress of work  |            |     |
|   | K7_W04  | Has a basic knowledge about methods of measurement applicable to studies of corrosive          |          |                                     | [SW3] Assessment of knowledge contained in written work and projects  |            |     |
|   | K7_U01  | Can obtain an information from the literature, databases, and other, properly selected sources |          |                                     | [SU3] Assessment of ability to use knowledge gained from the subject<br>[SU1] Assessment of task fulfilment<br>[SU4] Assessment of ability to use methods and tools |            |     |
| Subject contents                            | Flame photometry, ASA, GC, TLC and LC, Elektroanalityczne, calibration Techniques, QA/QC  |  |          |                                     |   |            |     |
| Prerequisites and co-requisites             | Basic knowledge of analytical chemistry on the theory of instrumental methods of analysis.  |  |          |                                     |   |            |     |
| Assessment methods and criteria             | Subject passing criteria  | Passing threshold  |          |                                     | Percentage of the final grade   |            |     |
|   | laboratory  | 60.0%  |          |                                     | 60.0%   |            |     |
|   | lecture   | 60.0%  |          |                                     | 40.0%   |            |     |

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| Recommended reading  | Basic literature  | 1. A. Cygański, Metody spektroskopowe w chemii analitycznej, WNT, Warszawa, 2002.<br><br>2. Z. Witkiewicz, J. Hepter, Chromatografia gazowa, WNT, Warszawa, 2009.<br><br>3. W. Szczepaniak, Metody instrumentalne w analizie chemicznej, PWN, Warszawa 2008. |
|  | Supplementary literature  | Literature of the subject of analytical instrumental methods   |
|  | eResources addresses  | Adresy na platformie eNauczanie:   |
| Example issues/<br>example questions/<br>tasks being completed | <ol style="list-style-type: none"> <li>1. What characterizes a reliable analytical result?</li> <li>2. Specify the range of applications of Certified Reference Materials.</li> <li>3. Point out the systems for inserting the sample into the chromatographic column.</li> <li>4. What determines the elution sequence in the case of the liquid chromatography technique in the reversed phase system.</li> <li>5. Give the characteristics of the conductivity technique.</li> </ol> |  |
| Work placement   | Not applicable  |  |