



Subject card

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|---|--|---|-------------------------------------|------------|--|---------|-----|
| Subject name and code | Laboratory of the Physical Chemistry, PG_00037392 | | | | | | |
| Field of study | Biotechnology | | | | | | |
| Date of commencement of studies | October 2020 | Academic year of realisation of subject | | | 2021/2022 | | |
| Education level | first-cycle studies | Subject group | | | Obligatory subject group in the field of study 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 | | | Polish | | |
| Semester of study | 4 | ECTS credits | | | 6.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Department of Physical Chemistry -> Faculty of Chemistry | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Jarosław Wawer | | | | | |
| | Teachers | dr inż. Jarosław Wawer dr hab. Aneta Panuszko prof. dr hab. inż. Jan Zielkiewicz | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 0.0 | 0.0 | 45.0 | 0.0 | 0.0 | 45 |
| | E-learning hours included: 0.0 | | | | | | |
| Laboratorium Chemii Fizycznej (lato 2021_22, BT sem. 4) - Moodle ID: 21240 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=21240 | | | | | | | |
| 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 | 3.0 | 102.0 | 150 | | |
| Subject objectives | Students after the course should: - understand the basics of the following techniques: potentiometry, spectrophotometry, conductometry, calorimetry, the measurement of surface tension, refractive index, density, boiling point, viscosity - be able to apply this techniques in order to solve a specific problems - be able to make all necessary calculations and draw the conclusions | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | K6_U09 | Student gains practical skills to use spectrophotometer and other analytical methods. | | | [SU4] Assessment of ability to use methods and tools | | |
| | K6_W09 | Student gains the knowledge about analytical methods (including spectroscopy) used in biotechnology. | | | [SW1] Assessment of factual knowledge | | |
| | K6_U02 | Student is able to predict the progress of the process and the properties of the biomolecules using the knowledge from the chemistry (including physical chemistry) | | | [SU2] Assessment of ability to analyse information | | |
| | K6_U01 | Student is able to recalculate the experimental data to determine the requested quantity. Student is able to analyse the data using the basic knowledge from the physics. | | | [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment | | |

| Subject contents | <p>Laboratory classes are divided into 2 parts. In each section student should pass 4 tests and perform 3 experiments.</p> <p>Part 1</p> <ol style="list-style-type: none"> 1. Spectrophotometry; determination of the composition of complexes 2. Calorimetry 3. Molecular weight of polymers 4. The physicochemical properties of liquids <p>Part 2</p> <ol style="list-style-type: none"> 5. Potentiometry; kinetics of iodination of aniline 6. Phase diagram liquid-vapor 7. Kinetics of coagulation 8. Conductometry | | | | | | | | | | | |
|--|--|---|--|--------------------------|-------------------|-------------------------------|--------|-------|-------|------|-------|-------|
| Prerequisites and co-requisites | The student should be familiar with basic tools in Mathematics and Physics at the level required form second-year student of Technical University. The student should be familiar with Chemistry at the level required form second-year student of Chemical Faculty. | | | | | | | | | | | |
| Assessment methods and criteria | <table border="1" data-bbox="448 595 1487 701"> <thead> <tr> <th data-bbox="448 595 794 629">Subject passing criteria</th> <th data-bbox="794 595 1141 629">Passing threshold</th> <th data-bbox="1141 595 1487 629">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 629 794 663">Report</td> <td data-bbox="794 629 1141 663">85.0%</td> <td data-bbox="1141 629 1487 663">20.0%</td> </tr> <tr> <td data-bbox="448 663 794 701">Test</td> <td data-bbox="794 663 1141 701">60.0%</td> <td data-bbox="1141 663 1487 701">80.0%</td> </tr> </tbody> </table> | | | Subject passing criteria | Passing threshold | Percentage of the final grade | Report | 85.0% | 20.0% | Test | 60.0% | 80.0% |
| Subject passing criteria | Passing threshold | Percentage of the final grade | | | | | | | | | | |
| Report | 85.0% | 20.0% | | | | | | | | | | |
| Test | 60.0% | 80.0% | | | | | | | | | | |
| Recommended reading | Basic literature | H. Strzelecki, W. Grzybkowski "Physical Chemistry - laboratory classes" Wydawnictwo PG, Gdańsk, 2004 P. W. Atkins "Physical Chemistry" PWN, Warszawa, 2003 | | | | | | | | | | |
| | Supplementary literature | Detailed bibliography can be found in H. Strzelecki, W. Grzybkowski "Chemia fizyczna - Ćwiczenia laboratoryjne" Wydawnictwo PG, Gdańsk, 2004 | | | | | | | | | | |
| | eResources addresses | | | | | | | | | | | |
| Example issues/ example questions/ tasks being completed | | | | | | | | | | | | |
| Work placement | Not applicable | | | | | | | | | | | |