**COURSE DESCRIPTION (SYLLABUS)**

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| 1. | Course:<br>**Biophysics** |
| 2. | Language of instruction:<br>**English** |
| 3. | Faculty:<br>**Faculty of Biotechnology** |
| 4. | Course/module code:<br>**29-BT-S1-E4-EnBphc** |
| 5. | Course/module type (*mandatory* or *elective*):<br>**mandatory** |
| 6. | Programme:<br>**Biotechnology** |
| 7. | Study cycle (*1st/2nd*):<br>**1st cycle** |
| 8. | Year:<br>**2nd** |
| 9. | Semester *(autumn* or *spring):*<br>**spring** |
| 10. | Form of tuition and number of hours:<br>Laboratory: **30 h**<br>Learning methods:<br>• **laboratory: performing scientific experiments**<br>• **team work**<br>• **analysis of results** |
| 11. | Coordinator(s):<br>**Wojciech Bialek, PhD** |
| 12. | Initial requirements (*knowledge, skills, social competences*):<br>**Basic knowledge about photosynthesis and redox reactions.** |
| 13. | Objectives:<br>**To introduce the basics of biochemical preparation and spectrophotometric analysis, redox reactions as well as calculating enzymatic activity.** |
| 14. | Content:<br>• **Conversion of solar energy to chemical energy.**<br>• **Organelles, biological membranes and membrane and soluble proteins involved in** |

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<tr><td></td><td colspan="2">the process of photosynthesis.<br>• Detailed description of photosynthethic light and dark phase.<br>• Structures of photosynthethic reaction centers and oxygen-evolving center.<br>• Application of inhibitors, artificial electron donors and acceptors in the study of photosynthethic electron flow.</td></tr>
<tr><td>15.</td><td>Learning outcomes:<br>• Students understand basic terms in the field of biophysics. They know basic biophysical methods and techniques.<br>• Students are able to perform simple experiments under supervision. They can draw conclusions from experiments. They can critically analyze obtained results.<br>• Students know rules of safety work in the lab. They show responsibility for carrying out experiments.</td><td>Outcome symbols:<br>K1_W01; K1_W05; K1_U01; K1_U05; K1_U09; K1_K03</td></tr>
<tr><td>16.</td><td colspan="2">Recommended literature:<br>Mandatory:<br>• Lab manual;<br>• Berg, Tymoczko, Stryer: Biochemistry, Chapter: <u>Photosynthesis.</u><br>Recommended:<br>• Rao, Hall; Photosynthesis.</td></tr>
<tr><td>17.</td><td colspan="2">Methods of verification of the assumed learning outcomes:<br>• entry test<br>• lab report<br>• final test</td></tr>
<tr><td>18.</td><td colspan="2">Conditions of earning credits:<br>• final test: multiplte choice and open questions, 60% required to pass;<br>• entry test: 3-5 questions;<br>• lab report: analysis of results, presenting scientific data in the form of description, tables and figures.</td></tr>
<tr><td rowspan="3">19.</td><td colspan="2">Student’s workload:</td></tr>
<tr><td>Activity</td><td>Number of hours for the activity</td></tr>
<tr><td>Hours of instruction (as stipulated in study programme):<br>• laboratory: 20 h<br>• seminar: 2 h<br>• discussion session: 1,5 h<br>• consultation: 3,5 h</td><td>27 h</td></tr>
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| | Student's own work:<br>• preparing for classes<br>• literature reading<br>• preparing lab report<br>• preparations for test | 10 h |
| | Total number of hours: | **37 h** |
| | Number of ECTS: | **2 ECTS** |