<table>
<thead>
<tr>
<th>Course title</th>
<th>ECTS code</th>
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<tbody>
<tr>
<td>Protein fosforylation in bacteria (lecture)</td>
<td>13.1.0222</td>
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</tbody>
</table>

**Name of unit administrating study**

Intercollegiate Faculty of Biotechnology UG-MUG

**Teaching staff**

dr hab. Michał Obuchowski

**Studies**

<table>
<thead>
<tr>
<th>faculty</th>
<th>field of study</th>
<th>type</th>
<th>form</th>
<th>specialty</th>
<th>specialization</th>
<th>semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercollegiate Faculty of Biotechnology UG-MUG</td>
<td>Biotechnology</td>
<td>second tier studies (MA)</td>
<td>full-time</td>
<td>all</td>
<td>all</td>
<td>2</td>
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</table>

**Forms of classes, the realization and number of hours**

**Forms of classes**

Wykład (to translate)

**The realization of activities**

lectures in the classroom

**Number of hours**

Wykład (to translate): 15 hours

**The academic cycle**

2013/2014 summer semester

**Type of course**

elective (to translate)

**Language of instruction**

english

**Teaching methods**

wykład z prezentacją multimedialną (to translate)

**Form and method of assessment and basic criteria for evaluation or examination requirements**

**Final evaluation**

Zaliczenie na ocenę (to translate)

**Assessment methods**

Written test

**The basic criteria for evaluation**

Assessment covers contents contained in the box ‘Course Contents’. The assessment is performed according to percentage index (compliant with the Rules and Regulations for Studies at the UG). Questions cover all effects indicated in the box ‘Learning Outcomes’

**Required courses and introductory requirements**

A. Formal requirements

Bachelor’s degree

B. Prerequisites

**Aims of education**

The student possesses knowledge about chemism of protein phosphorylation and its significance for all living organisms. He knows and can describe chosen systems of protein phosphorylation functioning in various bacterial strains on the molecular level (K_W01). He is able to show connections between the described system of protein phosphorylation and the behavior of the whole microorganism in environment. He can predict the impact of the disturbance of the described systems on the physiology of a bacterial cell and its interaction with other living organisms (K_W02).

**Course contents**

General conception of protein activity regulation through phosphorylation. Structure and activity of protein kinases and phosphatases. Selected examples of systems using protein phosphorylation such as: regulation of chemotactic response in bacteria (E. coli), activity of the mechanism of general stress response (B. subtilis), control of bioaccessible nitrogen assimilation (E.coli), virulence regulation (V. cholera and Y. pestis), formation of bacterial spores (B. subtilis), regulation of bacterial bioluminescence (V.fisher, V.harvey), mechanism of acquiring natural genetic competence (B. subtilis), regulation of phosphorylation-dependent transport of sugars to the cell (B. subtilis).

**Bibliography of literature**
Script ‘Protein Phosphorylation in Bacteria’ available in the extranet in the tab of the course; review papers concerning issues discussed during the lecture.

<table>
<thead>
<tr>
<th>The learning outcomes</th>
<th>Knowledge</th>
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<tbody>
<tr>
<td>K_W01</td>
<td>K_W01 Understands complex biological phenomena on the molecular level, knows their significance for biotechnology and their relationships with other areas and disciplines of science</td>
</tr>
<tr>
<td>K_W02</td>
<td>K_W02 Possesses a deepened knowledge in the field of related scientific areas and disciplines allowing him to see connections and dependencies in nature, in particular those essential for biotechnology</td>
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<tr>
<th>Skills</th>
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<tr>
<td>Social competence</td>
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Contact

obuchowk@biotech.ug.edu.pl