| 1. | **Field of study** | **Biotechnology** |
|---|---|---|
| 2. | Academic year of entry | 2016/2017 (winter term), 2017/2018 (winter term) |
| 3. | Level of qualifications/degree | first-cycle studies |
| 4. | Degree profile | general academic |
| 5. | Mode of study | full-time |

## Module: Medical biotechnology

**Module code:** 1BT_34

**1. Number of the ECTS credits:** 2

**2. Learning outcomes of the module**

| code | description | learning outcomes of the programme | level of competence (scale 1-5) |
|---|---|---|---|
| 1BT_34_01 | Student explains the mechanisms of action of antibiotics and their placements in the cell holder pathogen. She/he can name the side effects of antibiotics and other chemotherapeutics. He/she has a basic knowledge of the construction of viruses and knows the mechanisms of action of antiviral drugs. He/she knows how to present the applicability of human viruses and bacteria in modern biotechnology and medicine. Student describes antibodies is and able to point out their potential use in the diagnosis and treatment of human diseases. | 1BT_W12<br>1BT_W13<br>1BT_W14<br>1BT_W19 | 5<br>4<br>4<br>4 |
| 1BT_34_02 | Student characterizes natural antimicrobials, cancer and preparations to assist the human body. Can introduce types of vaccines, as well as understands the mechanisms of their design and production. Estimates the possibility of using opportunistic microorganisms and pathogenic, bacterial toxins in biotechnology. He/she sees the relationship between the balance of bacterial flora of the human body and its homeostasis. | 1BT_W12<br>1BT_W17 | 5<br>4 |
| 1BT_34_03 | Student classifies methods of diagnosis and therapy of infectious diseases and infections important from a public health perspective. Understands the importance of research concerning the culture of cells, tissues and organs for transplantation. Assesses the development of new techniques in medicine. Understands the importance of the need to develop methods for the production of biomedical materials. | 1BT_W14<br>1BT_W16 | 4<br>4 |
| 1BT_34_04 | Designs and reports developed in a team particular scientific problem. Demonstrates responsibility for his/her work. Understands and explains discussed issues. | 1BT_U04<br>1BT_U05<br>1BT_U11<br>1BT_W19 | 5<br>5<br>5<br>4 |
| 1BT_34_05 | Student can analyze and critically evaluate the information given in various sources including those in English. He has a habit of updating expertise and critical evaluation of the possibility of its practical use. | 1BT_K04<br>1BT_K06 | 5<br>5 |

| 3. Module description | |
|---|---|
| **Description** | The module provides knowledge in the field of medical biotechnology. It provides knowledge on antibiotics, their structure, mechanism of action and the grip point in the cell. Indicates the current directions in the search for new antibiotics. Shows the possibility of using microorganisms and their metabolic products in human medicine and biotechnology. Describes the effect of chemotherapeutic agents on the human body. Particular emphasis is placed on discussion of the significance of stem cells and biomaterials in medicine, as well as modern diagnostic techniques using antibodies. After developing a group of selected scientific problem, a student acquires the skills of selection and updating of expertise, as well as work in a team. |
| **Prerequisites** | Basic knowledge of microbiology, animal physiology, biochemistry, genetics, cell biology. |

**4. Assessment of the learning outcomes of the module**

| code | type | description | learning outcomes of the module |
|---|---|---|---|
| 1BT_34_w01 | Presentation of particular scientific issue | Oral presentation of the paper verifying a student’s scientific problem description. | 1BT_34_02, 1BT_34_03, 1BT_34_04, 1BT_34_05 |
| 1BT_34_w02 | Continuous assessment | Continuous evaluation of a student's activity during the seminars, participation in the discussion, the ability to provide reasons for his/her opinions. | 1BT_34_02, 1BT_34_03, 1BT_34_04 |
| 1BT_34_w03 | Written test | Multiple choice test containing closed questions covering topics presented during lectures. | 1BT_34_01 |

**5. Forms of teaching**

| code | form of teaching | | | required hours of student's own work | | assessment of the learning outcomes of the module |
|---|---|---|---|---|---|---|
| | type | description (including teaching methods) | number of hours | description | number of hours | |
| 1BT_34_fs01 | lecture | Lecture showing selected aspects of the use of audio-visual aids - computer presentations to illustrate the issues discussed. | 10 | Working with the textbook, supplementary reading - magazines in the field of medical science, including the English language. | 10 | 1BT_34_w03 |
| 1BT_34_fs02 | discussion classes | Presentation by a student, showing the development of the research problem. Consultation: Discussion of the problems identified by a student, an indication of the literature and Internet sources. | 20 | Description of the scientific problem based on a selected student scientific literature, including English-language. | 15 | 1BT_34_w01, 1BT_34_w02 |