Course Specifications

Valid as from the academic year 2016-2017

The Living World 2: Microbiology (O00084)

Course size

<table>
<thead>
<tr>
<th>Credits</th>
<th>Study time</th>
<th>Contact hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>150 h</td>
<td>60.0 h</td>
</tr>
</tbody>
</table>

Course offerings and teaching methods in academic year 2016-2017

A (semester 2)
- microteaching: 10.0 h
- practicum: 20.0 h
- lecture: 30.0 h

Lecturers in academic year 2016-2017

- Radwanska, Magdalena CA10 lecturer-in-charge
- Magez, Stefan CA10 co-lecturer

Offered in the following programmes in 2016-2017

<table>
<thead>
<tr>
<th>Programme</th>
<th>crdts</th>
<th>offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Science in Food Technology</td>
<td>5</td>
<td>A</td>
</tr>
<tr>
<td>Joint Section Bachelor of Science in Environmental Technology</td>
<td>5</td>
<td>A</td>
</tr>
<tr>
<td>Food Technology and Molecular Biotechnology</td>
<td>5</td>
<td>A</td>
</tr>
<tr>
<td>Bachelor of Science in Environmental Technology</td>
<td>5</td>
<td>A</td>
</tr>
<tr>
<td>Bachelor of Science in Molecular Biotechnology</td>
<td>5</td>
<td>A</td>
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</tbody>
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Teaching languages

- English

Keywords

- Taxonomy, Evolution, Biodiversity and Ecology of Microorganisms, Prokaryotes, Bacteria, Archaea, Unicellular Fungi, Unicellular Eukarya, Viruses, Cellular Morphology, Metabolism, Genomics and Genetics of Microorganisms, Pathogenic and Beneficial Role and Functions of Microorganism.

Position of the course

The Living World 2 constitutes a basic course in biology of microorganisms including Bacteria, Archaea, Unicellular Fungi and Eukarya, and Viruses. The course gives an introduction to the taxonomy, morphology, genomics, genetics and biochemistry of microorganisms. Typical features of the taxa are discussed; various adaptations to the environments, potential applications for agriculture, medicine, and ecology are explained. Moreover, the course gives an introduction to the beneficial and pathogenic role and functions of microorganism in respectively health and diseases.

Contents

1. Introduction to Microbiology: Diversity, Taxonomy, The Role and Functions of Microorganisms.
2. Structures and Biology of Prokaryotic and Eukaryotic Microorganisms.
3. Microbial Growth and Metabolism.
4. Microbial Genomics and Genetics
5. Microorganisms in Health and Diseases (Beneficial Role of the Microbiome, Antibiotic Resistance, Host-Pathogen Interactions, Infectious Diseases and Epidemiology, Diagnostics).
7. Contribution to the Nutrient Cycles.
8. The Role of Microorganisms in Agriculture.

Initial competences

Knowledge of Living World 1 is required.
Final competences
Students gain knowledge of the taxonomy, biodiversity, and biological functions and features of Bacteria, Archaea, Viruses, Unicellular Fungi and Eukarya. This includes morphological structures, biochemistry, genomics and genetics of microorganisms. Moreover, students acquire understanding of the role and functions of microorganisms in health, disease, ecology, agriculture, and nutrient cycles. They also gain skills how to identify and grow microorganisms for various applications in biotechnology.

Conditions for credit contract
Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract
This course unit cannot be taken via an exam contract

Teaching methods
Lecture, microteaching, practicum

Learning materials and price
Power Point slides, handouts of the practical laboratory exercises, and movies are available as learning materials. The course uses a text book: ‘Brock Biology of Microorganisms’.

References

Course content-related study coaching

Evaluation methods
end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period
Written examination with open questions

Examination methods in case of periodic evaluation during the second examination period

Examination methods in case of permanent evaluation
Assignment, skills test

Possibilities of retake in case of permanent evaluation
examination during the second examination period is possible in modified form

Extra information on the examination methods
Participation in the practical laboratory exercises and submission of a practical course report are mandatory in order to pass the course.

Calculation of the examination mark
Written examination with open questions 80%
Practical Laboratory Exercises 10%
Report from the practical laboratory exercises 10%