



Valid as from the academic year 2016-2017

The Living World 2: Microbiology (O000084)

Course size (nominal values; actual values may depend on programme)

Credits 5.0 **Study time** 150 h **Contact hrs** 60.0 h

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

	crdts	offering
Bachelor of Science in Food Technology	5	A
Joint Section Bachelor of Science in Environmental Technology, Food Technology and Molecular Biotechnology	5	A
Bachelor of Science in Environmental Technology	5	A
Bachelor of Science in Molecular Biotechnology	5	A

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).
6. Microbial Ecology and Biodiversity.
7. Contribution to the Nutrient Cycles.
8. The Role of Microorganisms in Agriculture.
9. The use of Microorganisms as Tools for Molecular Biotechnology.

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

Brock Biology of Microorganisms, Madigan et al, Fourteenth Edition, Pearson.

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%