



Valid as from the academic year 2016-2017

The Living World 1: General Biology (O000076)

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 1)	PDE tutorial	5.0 h
	lecture	30.0 h
	lecture: plenary exercises	7.5 h
	practicum	7.5 h
	microteaching	5.0 h
	self-reliant study activities	5.0 h

Lecturers in academic year 2016-2017

Depuydt, Stephen WE09 lecturer-in-charge

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

Universal features of life. Basic Cell Biology; Basic Biochemistry; Basic Genetics; Basic Molecular Biology; Recombinant DNA technology; History of Science and Biological Sciences; Origin, evolution and tree of life; Biotech in Asia; Chemistry of Life

Position of the course

Living World I constitutes a basic course in biology with emphasis on the universal features of life, i.e. the general concepts in biological sciences. The course gives an introduction on the general biological processes in life and diversity evolved by adaptation in a changing physical and biological world. In Living World I the emphasis is put on the unifying features of life including cell biology, biochemistry, genetics, molecular biology, and recombinant DNA technology. Living World II and III emphasize the diversity of life in the light of evolution.

Contents

1. The general structure of a cell: pro- and eukaryotic cells and organization, organelles, cytoskeleton, membranes, cellular transport, intercellular communication.
 2. Flow of matter and energy in life: primary metabolism of the cell. ATP as biological energy molecule, basic features of enzymes, aerobic respiration, photosynthesis.
 3. Mechanisms of reproduction, sex and death in life; genetics: chromosomes and genes, mitosis and meiosis, Mendel's Laws + extensions, genotype and phenotype.
 4. The origin of molecular biology: replication, transcription, translation and gene regulation.
 5. Unifying features of life and recombinant DNA technology. Their applications in agriculture and medicine.
- Via seminar sessions, guided exercises, independent work and microteaching, overviews of the history of science and the scientific method, evolution, the state of the

art of biotech in Asia, the chemistry of life etc. will be provided.

- Week 1: The cell as the fundamental unit of life
- Week 2: Organelles, structure and function
- Week 3: Biological Membranes
- Week 4: Energy processes in the cell
- Week 5: Aerobic Respiration
- Week 6: Photosynthesis
- Week 7: Chromosomes, mitosis and meiosis
- Week 8: Genetics
- Week 9: DNA, structure and replication
- Week 10: Transcription and translation
- Week 11: Origin of Life and Darwin's data
- Week 12: Evolution, genetic evolution and tree of Life

Initial competences

Secondary school knowledge of history, biology, geology and chemistry.

Final competences

To know and understand concepts and general principles of cell biology, genetics, biochemistry and to use this for other courses in life sciences.
To recognize and understand the impact and importance of cell biological and biochemical principles, and of genetic information, on evolution and how living organisms work, at the cellular and molecular level.
Reading popularized books, general scientific articles and taking position in public common discussions on matters of evolution, cell biology and genetics.

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, PDE tutorial, practicum, self-reliant study activities, lecture: plenary exercises

Learning materials and price

Written syllabus and powerpoint slides will be provided

References

Campbell Biology (tenth edition), Reece et al.

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, written examination with multiple choice questions

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

Examination methods in case of permanent evaluation

Participation, assignment

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

Calculation of the examination mark

Written exam with multiple choice questions: 10%
Written exam with open questions: 70%
Assignment: 15%
Participation: 5%