

Course Specifications

From the academic year 2019-2020 up to and including the

Quantitative Cell Biology (E074010)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size (nominal values; actual values may depend on programme)
Credits 3.0 Study time 90 h Contact hrs 30.0 h

Course offerings and teaching methods in academic year 2020-2021

A (semester 1)	English	Gent	lecture	15.0 h
			practicum	15.0 h

Lecturers in academic year 2020-2021

Skirtach, Andre	LA25	lecturer-in-charge
De Vos, Winnok	LA25	co-lecturer
Van Criekinge, Wim	LA26	co-lecturer

Offered in the following programmes in 2020-2021

	crdts	offering
Master of Science in Biomedical Engineering	3	A
Master of Science in Biomedical Engineering	3	A

Teaching languages

English

Keywords

Cell biology, biochemical analysis, molecular biotechnological analysis, quantitative analysis, systems biology

Position of the course

The course provides basic introduction to cell biology and different methods available for quantitative analysis of cells and cell components

Aim: introduction of different components of the cell and their interactions, review of the different methods and techniques for the analysis of cells and tissues

Competency: understanding basic principles in cell biology and orientation of problems in cell biology

Contents

- Chapter 1: Basic concepts in cell biology
- Chapter 2: Structure and function of cells; applications: towards personalized medicine
- Chapter 3: Enzyme kinetics and regulation
- Chapter 4: Cell analysis I: Microscopy and flow cytometry
- Chapter 5: Cell analysis II: Label-free and high-resolution analysis
- Chapter 6: Advanced light- and electron- microscopy techniques

Initial competences

basic knowledge of biology, chemistry and physics (optics)

Final competences

- 1 be familiar with the basic terminology and have basic knowledge in cell biology
- 2 understand various techniques, which are used and are applied for cell analysis, and be able to apply quantitative analysis
- 3 understand the relation between cell composition and cell function as inferred from the above mentioned techniques

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, practicum

Extra information on the teaching methods

Classroom lectures and laboratory sessions

Learning materials and price

lecture notes and/or PPT-slides

References

- "Molecular Cell Biology", 5th edition. Lodish, Berk, Matsudaira, Krieger, Scott, Zipursky, Darnell, Freeman NY, 2003
- "Physical biology of the cell", 2nd Edition. R. Phillips, J. Kondev, J. Theriot, H. G. Garcia. Publisher: Garland Science, 2013
- "Essential Cell Biology", 5th Edition. B. Alberts, 2019
- PDF papers and reviews in top ranked journals: nature, science, cell etc..
- Hand-outs

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

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

Written examination

Examination methods in case of permanent evaluation

Skills test

Possibilities of retake in case of permanent evaluation

examination during the second examination period is not possible

Extra information on the examination methods

During examination period: written closed-book exam.

Practical exercises are obligatory. Not participating in periodical and/or non-periodical evaluations, may result in failure for this course.

Calculation of the examination mark

Evaluation during examination period (90 %), evaluation during practica (10%)