

Applied Biomedical Techniques (G000797)

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** 50.0 h

Course offerings and teaching methods in academic year 2020-2021

A (semester 2) Dutch Gent lecture: plenary exercises 50.0 h

Lecturers in academic year 2020-2021

Van Immerseel, Filip	DIO5	lecturer-in-charge
Devreese, Mathias	DIO2	co-lecturer
Favoreel, Herman	DIO4	co-lecturer
Geldhof, Peter	DIO4	co-lecturer
Meyer, Evelyne	DIO2	co-lecturer
Peelman, Luc	DIO7	co-lecturer
Van Den Broeck, Wim	DIO3	co-lecturer
Vanhaecke, Lynn	DIO6	co-lecturer
Van Soom, Ann	DIO8	co-lecturer

Offered in the following programmes in 2020-2021

	crdts	offering
Master of Veterinary Medicine in Veterinary Medicine (main subject Companion Animals)	3	A
Master of Veterinary Medicine in Veterinary Medicine (main subject Horse)	3	A
Master of Veterinary Medicine in Veterinary Medicine (main subject Pig, Poultry and Rabbit)	3	A
Master of Veterinary Medicine in Veterinary Medicine (main subject Research)	3	A
Master of Veterinary Medicine in Veterinary Medicine (main subject Ruminants)	3	A

Teaching languages

Dutch

Keywords

Biomedical techniques

Position of the course

This course aims to familiarize students with several biomedical techniques.

Contents

This course consists of 8 workshops on biomedical techniques including (not limited to):

- cell analysis techniques:
 - scanning and transmission elektron microscopy
 - flow cytometry en FACS
 - fluorescent staining techniques of embryos and sperm cells
- assisted reproduction techniques: IVM (in vitro maturation), IVF (in vitro fertilisation), embryo production, ICSI (intra cytoplasmatic sperm-injection), CASA (computer assisted sperm analysis)
- separation, purification and quantitative analysis of proteins
 - chromatographic techniques
 - gel filtration
 - LC-MS
- Molecular DNA tools for bacterial typing (PFGE, PCR)
- DNA diagnostics for sex determination and detection of mutations

- Bio-informatics

These workshops will familiarize students with several biomedical techniques, including their practical applications, in diverse biomedical domains such as fundamental and clinical research, as well as diagnostics.

Each student has to make a report about these workshops (in small groups), including the use and applications of the biomedical technique(s), their pro and cons and their limitations.

Initial competences

A basic knowledge on cell biological and molecular biomedical techniques is warranted.

Following the final attainment of the theoretical course "cell biological and molecular techniques in biomedical research" (first semester, third master year veterinary medicine, option research).

Subscribing for this course is only possible after obtaining a bachelor degree in veterinary medicine or when enrolled in a GIT trajectory in veterinary medicine between the third bachelor and first master year.

For students who are not currently enrolled in the UGent veterinary medicine studies is subscription for this course only possible if they comply with the majority of final competencies of the bachelor in veterinary medicine degree and after approval of the curriculum commission.

Final competences

- 1 Having knowledge and insights in a variety of techniques and equipment in biomedical research and their applications (2.4)
- 2 Having practical skills in a variety of techniques in biomedical research (2.1, 3.1)
- 3 Being experienced in searching in scientific databases on the use of techniques and equipment used in biomedical research (2.1, 3.1, 3.2)
- 4 Contribution to interdisciplinary competences: having a critical scientific way of reasoning in setting up experiments (2.1, 3.1)
- 5 Contribution to interdisciplinary competences; being skilled in writing reports on scientific-technical topics (2.5)
- 6 Contribution to interdisciplinary competences: being able to work in team on assignments with a deadline (4.4)

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: plenary exercises

Extra information on the teaching methods

The practical course consists of workshops. Hereby, a limited number of students will be guided by one or two persons. Background info on the techniques and applications are given.

Learning materials and price

(Electronical) manuals and scientific publications regarding biomedical equipment and techniques. Additional material is provided for free in the libraries and electronic databases of the Ghent University.

References

Course content-related study coaching

A formal student guidance is not provided. However, contact with docents is possible to discuss problems and ask questions.

Evaluation methods

continuous assessment

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

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

Examination methods in case of permanent evaluation

Report

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

There is a permanent evaluation with a quotation for each workshop based on (i) motivation and participation during the workshop and (ii) an assessment of the skills of the students to translate the acquired theoretical knowledge into practice.

In addition, there will be an evaluation of the written reports at the end of the course.

Exams in the second examperiod is possible in amended form. Hereby, the student will have to make a summary of a given scientific publication in which a biomedical technique was used. This biomedical technique will also need to be worked out completely.

Because of the continuous assessment, the presence and active participation during the workshops is compulsory and deliberately evading the permanent evaluation may lead to not succeeding this course.

Calculation of the examination mark

Permanent evaluation (40%), written report(s) (60%)