GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2026-2027

Human and Animal Biotechnology (I002613)

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

Credits 5.0 **Study time 150 h**

Course offerings in academic year 2026-2027

A (semester 2) English Gent

Lecturers in academic year 2026-2027

Vanrompay, Daisy LA22 lecturer-in-charge

Offered in the following programmes in 2026-2027	crdts	offering
Master of Science in Biochemical Engineering Technology	5	A
Master of Science in Bioscience Engineering: Cell and Gene Biotechnology	5	A
Exchange Programme in Bioscience Engineering: Cell and Gene Biotechnology (master's level)	5	A

Teaching languages

English

Keywords

1 Cell and tissue engineering, 3D culturing, gene expression, biotechnological drugs, gene therapy, vaccinology, nanobodies

Position of the course

This course aims to give students an overview of the main aspects of human and animal biotechnology and its related techniques and applications

Contents

1) general aspects of cell and tissue engineering, 2) 3D culturing, organoids, 3) embryology and stem cells, 4) gene transfer and expression in eukaryotic cells, 5) production of classic and recombinant vaccines, including DNA and mRNA vaccines, 6) nanobody engineering, 7) gene therapy, 8) recombinant drugs and their registration

Initial competences

Human and Animal Biotechnology builds on certain learning outcomes of course units Microbiology, Cell Biology, Gene Technology and Molecular Diagnostics; or the learning outcomes have been achieved differently.

Final competences

1 Explain and apply advanced knowledge from core biomedical disciplines to biomedical applications

2 Demonstrate necessary skills in the manipulation of human and animal cells and tissues

3 Discuss skills for gene expression in eukaryotic cells

4 Design strategies for developing recombinant drugs and their applications

5 Evaluate new scientific developments in genetic engineering within scientific and socio-economic contexts

6 Apply ethical and confidentiality principles in human and animal biotechnology applications

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, Practical, Independent work

Extra information on the teaching methods

Theory: lecture using power point presentations which will be made available via the electronic learning platform, with recordings where available. Practical: biotechnological engineering techniques focused on the contents of the course and to be performed by the student in the laboratory. Master's dissertation: possibility to prepare a Master's dissertation.

Study material

Type: Syllabus

Name: HUMAN AND ANIMAL BIOTECHNOLOGY
Indicative price: € 15
Optional: no
Language : English
Number of Pages : 184
Available on Ufora : No
Online Available : No
Available in the Library : No
Available through Student Association : No
Additional information: Available for sale during the first lecture.

Type: Slides

Name: HUMAN AND ANIMAL BIOTECHNOLOGY
Indicative price: Free or paid by faculty
Optional: no
Language : English
Number of Slides : 616
Available on Ufora : Yes
Online Available : No
Available in the Library : No
Available through Student Association : No
Additional information: Available on UFORA a few days before each lecture.

Type: Handouts

Name: HUMAN AND ANIMAL BIOTECHNOLOGY - Practical Protocols etc.
Indicative price: € 5
Optional: no
Language : English
Number of Pages : 15
Available on Ufora : Yes
Online Available : No
Available in the Library : No
Available through Student Association : No
Usability and Lifetime within the Course Unit : regularly
Usability and Lifetime within the Study Programme : one-time
Usability and Lifetime after the Study Programme : not
Additional information: Available for sale during the first lecture. The student is expected to bring the Protocol to the Practical.

References

1) Animal Cell culture: essential methods; Wiley-Blackwell, (2011). J.M. Davis, J. Wiley and Sons Inc., Hoboken, New Jersey, US.
2) Methods in Molecular Biology: 3D Cell Culture (2024), 2nd Edition, Zuzana Koledova (Editor), Humana Press
3) The immortal life of Henrietta Lacks by Rebecca Skloot, (2010), Crown Publishers New York,
4) Textbook of drug design and discovery (2016), 5th Edition, K. Stromgaard, P Krosgsgaard-Larsen, Ulf Madsen (editors), CRC Press,
5) Methods in Molecular Biology, Vaccine design (2022), 2nd Edition, S. Thomas (editor), Springer, New York

Course content-related study coaching

Teacher and assistant available for student counseling

Assessment moments

end-of-term and continuous assessment

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

Written assessment

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

Written assessment

Examination methods in case of permanent assessment

Participation, Written assessment, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is not possible

Extra information on the examination methods

Lectures: written examination
Practical: written assignment and participation

Calculation of the examination mark

Lectures: 85% and practical 15%
Students who eschew period aligned evaluations for this course unit may be failed by the examiner.