Course Specifications
From the academic year 2015-2016 up to and including the

Applied Genetics (I000793)

Course offerings and teaching methods in academic year 2018-2019

A (semester 2) Dutch
lecture 23.75 h
guided self-study 12.5 h
seminar: coached exercises 23.75 h

Lecturers in academic year 2018-2019
Reheul, Dirk LA21 lecturer-in-charge
Cougnon, Mathias LA21 co-lecturer

Offered in the following programmes in 2018-2019
Bachelor of Science in Bioscience Engineering (main subject Agricultural Sciences) 5 A
Bachelor of Science in Bioscience Engineering (main subject Cell and Gene Biotechnology) 5 A

Teaching languages
Dutch

Keywords
Inheritance of monogenic and polygenic characteristics, genetic analysis, gene interactions, population genetics and evolution, quantitative genetics

Position of the course
To explore the genetics in different organisms. The genetic analysis is the main pillar of this course. Theory will be elaborated immediately into exercises with plants, animals, humans and micro-organisms. Teaching is approached from a 'problem solving' viewpoint. During the exercises we solve relevant and practical genetic problems. The presented knowledge enables the student to understand actual genetic issues and prepares the student for in depth analyses in the masters cycle.

Contents

Part 1
1. Chromosomes, genes, gene expression, mitosis, meiosis, mutation, genotype, phenotype
2. Mendelian inheritance, penetrance, expressivity
3. Sex linked inheritance
4. Life cycles and polyploidy
5. Gene linkage
6. Multiple alleles
7. Specific phenotypic expressions

Part 2
8. Consanguinity and inbreeding
9. Population genetics
10. Quantitative genetics

Initial competences
To have a good knowledge of and have obtained competences in botany, zoology, microbiology, biochemistry, probability calculus

Course size (nominal values; actual values may depend on programme)
Credits 5.0 Study time 135 h Contact hrs 60.0 h

Contact hrs Study time 135 h
Credits 5.0

(Approved) 1
Final competences

1 Students **know** the basic principles of (i) Mendelian inheritance, (ii) consanguinity and inbreeding and (iii) genetics of populations and quantitative genetics

2 Students **know** the concepts of selection, selection response and heritability.

3 Students **can** explain the inheritance of traits in individuals and within populations.
4 Students **can** participate into specialized genetics-related courses in the master cycle.
5 Students **can** understand current trends and developments in genetic analysis and assess the consequences of scientific research and developments.

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

Guided self-study, lecture, seminar: coached exercises

Learning materials and price

A syllabus is available. Cost: 20 EUR

References

Standard books on genetics

Course content-related study coaching

Students are stimulated into creative knowledge acquisition. At the end of each chapter a series of problems are solved to implement the presented knowledge.

Evaluation methods

end-of-term evaluation

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

Open book examination

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

Open book examination

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

not applicable

Extra information on the examination methods

The open book exams allows the student to demonstrate his/her deep insight into the introduced knowledge

Calculation of the examination mark

(Approved)