

Plant Breeding (I002738)

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

Credits 5.0 **Study time 150 h**

Course offerings in academic year 2025-2026

A (semester 1) English Gent

Lecturers in academic year 2025-2026

Maenhout, Steven LA21 lecturer-in-charge

Offered in the following programmes in 2025-2026

Master of Science in Bioscience Engineering: Agricultural Sciences	5	A
Exchange Programme in Bioscience Engineering: Agricultural Sciences (master's level)	5	A

Teaching languages

English

Keywords

Variety breeding, hybrids, synthetic varieties, resistance breeding, plant breeders' rights, marker-assisted selection (MAS), breeding value estimation, molecular markers, linkage mapping, quantitative trait locus (QTL), genome-wide association, genomic selection

Position of the course

Plant breeding is an essential field of science that facilitates the development of sustainable crop and food production systems. This course aims to teach students all relevant strategies, methods and tools that enable the creation and protection of contemporary plant varieties.

Contents

- 1 Introduction: historical evolution, impact of plant breeding
- 2 Multiple trait selection
- 3 Biology of plant reproduction systems
- 4 Hybrid breeding
- 5 Backcrosses and marker assisted backcrossing
- 6 Breeding open-pollinated crops
- 7 Breeding self-pollinating crops
- 8 Plant breeders' rights
- 9 Breeding Value Estimation
- 10 Molecular markers
- 10 Linkage mapping and GWAS
- 11 Genomic Selection
- 12 Guest lectures, visits to research institutes and plant breeding companies

Initial competences

Knowledge of plant physiology, crop husbandry, applied genetics and statistics

Final competences

- 1 analyse plant reproductive systems, breeding programmes, selection strategies, breeding methods, techniques and schemes
- 2 have knowledge of DNA-marker technologies used in plant breeding
- 3 have insight into 'marker-assisted selection' and 'genomic selection'
- 4 analyse and interpret scientific literature in the field of plant breeding

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

Excursion, Lecture, Independent work

Extra information on the teaching methods

excursions and guest speaker(s): 20%

lectures: 60%

practical sessions and assignments: 20%

Study material

Type: Syllabus

Name: Plant Breeding

Indicative price: € 20

Optional: no

Language : English

Number of Pages : 381

Oldest Usable Edition : 2024

Available on Ufora : No

Online Available : No

Available in the Library : No

Available through Student Association : Yes

Type: Slides

Name: Plant breeding presentations

Indicative price: Free or paid by faculty

Optional: no

Language : English

Number of Slides : 500

Available on Ufora : Yes

Online Available : No

Available in the Library : No

Available through Student Association : No

References

Various informative journal articles, books and research results.

Course content-related study coaching

The knowledge transfer is based on a no-nonsense long standing experience in plant breeding and variety development.

Assessment moments

end-of-term and continuous assessment

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

Oral assessment

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

Oral assessment

Examination methods in case of permanent assessment

Participation, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is not possible

Extra information on the examination methods

Participation to activities with a permanent evaluation, such as excursions and practical session, is compulsory. Students demonstrating insufficient dedication regarding these activities and/or unmotivated absence are not eligible to receive credits for this course.

Calculation of the examination mark

Weight distribution of the final score:

- oral exam: 75%;

- task: 15%
- participation in and reporting on excursions: 10%