

Subject Name:

Integrated & Advanced Plant breeding

Course Type:

Researchers and teachers Lectures, case studies, data practicals, breeding companies visiting

Outline:

Plant Breeding plays an important role in the development of plant varieties for **food, feed and industrial uses**. Plant breeding is conducted by **international companies with strategic markets as European and Asian markets**. New varieties have to meet current demands regarding yield and biomass production, disease resistance, quality characteristics, salt or drought tolerance and suitability for **sustainable plant production systems as organic production**. Plant Breeding involves a variety of aspects, ranging from the molecular level as genes cloning to the population level and requires knowledge on **molecular biology, physiology, pathology, epigenetics, bioinformatics, biotechnologies and genetics of cultivated plants**.

The teaching unit will present the challenges of plant breeding for the 21st century, develop the up-to-date strategies for plant breeding including molecular markers, genes cloning, genomic selection, interaction genotype x environment and associated biotechnologies. Personal project will be conducted on breeding for quality, for resistance...on a chosen species.

Semester Schedule and Credit:

<u>Subject</u>	<u>Year</u>	<u>Semester</u>	<u>Day/Period</u>	<u>Credit</u>
Integrated & advanced Plant breeding	2	Fall	12 x 2h	1.5

Location:

University of Bordeaux (UB)

Instructor Information

Associate Prof. Valérie Schurdi-Levraud (UB), Associate Prof. Pierre-François Bert (UB), Prof. P. Gallusci (UB)

General Instructional Objective (GIO):

Students will acquire fundamental knowledge related to plant genetics and breeding. They will understand the present and future challenges in plant breeding and the associated tools. They will understand the plant breeding framework at the world level.

Specific Behavioral Objectives (SBO):

- 1 . Students will be able to describe and explain the interaction between phenotype, genotype and environment;
- 2 . Students will be able to integrate tools to propose a breeding strategy depending on breeding objectives and species;
- 3 . Students will be able to compare national policies related to plant varieties protection.

Course Overview/ Weekly Schedule:

1. Lectures by researchers in plant breeding and breeders from seed companies.
2. Case studies comparing breeding strategies.
3. Practicals on data analyses relating phenotype and genotype related to personal project.

Homework:

Scientific papers and case study reports, as assigned

Grading Method and Criteria:

Students are evaluated by their attendance to lectures and report assignments. The case/personal project will have to be presented as a conference to the teachers and other students. Each student has to take part in this presentation. Both the clarity and the accuracy of their presentations will be quoted. Each student will also have to answer to precise questions from the audience. The accuracy of their answer will be evaluated.

Textbook/ Referenced Materials: No prescribed materials

Notes: None