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| **Discipline** | *Genetics* |
| **Title of the course** | *Plant Breeding* |
| **Code** | |
| **Duration**<br>**Date start**<br>**Date end** | *6 ECTS*<br>*September*<br>*December* |
| **Course coordinator and contact details** | *Valérie SCHURDI-LEVRAUD*<br>*valerie.schurdi-levraud@u-bordeaux.fr* |
| **Other contact person**<br><br>**Secretary** | *Pierre-François BERT*<br>*pierre-françois.bert@ u-bordeaux.fr*<br><br>*Florence Lartigaut*<br>*Florence.lartigaut@u-bordeaux.fr* |
| **Mode of delivery** | *in-class face-to-face, seminars, flipped classroom*<br>*(30 hours; researchers and breeders for at least 10h)*<br>*Distance-based self study and project study (10 + 12 hours)*<br>*Company visiting (16 hours)* |
| **Level** | *Master* |
| **ECTScredit points** | *58 h in-class*<br>*122h personal work including distance-based, personal project preparation* |
| **Language** | *English* |
| **Description**[1] | *Students will be able to*<br>*- integrate theoretical and practical knowledge in a design study for a breeding program;*<br>*– integrate genotyping and phenotyping methods - connect breeding methods, techniques and breeding goals depending on species;*<br>*- parental choice, breeding strategy, population genetics, selection methods, traits of interest that are crucial for successful practical breeding;*<br>*– integrate legal rules and variety development, breeder's rights and patents*<br>*– integrate advanced statistics and bioinformatics*<br><br>*The project will be the set up of a breeding program for a specific crop (student choice) and specific goals (breeding for resistance to pathogens, tolerance to abiotic stresses, for fruit quality, for biomolecules production…)* |
| **Content** | *- Principles of selection and genetic gain, response to selection*<br>*- Germplasm resources, collecting, analysing, classifying*<br>*-International rules on germplasm resources* |

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| | *- Population improvement and cultivar development (breeding for lines, hybrids, clones, populations)*<br>*- Highthrough-put phenotyping*<br><br>*- Breeding strategies and methods including molecular breeding (MAS, genomic selection) and biotechnologies*<br>*- Multiple traits selection*<br>*- Genotype by environment interaction*<br>*- Protecting varieties and intellectual property*<br>*- Plant Breeding international network and organization*<br>*Focus will be done on crop breeding but also on local species such as pine, grapevine, fruit trees, strawberries, tomato, sunflower… breeding.* |
| **Methods** | *Lectures, seminars, project containing data study, visits* |
| **Assessmentprocedures** | *Assessment will be done by :*<br>*essay and group presentation of personal project*<br>*Quality of the proposal, quality of the report and quality of presentation will be taken into account.* |
| **Prerequisites** | *– First year of Master in Biological science*<br>*– Quantitative and population genetics and evolution basis needed or genetics, genomics basis needed*<br>*– Statistics and R* |
| **Other information** | *Due to personal project and company visiting, the number of students could be limited in this Teaching Unit.* |

*Please note that the number of places available may be limited for certain classes.*