

## SYLLABUS

*Instructor: Costa Angela*

*Course: Genetic and Genetic Improvement*

<b>Topic</b>	<b>Expertise to achieve</b>	<b>N. hours</b>
Chromosomes structure and genes. Mendel's laws. Sex-linked inheritance. Allelic forms and multiple alleles. Incomplete dominance and co-dominance. Lethal mutations. Genes interactions and Mendelian ratios. Association between genes. Mutations at gene and chromosome level.	Ability to identify mutations and anomalous genotypes ratios. Ability to interpret outcomes resulted from crosses.	6
<a href="#">Practical session: crossbreeding.</a>		1
Population genetics: population structure and Hardy-Weinberg equilibrium.	Ability to calculate frequency of alleles and genotypes in a population and verify Hardy-Weinberg equilibrium assumptions.	2
<a href="#">Practical session: frequency of alleles and genotypes.</a>		1
Qualitative data and quantitative phenotypes. Genetic, environmental, and phenotypic variability. Heritability. Response to selection per year and per generation. Element of genetic selection: official tests, kinship, evaluation of individuals in a representative population, i.e. dairy bulls (pedigree, performance test, sib test, progeny test, BLUP-animal model). Differences between pre- and post-genomics introduction.	Ability to describe the steps and elements needed for genetic/genomic selection in a population under monitoring.	11
<a href="#">Practical session: response to selection of quantitative traits in livestock.</a>		1