Module number	**MM4**
Module name	**Introduction to crop and animal breeding**
Program of Study	MSc mandatory module
Offered	Once a year, winter semester
Module coordinator	Prof. Dr. Georg Thaller
Module advisor	Prof. Dr. Georg Thaller
Courses and teachers	**Lecture:** Fundamentals of crop and animal breeding (G. Thaller, C. Jung)
Prerequisites	Knowledge of the fundamentals of crop and animal production (according to the mandatory modules of the BSc courses) and of statistics and population genetics (according to the module “Biometry and Population Genetics” (BSc module 26, “Biometrie und Populationsgenetik”), basic knowledge in plant breeding (according to the module “Plant Breeding“ (BSc module 201, “Pflanzenzüchtung”) and molecular biology
Language	English
Module capacity on campus students	20
Module capacity off campus students	0
Course types (classroom/ total workload)	Lecture (60 h / 180 h)
Schedule	Weekly during the semester
Grading	Oral exam: 100% (G. Thaller, C. Jung)
ID-card	Required for exams
European Credit Points	6
Module Objectives	The students master the quantitative genetics, selection theory and methods for agricultural crops and animals such that new performance testing schemes can be developed. The theory and application of breeding value evaluation and crossbreeding strategies enables to estimate and interpret the genetic disposition of crops and animals.
Contents	Concept of gene substitution, heritability, breeding values for selection, procedure and models for breeding evaluation, best linear unbiased prediction, mixed-model-equations and techniques for solutions, multiple trait models, numerator relationship matrix, concept of heterosis, crossbred designs, inbreeding and inbred lines, enlarging and exploiting genetic variation, mutation induction and transgenic technology, in vitro methods, legal frameworks
Taught Skills	Methods and Application
Course materials	▪ Mrode: Linear Models for Predicion of Animal Breeding Values ▪ Falconer: Quantitative Genetics ▪ Lecture Notes ▪ Additional literature will be announced before the course starts