Module number	**EM2**
Module name	**Utilization of genome analysis in animal breeding**
Program of Study	MSc elective module
Offered	Once a year, winter semester
Module coordinator	Prof. Dr. Georg Thaller
Module advisor	Prof. Dr. Georg Thaller
Courses and teachers	**Lecture:** Utilization of genome analysis in animal breeding (G. Thaller)
Prerequisites	Knowledge of biometrics and population genetics (according to the module “Biometry and Population Genetics” (BSc module 26, “Biometrie und Populationsgenetik”)), as well as knowledge of performance testing and breeding value estimation (according to the module “Quantitative Genetics and Breeding Value Estimation” (BSc module 334, “Quantitative Genetik und Zuchtwertschätzung”))
Language	English
Module capacity on campus students	15
Module capacity off campus students	5
Course types (classroom/ total workload)	Lecture (60 h /180 h)
Schedule	Weekly during the semester
Grading	Oral exam: 100% (G. Thaller)
ID-card	Required for exams
European Credit Points	6
Module Objectives	The students master the molecular and reproductive biology methods including analysis (statistics) for genomic data. By knowing the index theory and methods of estimation of genetic effects, they acquire the skills of using new knowledge of genetic mechanisms on quantitative traits.
Contents	Structure of genes, concept of quantitative trait loci, design of mapping experiments, marker information, procedure and methods of mapping, fine mapping and association studies, marker assisted selection, genomic selection, identification of single genes in monogenic inherited traits
Taught Skills	Methods and Application
Course materials	▪ Falconer: Quantitative Genetics ▪ Weller: Quantitative Trait Loci Analysis in Animals ▪ Lecture Notes