Module Name	Module Code
Utilization of Genome Analysis in Animal Breeding	AEF-agrig010
Module Coordinator	
Prof. Dr. Georg Thaller	
Organizer	
Institute of Animal Breeding and Husbandry - Animal Breeding and Genetics	
Faculty	
Faculty of Agricultural and Nutritional Sciences	
Examination Office	
Faculty of Agricultural and Nutritional Sciences - Examination Office	

ECTS Credits	6
Evaluation	Graded
Duration	one semester
Frequency	Only takes place during winter semesters
Workload per ECTS Credit	30 hours
Total Workload	180 hours
Contact Time	60 hours
Independent Study	120 hours
Teaching Language	English

Recommended Requirements
Knowledge of biometrics and population genetics (according to the module “Biometry and Population Genetics” (BSc module “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 “Quantitative Genetik und Zuchtwertschätzung”))

Module Courses

Course Type	Course Name	Compulsory/Optional	SWS
Lecture	Utilization of Genome Analysis in Animal Breeding	Compulsory	4

Examination(s)				
Examination Name	**Type of Examination**	**Evaluation**	**Compulsory / Optional**	**Weighting**
Oral Examination: Utilization of Genome Analysis in Animal Breeding	Oral Examination	Graded	Compulsory	100

Further Information on the Examination(s)

1.+2. period in winter semester
1. period in summer semester

examiner: Prof. Dr. Thaller/Dr. Blaj
QIS: 91200 with number of Examination 91210

Course Content

Structure of genes, concept and distribution of quantitative trait loci, design of mapping experiments, marker informativity procedure and methods of mapping, multiple marker regression, resampling techniques, fine mapping,, marker assisted selection, genomic selection, identification of single genes in monogenic inherited traits, genome wide association studies, genomic inbreeding and runs of homozygosity.

Learning Outcome

The students understand the genetic architecture of complex traits. They learn appropriate statistical methodology to identify quantitative trait loci by exploiting comprehensive marker information. Students know which design and which approach are best suited for different traits and data structures as found in livestock species. They master theory and application of genomic selection methodology. Opportunities and pitfalls of genome wide associations studies are recognized and results can be interpreted and discussed. By knowing the genomic properties and methods of estimation of genetic effects for various phenotypes, they acquire the skills of utilizing new knowledge of genetic mechanisms to improve quantitative traits.

Reading List

- Falconer: Quantitative Genetics
- Weller: Quantitative Trait Loci Analysis in Animals

Lecture Notes

Additional Information

Maximum number of participants: 30 - Up to 10 places will be allocated preferably to students in the Dairy Science master's programm

Enrollment by OLAT within workdays Monday through Friday in the 1nd week of the 2. audit period of the preceding semester. Following information are necessary:
matriculation number
last name
first name
degree
study program
stu-Email

The allocation of the places takes place in the 2nd week of the 2. audit period of the preceding semester.
Acceptance of the place by students only through participation at the first day of the course.
Students without a place can get a place at the first day of the course by move-up procedure.

Use	Compulsory / Optional	Semester
Master, 1-Subject, Agricultural Sciences, Specialisation Agricultural Economics, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Agricultural Economics, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Agribusiness, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Agribusiness, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Crop Sciences, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Crop Sciences, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Animal Sciences, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Animal Sciences, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Environmental Sciences, (Version 2017)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Environmental Sciences, (Version 2013)	Optional	-
Master, 1-Subject, AgriGenomics, (Version 2017)	Optional	-
Master, 1-Subject, AgriGenomics, (Version 2010)	Optional	-
Master, 1-Subject, Dairy Science, (Version 2017)	Optional	-
Master, 1-Subject, Nutritional and Food Science, (Version 2013)	Optional	-
Master, 1-Subject, Nutritional and Consumer Economics, (Version 2017)	Optional	-
Master, 1-Subject, Nutritional and Consumer Economics, (Version 2013)	Optional	-