

<b>Module Name</b>	<b>Module Code</b>
Advanced Statistics in Animal Breeding and Genomics	AEF-agr822e
<b>Module Coordinator</b>	
Prof. Dr. Georg Thaller	
<b>Organizer</b>	
Institute of Animal Breeding and Husbandry - Animal Breeding and Genetics	
<b>Faculty</b>	
Faculty of Agricultural and Nutritional Sciences	
<b>Examination Office</b>	
Faculty of Agricultural and Nutritional Sciences - Examination Office	

<b>ECTS Credits</b>	6
<b>Evaluation</b>	Graded
<b>Duration</b>	ein Semester
<b>Frequency</b>	Only takes place during summer semesters
<b>Workload per ECTS Credit</b>	30 hours
<b>Total Workload</b>	180 hours
<b>Contact Time</b>	60 hours
<b>Independent Study</b>	120 hours
<b>Teaching Language</b>	English

<b>Module Courses</b>			
<b>Course Type</b>	<b>Course Name</b>	<b>Compul- sory/Optional</b>	<b>SWS</b>
Lecture	Advanced Statistics in Animal Breeding and Genomics	Compulsory	3
Practical exercise	Advanced Statistics in Animal Breeding and Genomics	Compulsory	2
<b>Prerequisites for Admission to the Examination(s)</b>			
regular visit: practical exercise			

<b>Examination(s)</b>				
<b>Examination Name</b>	<b>Type of Examination</b>	<b>Evaluation</b>	<b>Compulsory / Optional</b>	<b>Weighting</b>
Oral Examination: Advanced Statistics in Animal Breeding and Genomics	Oral Examination	Graded	Compulsory	100
<b>Further Information on the Examination(s)</b>				
1.+2. period in summer semester 1. period in winter semester				
QIS: 64301 with exam 64310				

<b>Course Content</b>
Theory of probabilities, distributions and their properties, handling of continuous and categorical data and variables, estimation procedures, Least Squares, Maximum Likelihood, Bayes Concepts, testing of hypotheses, likelihood-ratio test, algorithms, programming in R-language, own examples, graphical illustration, resampling techniques, breeding values estimation in detailed programs, solving algorithms, most relevant developments in genomics.
<b>Learning Outcome</b>
Students achieve deeper insights in probability theory and statistical concepts necessary in statistical genetics as applied in animal breeding. They get aware of concepts, implementation and application of statistical approaches to utilize data in an appropriate manner. They will be able, to write programs for solving examples for their own. Next they will get an overview about current procedures and program packages to utilize high dimensional genomic data. They will be able to judge new developments in this area.
<b>Reading List</b>
Casella, Berger "Statistical Inference", Sorenson, Gianola "Likelihood, Bayesian, and MCMC Methods in Quantitative Genetics, Weller "Quantitative Trait Loci Analysis in Animals", Siegmund, Yakir "The Statistics of Gene Mapping", Wu, Ma, Casella "Statistical Genetics of Quantitative Traits"
<b>Additional Information</b>
Maximum number of participants: 15 - Up to 5 places will be allocated preferably to students in the Dairy Science master's programm
Enrollment by Email to OLAT within workdays Monday through Friday in the 1st week of the 2. audit period of the preceding semester. Following information are necessary: matriculation number last name first name striven 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. Notification will be sent to the stu-email address. Acceptance of the place by students only through participation at the first day of the course.

<b>Use</b>	<b>Compulsory / Optional</b>	<b>Semester</b>
Master, 1-Subject, Agricultural Sciences, Specialisation Agricultural Economics, (Version 2017)	Compulsory	-
Master, 1-Subject, Agricultural Sciences, Specialisation Agricultural Economics, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Special. Agricultural Economics and Agribusiness # Specific Field of Study: Agricultural Economics, (Version 2008)	Optional	-
Master, 1-Subject, Agricultural Sciences, Special. Agricultural Economics and Agribusiness # Specific Field of Study: Agribusiness, (Version 2008)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Agribusiness, (Version 2017)	Compulsory	-
Master, 1-Subject, Agricultural Sciences, Specialisation Agribusiness, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Crop Sciences, (Version 2017)	Compulsory	-
Master, 1-Subject, Agricultural Sciences, Specialisation Crop Sciences, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Crop Sciences, (Version 2008)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Animal Sciences, (Version 2017)	Compulsory	-
Master, 1-Subject, Agricultural Sciences, Specialisation Animal Sciences, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Animal Sciences, (Version 2008)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Environmental Sciences, (Version 2017)	Compulsory	-
Master, 1-Subject, Agricultural Sciences, Specialisation Environmental Sciences, (Version 2013)	Optional	-
Master, 1-Subject, Agricultural Sciences, Specialisation Environmental Sciences, (Version 2008)	Optional	-
Master, 1-Subject, Dairy Science, (Version 2017)	Compulsory	-
Master, 1-Subject, Nutritional and Food Science, (Version 2013)	Optional	-
Master, 1-Subject, Nutritional and Consumer Economics, (Version 2017)	Compulsory	-
Master, 1-Subject, Nutritional and Consumer Economics, (Version 2013)	Optional	-
Master, 1-Subject, Nutritional Sciences and Household Economics, Specialisation Nutritional and Consumer Economics, (Version 2008)	Optional	-
Master, 1-Subject, Nutritional Sciences and Household Economics, Specialisation Nutritional Sciences, (Version 2008)	Optional	-

