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|---|--|------------------------------|------------|
| <b>Module Name</b>  |  | <b>Module Code</b>           |            |
| Biometrical Planning and Inference                                    |  | dsAEF010-01a                 |            |
| <b>Module Coordinator</b>   |  |                              |            |
| Dr. Mario Hasler  |  |                              |            |
| <b>Organizer</b>  |  |                              |            |
| Faculty of Agricultural and Nutritional Sciences - Applied Statistics |  |                              |            |
| <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>   | one 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>Compulsory / Optional</b> | <b>SWS</b> |
| Lecture   | Biometrical Planning and Inference       | Compulsory                   | 3          |
| Practical Exercise  | Biometrical Planning and Inference       | Compulsory                   | 1          |
| <b>Prerequisites for Admission to the Examination(s)</b>              |  |                              |            |
|   |  |                              |            |

| <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: Biometrical Planning and Inference   | Oral Examination           | Graded            | Compulsory                   | 100              |
| <b>Further Information on the Examination(s)</b>   |                            |                   |                              |                  |
| 1.+2. period in summer semester<br>1. period in winter semester<br><br>QIS: 301001 with examination 301010   |                            |                   |                              |                  |
| <b>Course Content</b>  |                            |                   |                              |                  |
| Sample size calculation, regression analysis, analysis of variance (and covariance), multiple contrast tests, experimental designs, introduction to mixed models, introduction to principle component analysis, introduction to statistical software R   |                            |                   |                              |                  |
| <b>Learning Outcome</b>  |                            |                   |                              |                  |
| The students have advanced knowledge of frequently used statistical models and multiple testing problems. They are aware of the basic principles of sample size calculation, they know how to plan and analyze typical experiments and surveys. They have basic knowledge of the most frequently used multivariate approaches. Moreover, they can understand, reproduce and critically evaluate most of the statistical analysis in the literature.  |                            |                   |                              |                  |
| <b>Reading List</b>  |                            |                   |                              |                  |
| Lecture notes and code for the statistical software R.<br>Köhler, Schachtel, Voleske: Biostatistik - Eine Einführung für Biologen und Agrarwissenschaftler<br>Sachs: Angewandte Statistik - Anwendung statistischer Methoden<br>Hartung: Statistik - Lehr- und Handbuch der angewandten Statistik<br>Hartung, Elpelt: Multivariate Statistik - Lehr- und Handbuch der angewandten Statistik<br>Rasch, Herrendörfer, Bock, Victor, Guiard: Verfahrensbibliothek - Versuchsplanung und -auswertung<br>Thomas: Feldversuchswesen<br>Pearce: The Agricultural Field Experiment - A Statistical Examination of Theory and Practice<br>Hoff: R-Handbuch für Biostatistik - Eine Einführung für Studierende der Gartenbauwissenschaften und Pflanzenbiotechnologie<br>Crawley: Statistics - An Introduction using R<br>Bretz, Hothorn, Westfall: Multiple Comparisons Using R |                            |                   |                              |                  |
| <b>Additional Information</b>  |                            |                   |                              |                  |
| Maximum number of participants: 26 - Up to 20 places will be allocated preferably to students in the Dairy Science master's program<br>Enrollment in OLAT during the 1st week of the 2. examination period of the preceding semester. The following information has to be provided for enrollment: matriculation number last name first name striven degree study program stu-Email<br>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.<br>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   |                            |                   |                              |                  |