

<b>Module Name</b>		<b>Module Code</b>	
Biochemistry and Proteomics		agrigAEF003-01a	
<b>Module Coordinator</b>			
Prof. Dr. Karl-Hermann Mühling			
<b>Organizer</b>			
Institute of Plant Nutrition and Soil Science - Plant Nutrition			
<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 winter 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>Recommended Requirements</b>			
none			
<b>Module Courses</b>			
<b>Course Type</b>	<b>Course Name</b>	<b>Compulsory/Optional</b>	<b>SWS</b>
Lecture	Plant Biochemistry	Compulsory	2
Lecture	Animal Biochemistry	Compulsory	2

<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: Biochemistry and Proteomics	Oral Examination	Graded	Compulsory	100
<b>Further Information on the Examination(s)</b>				
<p>1.+2. period in winter semester  1. period in summer semester</p> <p>examiner: Prof. Dr. Mühling / Dr. Burdeos  QIS: 90300 with number of Examination 90310</p>				
<b>Course Content</b>				
<p><u>Plant biochemistry</u>: assimilation of carbon, nitrogen and sulphur; biosynthesis of amino acids; biosynthesis, structure, sorting and modification of proteins; enzyme catalysis, regulation and kinetics; membrane proteins; transport of ions through plant membranes; plant proteomics</p> <p><u>Animal biochemistry</u>: Mammalian metabolic pathways and its regulations; metabolism of carbohydrates, lipids, protein and amino acids; gene expression; epigenetic mechanisms</p>				
<b>Learning Outcome</b>				
<p>The students understand basic and specific biochemical and physiological principles in plants and animals. They can interpret complex situations with respect to metabolic consequences. It also outlines the basic principles of nutrient transport through plant membranes. The students understand the role of minerals in photosynthesis, nitrogen fixation, and the assimilation of nitrogen and sulfur. They can assess that without carbon, nitrogen and sulfur, there is a reduced protein biosynthesis and the quality of plant foods deteriorates as a result. Moreover, the students will be able to understand the crucial processes, functions and regulations of different mammalian metabolic pathways as such glycolysis, TCA cycle, pentose phosphate pathways, protein metabolism, lipid metabolism and carbohydrate metabolism. Additionally, the students also understand the principle of gene expression and epigenetic mechanisms that affects the mammalian metabolic machinery.</p>				
<b>Reading List</b>				
<p>Plant Biochemistry, Hans-Werner Heldt, Elsevier Academic Press  Animal biochemistry: Clinical Biochemistry, J. Kaneko, J. Harvey and M. Bruss</p>				

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