

Module Name		Module Code	
Molecular Plant Nutrition		agricAEF011-01a	
Module Coordinator			
Prof. Dr. Karl H. Mühling			
Organizer			
Institute of Plant Nutrition and Soil Science – Plant Nutrition			
Faculty			
Faculty of Agricultural and Nutritional Sciences			
Examination Office			
Faculty of Agricultural and Nutritional Sciences - Examination Office			
ECTS Credits	6		
Evaluation	graded		
Duration	1 semester		
Frequency	Only in winter semester		
Workload per ECTS Credit	30 hours		
Total Workload	180 hours		
Contact Time	60 hours		
Independent Study	120 hours		
Teaching Language	English		
Recommended Requirements			
Advanced understanding of plant nutrition and physiology (according to modules „Biochemistry and Proteomics“(agricAEF003-01a).			
Module Courses			
Course Type	Course Name	Compulsory/Optional	SWS
Lecture	Molecular Plant Nutrition	optional	2
Seminar	Nutritional aspects in molecular plant nutrition	optional	1
Exercise	Nutritional aspects in molecular plant nutrition	optional	1
Examination(s)			

Examination Name	Type of Examination	Evaluation	Compulsory / Optional	Weighting
Oral: Molecular Plant Nutrition	Oral	Graded	Optional	100
Further Information on the Examination(s)				
Regular visits of lecture, seminar and exercises are necessary.				
Course Content				
The students gain an overview of the key nutritional and molecular signal pathways in plant metabolism. They have molecular knowledge of the function of carrier and channel proteins and their importance in nutrient acquisition and efficiency. They have practical experience in biochemical and molecular techniques in plant nutrition.				
Learning Outcome				
<ul style="list-style-type: none"> • Nutrient acquisition and uptake by plants • Plant membranes and functions • General ion transport across membranes • Specific molecule and ion uptake (water, plant nutrients) • Molecular regulation and adaptation of specific transporters • Molecular background on symbiotic N-fixation • Molecular background on mycorrhiza 				
Reading List				
Plant Biochemistry (Heldt, Elsevier Academic Press) Essential Cell Biology (Alberts et al., Taylor & Francis Group) Biochemistry & Molecular Biology of Plants (Buchanan et al., American Society of Plant Biologists) Marschner's Mineral Nutrition of Higher Plants (Marschner, Academic Press) Handbook of Plant Nutrition (Barker et al., Marcel Dekker Ltd.) Nutrient Acquisition by Plants (Bassiri, Springer)				
Additional Information				