

B11339 Experimental approaches in plant growth analysis and phenotyping, 15 hp, autumn 2024 - Schedule version 1.4											
PhD course <i>Plant growth analysis, nutrient use efficiency and phenotyping</i> (6 ECTS)											
Please note that some classes require preparatory work!											
Unless otherwise noted, the literature is compulsory. Refer to the course literature information and Canvas for details on the literature											
	Day	Month	Time	Part	Room Booked	Type	Session	Summary of the content	Reading/Preparation	Teachers	
Mon	29		10-12		F4, Zoom	S	Course start and introduction; project presentation	General course idea, distribution of literature to be reviewed for examination (PhD students), grading criteria, logistics and housekeeping		MW	
Mon	29		13-16	Project A	Field near campus	E	Project work (willow project)	Growth assessments (mostly in a willow field trial which is located nearby the Ultuna campus)		MW, NEN	
Wed	49		9-10:15	Tools	Zoom!	L	The scientific method	The process of scientific investigation from idea to publication is explored with special focus on the role and importance of hypothesis	See under "Literature to lectures & exercises" at Canvas	RG	
Wed	49		10:30-12	Tools	Zoom!	L	Tools for project work	Basics on experimental planning, design, execution and reporting		MW	
Thu	59		9-12	Plant growth theory & assessment	Zoom!	L	Photosynthesis from scratch to plant production in northern latitudes	Photosynthesis and growth in relation to external factors, with focus on the opportunities for plant growth improvements.	See under "Literature to lectures & exercises" at Canvas	MW	
Fri	69		9-12	Tools	F4, Zoom	E	Basic statistics	Training in basic statistics by going through some of the relevant methods and actually doing the data analysis from the growth assessments in project A		IK	
Fri	69		13-16	Tools	F4, Zoom	L	Data analysis "Dugga" (diagnostic test and exercise)	Discussion of several case studies for statistical problems relevant to the project work	See under "Literature to lectures & exercises" at Canvas, and <b>prepare before class according to the instructions!</b>	MW	
Mon	99		9-12	Project B		E		Re-planting birch, planting wheat		NN/JC	
Mon	99		13-16.30	Plant growth theory & assessment	Zoom!	L/S	Growth analysis **	Theory and methodology for plant growth analysis	See under "Literature to lectures & exercises" at Canvas	MW	
Wed	119		9-12.30	Plant growth theory & assessment	Zoom!	L/S	Plant-plant interaction **	Assessment of plant-plant interaction, and case study for the evaluation of plant-plant interaction in cereal-legume mixtures	See under "Literature to lectures & exercises" at Canvas	MW, JA	
Thu	129		9-12.30	Plant growth theory & assessment	F2, Zoom	L/S/E	Plant-plant interaction **	Experimental methods to investigate plant-plant interactions, e.g. pairwise experiments, additive series, replacement series, surface response models	See under "Literature to lectures & exercises" at Canvas	AM	
Fri	139		9-12.30	Plant growth theory & assessment	Zoom!	L/S	Plant nutrient use efficiency **	Theory and methodology for the assessment of plant nutrient use efficiency	See under "Literature to lectures & exercises" at Canvas	MW	
Fri	139		13-16.30	Plant growth theory & assessment	Zoom!	L/S	Root phenotyping, Tools for image analysis, nutrient use efficiency in spring wheat, etc **	Case studies research projects using different growth assessment methodologies		NN, JJ, JC, FB	
Mon	169		9-12	Project B	F4, Zoom	E	Introduction project B assessments & workshop	Measuring external growth factors (e.g. light), <b>image taking &amp; processing</b>		MW, JC, FB	
Mon	169		13-16	Projects A, B		E		Project work (Harvest 1)			
Wed	189		9-12	Projects A, B		E		Project work			
Thu	199		9-12	Projects A, B		E		Project work			
Fri	209		9-16	Projects A, B		E		Project work			
Mon	239		Deadline project A (willow) report!								
Mon	239		9-16	Projects A, B		E		Project work			
Wed	259		9-12	Project B		E		Project work			
Thu	269		9-12	Project B		E		Project work			
Fri	279		9-16	Project B		E		Project work			
Mon	309		9.30-13.30	Plant growth theory & assessment	Zoom!	L/S	Plant growth modelling **	What is a model, and why do we model? Introduction to modelling approaches and how modelling can be used in plant phenotyping	See under "Literature to lectures & exercises" at Canvas	MW, HPK	
Mon	309		13-14	Project B	F4, Zoom	E	Project follow-up	Wheat-birch project discussions		MW, JC	
Mon	309		14-16	Project B		E		Project work			
Wed	210		9-12	Project B		E		Project work (Harvest 2)			
Thu	310		9-12	Project B		E		Project work (Harvest 2)			
Fri	410		8-10	Examination	Tentamensal 1		Written exam I, please register (Ladok) by 20/9 at the latest!			Exam service	
Fri	410		11-12	Project B	F4, Zoom	E	Project follow-up	Wheat-birch project discussions		JC	
Fri	410		13-16	Project B		E		Project work			
Mon	710		9-16	Project B		E		Project work (data analysis & writing)			
Wed	910		9-12	Project B		E		Project work (data analysis & writing)			
Thu	1010		9-12	Project B		E		Project work (data analysis & writing)			
Fri	1110		9-16	Project B		E		Project work (data analysis & writing)			
Mon	1410		9-16	Project B		E		Project work (Harvest 3)			
Wed	1610		9-12	Project B		E		Project work (data analysis & writing)			
Thu	1710		9-10	Plant phenotyping	Zoom!	S	Phenotyping applications	Introduction plant phenotyping; phenotypic plasticity		MW	
Thu	1710		10-12.30	Plant phenotyping	Zoom!	S	Phenotyping applications - trophic interactions **	Case studies, e.g. detecting and monitoring potato virus infections using infrared technology		VN	
Fri	1810		9-12	PhD student activity	Zoom!		Research colloquium	Presentations of original research papers (one per PhD student)		PhD students	
Fri	1810		13-16	Project B		E		Project work			
Mon	2110		9-10	Project B		S		Project work			
Mon	2110		10-12.30	Plant phenotyping	Zoom!	S	Phenotyping applications **	What are phenotypes? Case studies for rapid assessments of growth and development of	See under "Literature to lectures & exercises" at Canvas	AC	
Mon	2110		13-14	Project B	Zoom!	E	Project follow-up	Wheat-birch project discussions		MW, JC	
Mon	2110		14-16	Project B		E		Project work			
Wed	2310		9-12.30	Plant phenotyping	Zoom!	S	Phenotyping applications **		See under "Literature to lectures & exercises" at Canvas	JO & DP	

Thu	24	10	9-11.30	Plant phenotyping	Zoom!	S	Phenotyping applications **	The NaPPI-National Plant Phenotyping Infrastructure (Helsinki, Finland)		KH
Fri	25	10	10-12.30	Plant phenotyping	Zoom!	S	Phenotyping applications **	Plant phenotyping for breeding		ML
Tue	29	10*	8-10	Examination	Tentamensal 1		Written exam II, please register (Ladok) by 15/10 at the latest!			Exam service
Wed	30	10	9-15	Project B		E		Preparations of project presentation & report		
Thu	31	10	9-12	Mini-symposium (examination)	F4, Zoom	S	Project presentations (incl. PhD student projects), final discussions, course evaluation			MW
Fri	1	11	Deadline project B (birch-wheat) report!							
<b>Course Leader</b>										
Martin Weih, Dept of Crop Production Ecology (VPE), SLU, martin.weih@slu.se										
*Course evaluation (Evald) opens 29/10 and closes 19/11!										
** Discussion of "Reflection notes" at the end of lecture/seminar and compulsory for PhD students!										
<b>Location</b>										
Various locations at the SLU Ecology centre, Ulls väg 16, Uppsala										
<b>Type</b>										
L	Lecture.									
E, S	Exercise (E) and seminars (S). <b>Obligatory</b> attendance. An extra assignment is usually required if you miss the class.									
P	Project. Introductory project presentations and the final mini-symposium are <b>obligatory</b> sessions. The rest of the scheduled project time is used in agreement between the teachers and the project group									
<b>Clarification of teachers' initials</b>										
AC	Aakash Chawade (SLU Alnarp, aakash.chawade@slu.se)									
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KH	Kristiina Himanen (kristiina.himanen@helsinki.fi)									
HPK	Hans-Peter Kaul (BOKU, Vienna, hans-peter.kaul@boku.ac.at)									
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