



SCIENCE AND
EDUCATION
**FOR
SUSTAINABLE
LIFE**

BI1044

SLU's ADVANCED PLANT PATHOLOGY MASTER COURSE

FALL SEMESTER 2021 COURSE SCHEDULE

Version May 25, 2021

Department of Forest Mycology and Plant Pathology.
Swedish University of Agricultural Sciences.
Almas Allé 5, 75007. Uppsala. Sweden.

COURSE LEADER

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WEEK 35

Basic principles of plant pathology					
	MONDAY 30 AUG.	TUESDAY 31 AUG.	WEDNESDAY 1 SEP.	THURSDAY 2 SEP.	FRIDAY 3 SEP.
9:00	# SLU Introduction	#Lecture [AK] Introduction to Plant Virology	#Principles Of Plant Pathology [SB] and their real-life implications 2. Flor and the gene-for-gene hypothesis.	# Excursion [BA, DFJ, AL, SB] - Survey of Field Diseases.	# Lab Work [AB] - Diagnostics of Rust Diseases / Rust Stages. [Microscopy Practical]
10:25		ZOOM		SLU Campus Ultuna	Room: BÖL 1 – [Secured]
Break					
10:35		#Lecture [AK] Transmission of Plant Viruses	#Principles Of Plant Pathology [SB] and their real-life implications 3. The Zig-Zag model and the Pathogen – Endophyte - Symbiont continuum.	# Excursion [BA, DFJ, AL, SB] - Survey of Field Diseases at SLU (Campus Ultuna).	# Lab Work [SB] - Diagnostics and isolation of plant pathogens [continued] [Mycology – Microbiology Practical]
12:00		ZOOM		SLU Campus Ultuna	Room: BÖL 1
Break					
13:00	#Course Introduction [SB] - Course Assignments: Digital LabNotebook - Theoretical Exercises – Case Study Report – Case Study Presentation.	# Field Work [AK] - Survey of Plant Viruses at Uppsala Botanical Garden.	#Self-Study - Work on the Case Study report and the poster.	# Lab work [BA, DFJ, AL, SB] - Diagnostics and isolation of plant pathogens [Mycology – Microbiology Practical]	#Self-Study - Work on the LabNotebook
14:25		Uppsala Botanical Garden		Room: BÖL 1 – [Secured]	
Break					
14:35	#Principles Of Plant Pathology [SB] and their real-life implications 1.Koch and the germ theory.	# Field Work [AK] - Survey of Plant Viruses at Uppsala Botanical Garden.	#Self-Study - Work on the Case Study report and the poster.	# Lab work [BA, DFJ, AL, SB] - Diagnostics and isolation of plant pathogens [Mycology – Microbiology Practical]	#Self-Study - Work on the LabNotebook
16:00		Uppsala Botanical Garden		Room: BÖL 1 – [Secured]	

WEEK 36

Systematics and phylogeny of plant pathogenic microbes					
	MONDAY 6 SEP.	TUESDAY 7 SEP.	WEDNESDAY 8 SEP.	THURSDAY 9 SEP.	FRIDAY 10 SEP.
9:00	# Lecture [AL] - Plant Protection Extension (Swedish Board of Agriculture)	# Lab Work [HV, MSÅ] - Molecular Characterization of Plant Pathobiomes	# Lab Work [HV, MSÅ] - Molecular Detection of Pathogens	#Lecture [MSG] Plant Pathogens in The Tree of Life [MSG / SB]	# Lecture [MK] - Molecular Characterization of Fungal Pathogens
10:25	ZOOM	Room: BÖL 3 – [Secured]	Room: BÖL 3 – [Secured]	ZOOM	ZOOM
Break					
10:35	# Lecture [AL] - Plant Protection Extension (Swedish Board of Agriculture)	# Lab Work [HV, MSÅ] - Molecular Characterization of Plant Pathobiomes	# Lab Work [HV, MSÅ] - Molecular Detection of Pathogens	#Lecture [MSG] Plant Pathogens in The Tree of Life [MSG / SB]	# Theoretical Exercise 1 [MK] - Phylogeny of Plant Pathogenic Fungi - Group Work
12:00	ZOOM #Theoretical Exercise 1 available on Canvas [MK]	Room: BÖL 3 – [Secured]	Room: BÖL 3 – [Secured]	ZOOM	ZOOM
Break					
13:00	#Lecture [MK] - Systematics of The Fungal Kingdom.	# Lab Work [HV, MSÅ] - Molecular Characterization of Plant Pathobiomes	#Self-Study - Work on the LabNotebook	#Self-Study - Work on Theoretical Exercise 1	#Self-Study - Work on the Case Study report and the poster.
14:25	ZOOM	Room: BÖL 3 – [Secured]			
Break					
14:35	#Lecture [MK] - Systematics of The Fungal Kingdom.	# Lab Work [HV, MSÅ] - Molecular Characterization of Plant Pathobiomes	#Self-Study - Work on the LabNotebook	#Self-Study - Work on Theoretical Exercise 1	#Self-Study - Work on the Case Study report and the poster.
16:00	ZOOM	Room: BÖL 3 – [Secured]			

WEEK 37

	MONDAY 13 SEP.	TUESDAY 14 SEP.	WEDNESDAY 15 SEP.	THURSDAY 16 SEP.	FRIDAY 17 SEP.
9:00	#Self-Study - Work on the Case Study report and the poster.	# Lab Work [MD/CK/SC] - Biological Control of Plant Diseases.	#Lecture [DFJ/MK] - Life cycle and epidemiology of soil-bourne pathogens.	#Self-Study - Work on the Case Study report and the poster.	#Lecture [AB / SB] - Pathogen population genetics / genomics [principles]
10:25			ZOOM		ZOOM
Break					
10:35	#Lecture [BA] - Life cycle and epidemiology of air-bourne pathogens #Theoretical Exercise 2 available on canvas [AB - SB]	# Lab Work [MD/CK/SC] - Biological Control of Plant Diseases.	#Lecture [DFJ/MK] - Life cycle and epidemiology of post-harvest pathogens.	#Lecture [MP] (Uni. Helsinki) - Plant Pathogenic Bacteria	#Theoretical Exercise 2 [AB / SB] - Pathogen population genetics / genomics [applications] - Group work.
12:00	ZOOM		ZOOM	ZOOM	ZOOM
Break					
13:00	# Lab Work [MD/CK/SC] - Biological Control of Plant Diseases.	# Lab Work [MD/CK/SC] - Biological Control of Plant Diseases.	#Self-Study - Work on the LabNotebook	#Lecture [JZ] - Principles of plant disease epidemiology.	#Self-Study - Work on the Case Study report and the poster.
14:25				ZOOM	
Break					
14:35	# Lab Work [MD/CK/SC] - Biological Control of Plant Diseases.	# Lab Work [MD/CK/SC] - Biological Control of Plant Diseases.	#Self-Study - Work on the LabNotebook	#Lecture [JZ] - Plant Disease Epidemiology: Statistical Models.	#Self-Study - Work on the Case Study report and the poster.
16:00				ZOOM	

WEEK 38

Origin, evolution, and adaptation of plant pathogens to their host					
	MONDAY 20 SEP.	TUESDAY 21 SEP.	WEDNESDAY 22 SEP.	THURSDAY 23 SEP.	FRIDAY 24 SEP.
9:00	#Self-Study - Work on the Case Study report and the poster.	#Lecture [SB] - Mechanisms of Microbial Lifestyle Shifts From Non-Pathogenic to Pathogenic Lifestyle. Part 1.	#Self-Study - Work on the Case Study report and the poster.	#Theoretical Exercise 3 [BA/JZ/SB] - Climate Change and Disease Outbreaks. - Group Discussion	#Self-Study - Work on the LabNotebook
10:25		ZOOM			
Break					
10:35	#Lecture [JS] - Invasive Species and New Emerging Diseases. ZOOM #Theoretical Exercise 3 available on canvas [BA/JZ/SB]	#Lecture [SB] - Mechanisms of Microbial Lifestyle Shifts From Non-Pathogenic to Pathogenic Lifestyle. Part 2. ZOOM	#Self-Study - Work on the Case Study report and the poster.	# Lecture [MV] - Plant Pathogenic Nematodes. Room: BioC-C216 - ZOOM	#Self-Study - Work on the LabNotebook
12:00					
Break					
13:00	#Lecture [SB] - Mechanisms of Adaptation of Plant Pathogens to New Hosts – <i>Part 1: adapted pathogens</i>	#Self-Study - Work on TEx_3	#Self-Study - Work on the Case Study report and the poster.	Mind The Time [14:00] # Lab work [MV] - Plant Pathogenic Nematodes.	#Self-Study - Work on the Case Study report and the poster.
14:25				Room: BÖL 1 - [Secured]	
Break					
14:35	#Lecture [SB] - Mechanisms of Adaptation of Plant Pathogens to New Hosts – <i>Part 2: non-adapted pathogens</i>	#Self-Study - Work on TEx_3	#Self-Study - Work on the Case Study report and the poster.	# Lab work [MV] - Plant Pathogenic Nematodes.	#Self-Study - Work on the Case Study report and the poster.
16:00				Room: BÖL 1 – [Secured]	

WEEK 39

Plant protection and disease management					
	MONDAY 27 SEP.	TUESDAY 28 SEP.	WEDNESDAY 29 SEP.	THURSDAY 30 SEP.	FRIDAY 1 OKT.
9:00	#Self-Study - Work on the Case Study report.	# Lecture [BA] - Chemical Disease Control.	# Lecture [DFJ] - Post harvest diseases: principles.	# Lecture [BA] - Fungicide Resistance	# Lab Work [MD/CK/SC] - Biological Control of Plant Diseases
10:25		ZOOM	ZOOM	ZOOM	Room: BÖL 3 – [Secured]
Break					
10:35	#Self-Study - Work on the Case Study report.	# Lecture [BA] - Forecasting of Plant Disease Epidemics.	# Lecture [DFJ] - Post harvest diseases: mycotoxins.	# Lecture [DFJ] - Biological Disease Control	# Lab Work [MD/CK/SC] - Biological Control of Plant Diseases
12:00	#Theoretical Exercise 4 available on canvas [MD/MK/DFJ]	ZOOM	ZOOM	ZOOM	Room: BÖL 3 – [Secured]
Break					
13:00	# Lecture [HF] - Suppressive Soils	# Practical Exercise [BA] - Predicting the need for spraying [Bring Your Computer]	#Self-Study - Work on TEx_4	# Theoretical Exercise 4 [MD] - Identification of New Biological Control Agents - Group Discussion	# Lab Work [MD/CK/SC] - Biological Control of Plant Diseases
14:25	ZOOM	Book a new room			Room: BÖL 3 – [Secured]
Break					
14:35	# Lecture [MD] - RNAi technologies for disease control.	# Practical Exercise [BA] - Predicting the need for spraying [Bring Your Computer]	#Self-Study - Work on TEx_4	#Self-Study - Work on the Case Study report and the poster.	# Group Presentations - Biological Control of Plant Diseases
16:00	ZOOM	Book a new room			Room: BÖL 3 – [Secured]

WEEK 40

Molecular/Genetic basis of plant-pathobiome interactions with a focus on management and breeding.					
	MONDAY 4 OKT.	TUESDAY 5 OKT.	WEDNESDAY 6 OKT.	THURSDAY 7 OKT.	FRIDAY 8 OKT.
9:00	#Self-Study - Work on the LabNotebook	# Lecture [SB] - Plant Immunity For Resistance Breeding. <i>Part 1: plant immune receptors.</i>	#Self-Study - Work on the Case Study report and the poster.	#IPM Workshop [BA, DFJ, HF, SB] - Group work	#IPM Workshop # Finalize and Submit Group Presentations on Canvas Before 9:45
10:25		ZOOM		ZOOM	
Break					
10:35	#Self-Study - Work on the LabNotebook	# Lecture [SB] - Plant Immunity For Resistance Breeding. <i>Part 2: mode of action of plant resistance genes.</i>	#Self-Study - Work on the Case Study report and the poster.	#IPM Workshop [BA, DFJ, HF, SB] - Group work	[Starts at 10:00] #IPM Workshop [BA, DFJ, HF, SB + GUESTS] - Group Presentations
12:00		ZOOM		ZOOM	ZOOM
Break					
13:00	# Lecture [GT] - How Pathogens attack Plants – Mechanisms and Molecules.	#Self-Study - Work on the Case Study report and the poster.	#Self-Study - Work on the Case Study report and the poster.	#IPM Workshop [BA, DFJ, HF, SB] - Group work	#Self-Study - Work on the LabNotebook
14:25	ZOOM			ZOOM	
Break					
14:35	# Lecture [MD] - How Plants Defend Against Pathogens – Structural and Biochemical Plant Defenses.	#Self-Study - Work on the Case Study report and the poster.	#Self-Study - Work on the Case Study report and the poster.	#IPM Workshop [BA, DFJ, HF, SB] - Group work	#Self-Study - Work on the LabNotebook
16:00	ZOOM			ZOOM	#Finalize and Submit LabNotebook on Canvas Before 16:00

WEEK 41

Genetics					
	MONDAY 11 OKT.	TUESDAY 12 OKT.	WEDNESDAY 13 OKT.	THURSDAY 14 OKT.	FRIDAY 15 OKT.
9:00	#Self-Study - Work on the Case Study report and the poster.	# One Stop Shop [SB / XX] - Walkthrough a virtual resistance breeding program: <i>principles, technologies, and challenges.</i>	#Self-Study - Work on the Case Study report and the poster.	#One Health Workshop [BA, HF, AB, SB] - Group work	# One Health Workshop # Finalize and Submit Group Presentations on Canvas Before 9:45
10:25		ZOOM		ZOOM	
Break					
10:35	#Self-Study - Work on the Case Study report and the poster.	# One Stop Shop [SB / XX] - Walkthrough a virtual resistance breeding program: <i>principles, technologies, and challenges.</i>	#Self-Study - Work on the Case Study report and the poster.	#One Health Workshop [BA, HF, AB, SB] - Group work	[Starts at 10:00] #One Health Workshop [BA, HF, AB, SB + GUESTS] - Group Presentations
12:00		ZOOM		ZOOM	ZOOM
Break					
13:00	# Lecture [SB] - Resistance Genetics. <i>Part 1: identifying a resistance trait (Quali- vs. Quantitative – Mono- vs. Polygenic)</i>	#Self-Study - Work on the Case Study report and the poster.	#Self-Study - Work on the Case Study report and the poster.	#One Health Workshop [BA, HF, AB, SB] - Group work	#Self-Study - Work on the Case Study report and the poster.
14:25	ZOOM			ZOOM	
Break					
14:35	# Lecture [SB] -Resistance genetics. <i>Part 2: developing a marker.</i>	#Self-Study - Work on the Case Study report and the poster.	#Self-Study - Work on the Case Study report and the poster.	#One Health Workshop [BA, HF, AB, SB] - Group work	#Self-Study - Work on the Case Study report and the poster.
16:00	ZOOM			ZOOM	#Finalize and Submit Case Study Poster on Canvas Before 15:00

WEEK 42

	- Final reports				
	MONDAY 18 OKT.	TUESDAY 19 OKT.	WEDNESDAY 20 OKT.	THURSDAY 21 OKT.	FRIDAY 22 OKT.
9:00	# Finalize Case Study Report	# Finalize Case Study Report	# Read Case Study Reports of Others # Prepare Poster Presentations of Your Own Case Study # Prepare for the Exam	# Read Case Study Reports of Others # Prepare Poster Presentations of Your Own Case Study # Prepare for the Exam	# Read Case Study Reports of Others # Prepare Poster Presentations of Your Own Case Study # Prepare for the Exam
10:25					
Break					
10:35	# Finalize Case Study Report	# Finalize Case Study Report # Submit Case Study Report Before 12:00 on Canvas.	# Read Case Study Reports of Others # Prepare Poster Presentations of Your Own Case Study # Prepare for the Exam	# Read Case Study Reports of Others # Prepare Poster Presentations of Your Own Case Study # Prepare for the Exam	# Read Case Study Reports of Others # Prepare Poster Presentations of Your Own Case Study # Prepare for the Exam
12:00					
Break					
13:00	# Finalize Case Study Report	# Read Case Study Reports of Others # Prepare Poster Presentations of Your Own Case Study # Prepare for the Exam		# Read Case Study Reports of Others # Prepare Poster Presentations of Your Own Case Study # Prepare for the Exam	# Read Case Study Reports of Others # Prepare Poster Presentations of Your Own Case Study # Prepare for the Exam
14:25					
Break					
14:35	# Finalize Case Study Report	# Read Case Study Reports of Others # Prepare Poster Presentations of Your Own Case Study # Prepare for the Exam		# Read Case Study Reports of Others # Prepare Poster Presentations of Your Own Case Study # Prepare for the Exam	# Read Case Study Reports of Others # Prepare Poster Presentations of Your Own Case Study # Prepare for the Exam
16:00					

WEEK 43

	- Final exams				
	MONDAY 25 OKT.	TUESDAY 26 OKT.	WEDNESDAY 27 OKT.	THURSDAY 28 OKT.	FRIDAY 29 OKT.
9:00	# Exam Schedule and Student's Order. # Course Evaluation.	# Prepare for the Exam	# Prepare for the Exam	# Final exam	
10:25	ZOOM			BioC. Room A332 BioC. Room A336	
Break					
10:35	# Poster presentations Students – Take Turns And Present Online	# Prepare for the Exam	# Prepare for the Exam	# Final exam	
12:00	Zoom			BioC. Room A332 BioC. Room A336	
Break					
13:00	# Poster presentations Students – Take Turns And Present Online	# Prepare for the Exam	# Prepare for the Exam	# Final exam	# Teachers Fika
14:25	Zoom			BioC. Room A332 BioC. Room A336	
Break					
14:35	# Poster presentations Students – Take Turns And Present Online	# Prepare for the Exam	# Prepare for the Exam	# Final exam	
16:00	Zoom			BioC. Room A332 BioC. Room A336	

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