International Master of Science in Horticulture

joint degree program among universities:

MENDEL UNIVERSITY IN BRNO, FACULTY OF HORTICULTURE



UNIVERSITY OF AGRICULTURE IN KRAKOW, FACULTY OF HORTICULTURE



SLOVAK UNIVERSITY OF AGRICULTURE IN NITRA, FACULTY OF HORTICULTURE AND LANDSCAPE ENGENEERING



THE CURRICULUM OF COURSES

March, 2014

CONTENTS

MENDELU

 Horticulture Machinery Technology of Fruit Destillates Fruit Storage Stone Fruit production Sophisticated Vegetable production Wine Technology Applied Plant Biotechnology 	3 5 7 9 11 13	15
University of Krakow		
8. Biostatistics9. Ethics in biotechnology 1810. Laterate the second secon	17	
10. Integrated protection of Horticulture Crops 20	22	
12 Plant molecular Genetics and Genomics	22	
13. Polymers in Horticulture	26	
14. Principles of Plant Cell and Tissue Cultures		28
15. Rural Culture Tourism	30	
16. Social Insect Ecology		32
17. Soiless Cultivation Systems	33	
Slovak Agriculture University		
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21. Vegetable Seed Production	41	
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23. Quality Management Systems in Horticulture		
24. Pruning and training of Fruit Trees	45	
25. Horticulture Dendrology	47	

1. Title of			Horticultural Machinery							
unit/subject/mo	dule									
2. Unit code				3. Numbe credits	r of E	CTS		5		
4. Contact hour	rs		Total	L	E	E		S Other		
	_		56	28	2	8		1	forms	
5. Cycle N	laster	Ś	6. Year	r 1		<u>7. Seme</u>	ster	2nd		
8. Study	ve		9.	Branch	of					
programme		T (T (B		study	F			
10. Pillar of the	•	Intern	national N	Vlaster of	Τ	11.	Eng	glish		
programme		Science	e in Hor	ticulture	Lan	iguage				
12. Special										
12 Objectives	nd au	hight	To	noint stude	nto v	with forming		wing and	the rence of	
15. Objectives a	ma su	Dject-	10 acqu	ry used in	tho o	andition	l gro	owiling and	The range of	
specific compet	ences		mainten	nce and re	nair o	f machin	s pre	vannig in C	rations such	
			as cultiv	ations cron	pan 0. nrote	ction and	l harv	various op	tudied	
			us cultiv	utions, crop	prote	etion und	i iiui v	esting, are s	tualea.	
14. Description	of cor	ntent	Fruit-orc	wing techn	iques	producti	on n	rocesses wo	rking	
14. Description	01 001	itent	operation	ns technica	l proce	edures a	nnroi	priate technic	aues for soil	
			manager	nent system	s. trac	tors, ma	chine	s for workin	g the soil	
			(cultivations, hydraulic swinging sections) machines for							
		mulching and mowing grass, spreaders, sprayers, front-fitted								
		knife trimmers, harvesting machines, transporting equipment,								
			working costs of machines, development trends							
15. Basic biblio	graph	у	ZEMÁNEK, P; BURG, P. : Speciální mechanizace-							
			mechanizační prostředky pro vinohradnictví. 1.vyd. Brno: MZLU							
			v Brně, 2003. 98 s. ISBN 80-7157-739-1							
			WALG, O.: Taschenbuch der Weinbautechnik. 1. Auflage.							
			Kaiserlautern: Rohr-Druck, 2000. 432 s. ISBN 3-921156-45-9							
			SKROCH, W.A.: Orchard floor management – an overview.							
			HortScience 21 (3), 390 -94 DORSON A D Soil Acidity and Plant Crowth Academic							
			ROBSON, A.D.: Soil Acidity and Plant Growth, Academic							
	Press, Sydney KAV PD EDWAPDS WM · Farm Management 1st ed. vol									
	2 Texas University a Iowa State University 1994 433 c ISBN 0-									
			2. TORAS UNIVERSITY & TOWA STATE UNIVERSITY, 1994. 455 S. ISBN 0- 07-033868-X							
			COOMBE, B.G., DRY, P.R. Viticulture						vol. 2. South	
			Australia: Hyde Park Press, Adelaide, 19						340. ISBN 1	
			875130 01 2							
			ZEMÁNEK, P, BURG, P.: Vinohradnická me						nizace – stroje	
			pro chen	nickou ochr	anu. I	Brno: MZ	ZLU	v Brně, skrij	ptum, 2007. 1.	
			vyd., 80	<u>s. ISBN 97</u>	8-80-7	<u>7375-123</u>	-4			
16. Envisaged l	earnin	g	16.1 Kna	wledge and	l	partition	ing r	esources and	d efficient use	
outcomes						of mach	inery	, technical	solutions and	
						economi	nic considerations in the area of			
1				standing		fruit gro	wing			

	16.2 Application	This knowledge can be used to build					
		and maintain mechanical production					
		lines, improve production processes					
		and appropriate use machines.					
	16.3 Reflection	The efficient exploitation of machinery					
		in horticultural processes.					
	16.4 Transferable skills	The preparation and presentation of					
	– not tied to just one	seminar work, use of domestic and					
	subject	<i>iect</i> foreign literature and other information					
	resources has general application. A						
		knowledge and understanding of					
		machinery and mechanization has					
		application throughout industry.					
		-FF					
17. Methods of teaching	Lectures, seminars, excursion.						
and learning							
18. Conditions for inclusion	Enrolment in the year of t	he course					
or to undertake work							
required							
19. Methods of assessment	Written exam (80%), oral exam (20%)						
and the assessment scale	Evaluation scale: Grades from A (best) to F (worst).						
20. Method of evaluation of	Institutional self-evaluation by students						
quality							
21. Curriculum compiler	Prof.Ing. Pavel Zemánek, Ph.D; MENDELU, Faculty of						
	Horticulture in Lednice						
	E-mail: pavel.zemanek@	mendelu.cz					

1. Title of su	bject	t/mo	dule/ur	nit	Technology of Fruit Distillates							
2. Unit code					3. Number of ECTS 4							
					credits							
				·				n			П <u> </u>	
4. Contact h	ours			Total	L		E		S		Other	
				28	14		14		0		forms	
5 Cycle	Ma	ster	Ś.	6 Veau	r 1st		7 Sen	rester	21	nd		
5. Cycle	IVIC	5001	5	0. 1 cu			/ Ben	icster		liu		
8 Study			Intorr	 national N	Mostor of		0 Bronel	hof				
o. Study nrogramme	ne Science in Ho				ticulture		study	,				
10. Pillar of	the		Beleik	<u>e in 1101</u>	<u>iicuitui c</u>		<u> </u>					
programme			electiv	ve .		La	nguage	Eng	lish			
12. Special							0 0	1				
features												
13. Objective	es an	d sul	bject-	Students	will study	/ th	e basic p	proces	ses	and prac	tical methods	
specific comp	peten	ices		used on	producing	g fr	uit distil	lates.	Stu	dents wi	ll master the	
				principle	es of prepar	atio	n of frui	t mas	n an	d ferment	tation control,	
				about pr	inciples of	dis	tillation a	and re	ectifi	ication. 1	hey will also	
				learn ab	out adjustn	nent	s and ag	eing	oi a f pr	istillates,	their sensory	
				evaluations and specific procedures of producing some kinds of distilled spirits								
14. Description of content			Oualitati	ve naram	eter	s of fr	nit s	neci	es for	fermentation		
14. Description of content			tent	Principles of preparation of fruit mash. Methods of fermentation								
				control.	Technology	y of	producti	on of	dist	illates fro	om starch raw	
				materials. Principles of distillation and rectification. Methods of								
				distillation and rectification. Chemical composition of distillation								
				fractions. Adjustments and ageing of fruit distillates. Defects of								
				fruit distillates and their elimination. Quality requirements and								
15 D · 6				evaluation of distilled spirits.								
15. Basic refe	erenc	ces		Bryce, J.H., Stewart, G.G. (2003): Distilled Spirits. Nottingham								
				University Press, ISBN: 189/6/6395. Wakely I. Brother I. (2001): The international spirits industry								
				Wakery, J., Brouler, L. (2001): The international spirits industry. Woodhead Publishing, Limited ISBN 1 85573 511 3								
				Hui, Y.H. et al. (2004): Handbook of Food and Reverage								
				Fermenta	Fermentation Technology. Marcel Dekker Inc., ISBN:							
				0824747	801.							
16. Envisage	d lea	rnin	g	16.1 Kna	owledge and	d	During	g this o	course, students will learn			
outcomes							about t	the tec	hno	logy of fr	uit distillates,	
			1			princip	bles of	ferr	nentation	control of		
			unaer.	stanaing		rootific	asnes	, and	about al	stillation and		
					also in	forme	d ab	out qualit	ty parameters			
						of sele	cted k	inds	of distill	ed spirits.		
				16.2 Apr	olication		Throug	gh a c	omb	ination of	ectures.	
				r r			semina	ars, an	d ex	cursions	the students	
							will be	able	e to obtain the required			
							knowle	edge o	of principles of distillation			
							proces	ses an	d pr	oduction	of fruit	
							distilla	ites.				

	16.3 Reflection	This knowledge will be thereafter applied to elaborate essays about the technology of production of some kinds of fruit distillates.			
	16.4 Transferable skills – not tied to just one subject	During an excursion to a distillery the students will become familiar with practical technological methods of production of fruit distillates as well as with possibilities of working in this branch of food industry.			
17. Methods of teaching and learning	Lectures, seminars, essay	s, and excursion to a distillery.			
18. Conditions for inclusion or to undertake work required	Enrolment in the year of the course. Prerequisite is a basic course in fruit processing.				
19. Methods of assessment and the assessment scale	Oral examination (90%), seminar papers (10%) Evaluation scale: Grades from A (best) to F (worst).				
20. Method of evaluation of quality	Student questionnaire.				
21. Curriculum compiler	Ass. Prof. Ing. Josef Balíl Horticulture in Lednice	<, Ph.D.; MENDELU, Faculty of			

1. Title of subject/module/unit			Fruit storage						
2. Unit code			3. Number of credits	of ECTS	Г S 6				
4. Contact hours		Total 56	L 28	E 22	S 6	Other forms			

5. Cycle	Master	ς.	6. Year	1st		7. Semester		2nd		
8 Study		Interr	ational Ma	ster of	9	0 Branch				
programme		Science	ce in Hortic	ulture		study				
10. Pillar of	the					<u></u> 11.				
programme		Comp	oulsory		Lan	guage	Engli	sh		
12. Special features										
13. Objective	es and su	bject-	Students will study the basic principles of post-harvest							
specific competences			physiology	in fresh	fruit.	This k	nowled	ge of post-harvest biology		
			and related technology will be applied in practical training in							
			storehouses and packing centres. Practical work during lab							
			excercises	will give	stude	ents an i	insight	into the various processes		
			involved,	leading	to a	ı better	unde	rstanding of the issues		
14 D	C	4 4	surroundin	<u>g fruit qu</u>	ality.	1 .	1			
			Biological factors involved in deterioration, such as respiration and ethylene production, compositional changes during growth and development, and ripening stages in stores with different temperature and humidity regimes. Physical damage is a major contributor to deterioration. Post-harvest processes are assessed							
			control of relative humidity, including the storage systems themselves. Controlled-atmosphere storage systems, which can be very varied, will be studied in detail. All aspects of the cold- storage and handling of fruit, from preserving high quality (by suppressing disease and slowing down metabolic processes) to safety issues, will be studied.							
15. Basic refe	erences		Kader, A. A. (1992) Post-harvest Technology of Horticultural							
			Crops.							
			University of California, 291pp. ISBN 0-93176-99-0							
			Tijskens, L. M. M., Hertog, M.L.A.T.M. and Nicolai, B.M.							
			(2001) Easd Process Modelling, Woodhead Publishing Limited							
			Abington	.ess 1100	enne	. wood	ineau r	uonsning Linneu,		
			Hall Abi	ngton. Ca	mbri	dge CB	1 6AH	ISBN 0-8493-1224-8		
			Bottcher, H. (1996) Frishhaltung und Lagerung von Gemüse							
			Ulmer							
			Verlag, St	tuttgart,2	51 pp	. ISBN	3-800	1-5825-2		
1(16117	1 1	1	T T 1	· 11	.1 1 1 1		
16. Envisage outcomes	d learnín	g	16.1 Know	ledge and	d	Unders bioche post-ha	standin mistry arvest t	g the physiology and of ripening is the basis of echnology. Basic		
			<i>understanding</i> <i>understanding</i> <i>fruit and vegetable storage</i> <i>studied. Students will acq</i> <i>knowledge of fruit chemis</i> <i>overview of the quality iss</i> <i>surrounding storing fresh t</i>					ising gas mixtures for table storage will be ents will acquire a basic fruit chemistry and an he quality issues toring fresh fruit.		

	16.2 Application	Lab work will give students a knowledge of the underlying physiological processes involved in ripening, softening and the basic changes in metabolites. They will understand how storage regimes are managed commercially.				
	experiments will give students a bett understanding of changes in living f and the factors limiting post-harvest storage, as demonstrated by physiological diseases and microbia spoilage.					
	16.4 Transferable skillsThis knowledge of biochemistry, microbiology and storage systems for fruit, and the quality issues involved in handling and storage, has general application throughout the food industry.					
17. Methods of teaching and learning	Lectures, laboratory pract	ticals and visits to storage factories.				
18. Conditions for inclusion	Enrolment in the year of t	the course.				
or to undertake work	Pre-requisite is a basic co	ourse in chemistry and plant physiology				
required	or fruit conservation.					
19. Methods of assessment	- Written exam (30%), oral exam (60%)					
and the assessment scale	- Attendance at laboratory practicals and preparation of laboratory					
	reports (10%)					
	Evaluation scale: Grades from A (best) to F (worst).					
20. Method of evaluation of quality	Student questionnaire.					
21. Curriculum compiler	Prof. Dr. Jan Goliáš; MEI	NDELU, Faculty of Horticulture in				
	Lednice					

1. Title of u	nit/subject/mo	dule	Stone fruit production						
2. Unit code			3. Number of ECTS 6 credits 6						
4. Contact hours Total 56		L 28	E 28	S 0	Other forms				
5. Cycle	Master's	6. Yea	r 1st	7. Seme	ester 2nd				

programme Science in Horticulture study 10. Pillar of the programme compulsory 11. Langua ge English 12. Special features specific competences Students will be taught the basic principles of growing stone fruits, enabling them to subsequently work on commercial fruit farms, in government institutions or in specialised teaching establishments. This course covers cultivation techniques and training systems for stone fruits, and new developments both in the Czech Republic and abroad. This includes: required growing conditions, pruning and modern training systems, commercially popular varieties and promising new varieties, harvesting and the major pests and diseases. 14. Description of content This course covers cultivation techniques and training systems for stone fruit production: - current situation in apricot, peach, sweet and sour cherries and plum production world-wide - basic conditions required - main breeding goals for stone fruits - flowering, pollination and fertilisation of stone fruits - pruning (effect of apical dominance, growth rate of tree) - fruit thinning (fruit set, fruit drop, biennial cropping and fruit quality) - stone fruit varieties (domestic and international developments) - main pest and diseases 15. Basic bibliography MACKSON, David I: Temperate and subtropical fruit production. Wallingford : CAB I Publishing 1999, 332 s , il, ISBN: 0-85199-271-4 NAKASONE, H. Y - PAULL, R. E: Tropical fruit, Wallingford : CAB International 999, 430 s , ISBN: 0-85199-271-4 NAKASONE, H. Y - PAULL, R. E: Tropical fruit, Wallingford : CAB International 9999, 303 s , solishis 0-5782-152-4 BAUGHER, Tara Auxt:	8. Study	Interr	national Master of	9. Bran	ch of						
10. Pillar of the programme compulsory 11. Langua ge English 12. Special features Image: Special competences Students will be taught the basic principles of growing stone fruits, enabling them to subsequently work on commercial fruit farms, in government institutions or in specialised teaching establishments. This course covers cultivation techniques and training systems for stone fruits, and new developments both in the Czech Republic and abroad. This includes: required growing conditions, pruning and modern training systems, commercially popular varieties and promising new varieties, harvesting and the major pests and diseases. 14. Description of content This course covers cultivation techniques and training systems for stone fruits production: current situation in apricot, peach, sweet and sour cherries and plum production world-wide basic conditions required main breeding goals for stone fruits flowering, pollination and fertilisation of stone fruits pruning (effect of apical dominance, growth rate of tree) fruit thinning (fruit set, fruit drop, biennial cropping and fruit quality) stone fruit varieties (domestic and international developments) fruit classification main pest and diseases 15. Basic bibliography IACKSON, David I: Temperate and subtropical fruit production, Wallingford : CABI Publishing 1999, 332 s, ii, ISBN: 0-8319-271-4 NAKASONE, H.Y PAULL, R. E: Tropical fruits Wallingford : CABI Publishing 1999, 332 s, ii, ISBN: 0-8319-271-4 NAKASONE, H.Y PAULL, R. E: Tropical fruits Wallingfo	programme	Sciene	<u>e in Horticulture</u>	stuc	ly						
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12. Special features 13. Objectives and subject specific competences Students will be taught the basic principles of growing stone fruits, enabling them to subsequently work on commercial fruit farms, in government institutions or in specialised teaching establishments. This course covers cultivation techniques and training systems for stone fruits, and new developments both in the Czech Republic and abroad. This includes: required growing conditions, pruning and modern training systems, commercially popular varieties and promising new varieties, harvesting and the major pests and diseases. 14. Description of content This course covers cultivation techniques and training systems for stone fruit production: - current situation in apricot, peach, sweet and sour cherries and plum production world-wide - basic conditions required - main breeding goals for stone fruits - flowering, pollination and fertilisation of stone fruits - pruning (effect of apical dominance, growth rate of tree) - fruit thinning (fruit set, fruit drop, biennial cropping and fruit quality) - stone fruit varieties (domestic and international developments) - modern training systems, requirements for establishing new plantations, characteristics of different training systems - fruit classification - main pest and diseases 15. Basic bibliography JACKSON, David I: Temperate and subtropical fruit production, Wallingford : CABI Publishing 1999, 332 s. i1, ISBN: -0.85199-271-4 NAKASONE, H. Y - PAULL, R. E: Tropical fruit, Wallingford : CAB International 1998, 450 s. ISBN: 0-85199-254-4 BAUGHER, Tara Auxt: Concise encyclopedia of temperate tree fruit, New York : Food Products Press 2003,387 s ISBN: 1-56022-940-3, 1- 56022-941-1 TROMP, J: Fundamentals of temperate zone tree fruit production, Leiden : Backhuys Publishers 2005,4				ge							
 13. Objectives and subject-specific competences Students will be taught the basic principles of growing stone fruits, enabling them to subsequently work on commercial fruit farms, in government institutions or in specialised teaching establishments. This course covers cultivation techniques and training systems for stone fruits, and new developments both in the Czech Republic and abroad. This includes: required growing conditions, pruning and modern training systems, commercially popular varieties and promising new varieties, harvesting and the major pests and diseases. 14. Description of content This course covers cultivation techniques and training systems for stone fruit production: current situation in apricot, peach, sweet and sour cherries and plum production world-wide basic conditions required main breeding goals for stone fruits flowering, pollination and fertilisation of stone fruits pruning (effect of apical dominance, growth rate of tree) fruit traiting systems, characteristics of different training systems atom fruit varieties (domestic and international developments) modern training systems, requirements for establishing new plantations, characteristics of different training systems fruit classification main pest and diseases 15. Basic bibliography IACKSON, David I: Temperate and subtropical fruit production. Wallingford : CABI Publishing 1999, 322 s, il, ISBN: 0-85199-271-4 NAKASONE, H. V - PAULL, R. E: Tropical fruit, Wallingford : CAB International 1998, 450 s. ISBN: 0-85199-271-4 NAKASONE, H. V - PAULL, R. E: Tropical fruit, New York : Fool Products Press 2003, 387 s ISBN: 1-56022-940-3, 1-56022-941-1 TROMP, J: Fundamentals of temperate zone tree fruit,	12. Special features										
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 main pest and diseases 15. Basic bibliography JACKSON, David I: Temperate and subtropical fruit production, Wallingford : CABI Publishing 1999, 332 s , il, ISBN: 0-85199-271-4 NAKASONE, H. Y - PAULL, R. E: Tropical fruits, Wallingford : CAB International 1998, 450 s. ISBN: 0-85199-254-4 BAUGHER, Tara Auxt: Concise encyclopedia of temperate tree fruit, New York : Food Products Press 2003,387 s ISBN: 1-56022-940-3, 1- 56022-941-1 TROMP, J: Fundamentals of temperate zone tree fruit production, Leiden : Backhuys Publishers c2005, 400 s. , il ISBN: 90-5782-152-4 JANICK, Jules: Fruit breeding , Volume I, II, III, New York : John Wiley & Sons 1995, 616 s.:il. ISBN: 0-471-31014-X DESVIGNES, Jean-claude: Virus Diseases of Fruit Trees , Diseases 			- fruit classification								
 15. Basic bibliography JACKSON, David I: Temperate and subtropical fruit production, Wallingford : CABI Publishing 1999, 332 s , il, ISBN: 0-85199-271-4 NAKASONE, H. Y - PAULL, R. E: Tropical fruits, Wallingford : CAB International 1998, 450 s. ISBN: 0-85199-254-4 BAUGHER, Tara Auxt: Concise encyclopedia of temperate tree fruit, New York : Food Products Press 2003,387 s ISBN: 1-56022-940-3, 1- 56022-941-1 TROMP, J: Fundamentals of temperate zone tree fruit production, Leiden : Backhuys Publishers c2005, 400 s. , il ISBN: 90-5782-152-4 JANICK, Jules: Fruit breeding , Volume I, II, III, New York : John Wiley & Sons 1995, 616 s.:il. ISBN: 0-471-31014-X DESVIGNES, Jean-claude: Virus Diseases of Fruit Trees , Diseases 			- main pest ar	nd diseases							
 Wallingford : CABI Publishing 1999, 332 s , il, ISBN: 0-85199-271-4 NAKASONE, H. Y - PAULL, R. E: Tropical fruits, Wallingford : CAB International 1998, 450 s. ISBN: 0-85199-254-4 BAUGHER, Tara Auxt: Concise encyclopedia of temperate tree fruit, New York : Food Products Press 2003,387 s ISBN: 1-56022-940-3, 1- 56022-941-1 TROMP, J: Fundamentals of temperate zone tree fruit production, Leiden : Backhuys Publishers c2005, 400 s., il ISBN: 90-5782-152-4 JANICK, Jules: Fruit breeding , Volume I, II, III, New York : John Wiley & Sons 1995, 616 s.:il. ISBN: 0-471-31014-X DESVIGNES, Jean-claude: Virus Diseases of Fruit Trees , Diseases 	15. Basic bibliograph	У	JACKSON, David I	: Temperate	and subtro	opical fruit production,					
 CAB International 1998, 450 s. ISBN: 0-85199-254-4 BAUGHER, Tara Auxt: Concise encyclopedia of temperate tree fruit, New York : Food Products Press 2003,387 s ISBN: 1-56022-940-3, 1- 56022-941-1 TROMP, J: Fundamentals of temperate zone tree fruit production, Leiden : Backhuys Publishers c2005, 400 s. , il ISBN: 90-5782-152-4 JANICK, Jules: Fruit breeding , Volume I, II, III, New York : John Wiley & Sons 1995, 616 s.:il. ISBN: 0-471-31014-X DESVIGNES, Jean-claude: Virus Diseases of Fruit Trees , Diseases 			Wallingford : CABI F	DATITE	999, 332 s F • Troni	, 11, ISBN: 0-85199-271-4					
 BAUGHER, Tara Auxt: Concise encyclopedia of temperate tree fruit, New York : Food Products Press 2003,387 s ISBN: 1-56022-940-3, 1- 56022-941-1 TROMP, J: Fundamentals of temperate zone tree fruit production, Leiden : Backhuys Publishers c2005, 400 s., il ISBN: 90-5782-152-4 JANICK, Jules: Fruit breeding , Volume I, II, III, New York : John Wiley & Sons 1995, 616 s.:il. ISBN: 0-471-31014-X DESVIGNES, Jean-claude: Virus Diseases of Fruit Trees , Diseases 			CAB International 19	98 450 s IS	$BN \cdot 0.85$	199-254-4					
New York : Food Products Press 2003,387 s ISBN: 1-56022-940-3, 1- 56022-941-1 TROMP, J : Fundamentals of temperate zone tree fruit production, Leiden : Backhuys Publishers c2005, 400 s., il ISBN: 90-5782-152-4 JANICK, Jules : Fruit breeding, Volume I, II, III, New York : John Wiley & Sons 1995, 616 s.:il. ISBN: 0-471-31014-X DESVIGNES, Jean-claude : Virus Diseases of Fruit Trees, Diseases			BAUGHER, Tara A	uxt: Concise	e encyclop	bedia of temperate tree fruit,					
56022-941-1 TROMP, J : Fundamentals of temperate zone tree fruit production, Leiden : Backhuys Publishers c2005, 400 s., il ISBN: 90-5782-152-4 JANICK, Jules : Fruit breeding, Volume I, II, III, New York : John Wiley & Sons 1995, 616 s.:il. ISBN: 0-471-31014-X DESVIGNES, Jean-claude : Virus Diseases of Fruit Trees, Diseases			New York : Food Pro	ducts Press 2	2003,387	s ISBN: 1-56022-940-3, 1-					
 TROMP, J: Fundamentals of temperate zone tree fruit production, Leiden : Backhuys Publishers c2005, 400 s., il ISBN: 90-5782-152-4 JANICK, Jules: Fruit breeding, Volume I, II, III, New York : John Wiley & Sons 1995, 616 s.:il. ISBN: 0-471-31014-X DESVIGNES, Jean-claude: Virus Diseases of Fruit Trees, Diseases 			56022-941-1								
JANICK, Jules: Fruit breeding, Volume I, II, III, New York : John Wiley & Sons 1995, 616 s.:il. ISBN: 0-471-31014-X DESVIGNES, Jean-claude: Virus Diseases of Fruit Trees, Diseases			TROMP , J: Fundame	entals of tem	perate zo	ne tree fruit production,					
Wiley & Sons 1995, 616 s.:il. ISBN: 0-471-31014-X DESVIGNES, Jean-claude: Virus Diseases of Fruit Trees, Diseases			Leiden : Backhuys Pu	iblishers c20	05, 400 s. Volumo I	, 11 ISBN: 90-5/82-152-4					
DESVIGNES, Jean-claude : Virus Diseases of Fruit Trees, Diseases			Wiley & Sons 1995	$516 \text{ s} \cdot \text{i} \text{ISB}$	$N \cdot 0.471$	-31014-X					
			DESVIGNES, Jean-	claude: Viru	is Disease	s of Fruit Trees , Diseases					
due to viroids, viruses, phytoplasmas and other undetermined infectious			due to viroids, viruses, phytoplasmas and other undetermined infectious								
agents, Paris : CTIFL 1999, 202 s.			agents, Paris : CTIFL 1999, 202 s.								
ISBN: 2-87911-143-9			ISBN: 2-87911-143-9								
KHAN, Jawaid A : Plant viruses as molecular pathogens, New York : Food Products Proce 2002, 527 a. il JSDN: 1,56022,805,4			KHAN, Jawaid A: H	Plant viruses	as molecu	alar pathogens, New York :					
FOOD FTODUCTS FTESS 2002, 537 S.: 11. ISBN: 1-50022-895-4 DESVIENES Ioan Claude: Maladias a virus das arbras fruitions			DESVICINES Loop	2002, 337 S.: Clauda: Ma	II. ISBN: ladies a vi	1-JOU22-893-4 rus des arbres fruitiers					

	/Maladies a virus, a mycopl	asmes et a viroides, Paris : CTIFL 1990,				
	126 s. ISBN: 2-901002-78-	1				
16. Envisaged learning outcomes	16.1 Knowledge andStudents will be competent to manage stone fruit orchards. and will have up-to- date knowledge of the latest research findings concerning apricots and peaches					
		from the activities of the Dept. of Fruit growing in Lednice.				
	16.2 Application	On the basic of their newly-acquired knowledge about stone fruit growing, students will be able to critically evaluate techniques of stone fruit growing and choose the most appropriate for their situation.				
	16.3 Reflection	Becausethe Horticultural Faculty in Lednice is situated in the most suitable stone fruit growing area in the Czech Republic, students will be able to meet commercial growers and learn about current developments first-hand.				
	16.4 Transferable skills – not tied to just one subject	The ability to critically evaluate different growing techniques and the knowledge of plant physiology can be applied in all horticultural fields.				
17. Methods of teaching and learning	Lectures, seminars, field excercise					
18. Conditions for inclusion	Enrolment in the year of	the course				
or to undertake work required						
19. Methods of assessment	Totaly 100 points					
and the assessment scale	• Written exam (40 points)					
	• Attendance at laboratory practicals (40 points)					
	• Preparation of laboratory report (20 points)					
	Evaluation scale: A-F (A=91 – 100; B=81 – 90; C=71-80; D = $61-70$; F = $51-60$; F = lower than 50 points unsuccefull					
20 Method of evaluation of	101-70, $E = 51-60$, $F = 10$ wer than 50 points, unsuccertain Institutional self-evaluation by students					
quality	Institutional self-evaluation by students					
21. Curriculum compiler	MENDELU, Faculty of H	Iorticulture in Lednice;				
	Prof.Dr. Boris Krška, Dip	ol.Ing. Ivo Ondrášek, Ph.D.				
	E-mail: <u>krska@zf.mendelu</u>	.CZ				

1. Title of unit/subject/module				S	Sophisticated Vegetable Production					
2. Unit code	de 3. Number of ECTS				4	5				
				credits						
4. Contact hours Total			L	ı	F	E	S		Other	
	56 28 28				28			forms		
5. Cycle	Ma	aster´s	6. Year	r	1st		7. Semester	r	2nd	

8. Study	Interi	national Master of	9. Bra	nch of						
programme	Scien	ce in Horticulture	stu	dy						
10. Pillar of the	Electi	ve	11.	English	l					
programme			Langua							
12 Smootel			ge							
features										
13. Objectives and s	ubject-	To acquaint student	s with indi	vidual spe	ecies of vegetables,					
specific competence	S	including their morphology, growing techniques, harvest methods, marketing, quality standards and available varieties.								
14. Description of co	ontent	Botanical characteri harvesting, post-har assortment of the ec fruits (tomatoes, per brassicas and root as	stics, nutri vest proce conomicall opers, etc.) nd bulb ve	tional qua sses, grad y importa , legumes getables.	llity, growing methods, ing standards, cultivar nt range of: vegetable , leaf vegetables,					
15. Basic bibliograp	hy	 BARTOŠ, J. a kol. Pěstování a odbyt zeleniny, Agrospoj Praha, 2000, 286 pp KOTT,L., MORAVEC,J. Pěstování a použití méně známých zelenin, SZN Praha, 1989, 268 pp PETŔÍKOVÁ,K. a kol. Zelenina – pěstování, ekonomika, prodej Nakl. Profi Press, s.r.o., Praha 2006, 240 pp RUBATZKY V., YAMAGUCHI M. World vegetables: principles, production, and nutritive values. Aspen Publication, 1999. 843 pp VOGEL,G.Handbuch des speziellen Gemüsebaues. Eugen 								
16. Envisaged learn outcomes	ing	16.1 Knowledge and understanding	d Stud theo phy grov	Students will be able to apply their theoretical knowledge of nutrition, physiology and plant pathology to growing techniques for vegetables.						
		16.2 Application	This in the mar	This knowledge can be used on f in the actual production, and also marketing, of vegetables.						
		16.3 Reflection	This our mar	s course w growers to kets.	vill increase the ability of o compete in current					
		16.4 Transferable skills – not tied to just one subjectThe competences here can be appendent of a product of a product, whether in production, simarketing.								
17. Methods of teac	hing	Lectures, seminars								
and learning										
18. Conditions for in	nclusion	Enrolment in the ye	ar of the co	ourse						
or to undertake wo	·k									

required							
19. Methods of assessment	Totaly 100 points						
and the assessment scale	• Written exam (40 points)						
	• Attendance at practicals (40 points)						
	• Preparation of laboratory report (20 points)						
	Evaluation scale: A-F (A= $91 - 100$; B= $81 - 90$; C= $71-80$; D =						
	61-70; $E = 51-60$; $F = lower than 50 points, unsuccefull$						
20. Method of evaluation of	Institutional on-line self-evaluation by students						
quality							
21. Curriculum compiler	Assoc.ProfIng. Robert Pokluda,Ph.D., e-mail:						
	pokluda@zf.mendelu.cz						
	Phone:+420-519 367 232						
	MENDELU, Faculty of Horticulture in Lednice						

1. Title of unit/subject/module					Wine Technology							
2. Unit code				3. Number of ECTS				6				
				credits								
4. Contact h	our	8	Total	LE			C	S		Other		
56					28 28			forms				
5. Cycle	M	aster´s	6. Year	ear 1st			7. Semester	r	2nd			

8. Study	Interr	national Master of	9. Brar	ch of						
programme	Scienc	e in Horticulture	stu	ły						
10. Pillar of the	Electi	ve	11.	En	glish					
programme			Langua	ge						
12. Special features										
13. Objectives and su	bject-	The aim of this course is to inform students about basic								
specific competences	U	winemaking techniques and chemical principles of main								
		processes in viticult	ure and vin	iculture.	To teach analytical					
		methods for determine	ning the pi	esence of	of additives in wine					
		alongside the natural compounds found in wine.								
14. Description of cor	ntent	1. History of viticulture in CR and the rest of the world.								
		2.Grape and its mat	uration.							
		3.Harvest and Pre-F	ermentatio	n Treatn	ients					
		4.Conditions of Yea	st Develop	ment						
		5.Biochemistry of A	Icoholic F	ermentat	10n					
		o. The Use of Sulfur	Dioxide in	Must ar	a wine Treatment					
		7. Maiolactic Fermel	ntation							
		0 Ped Winemaking	g							
		10 Evolution of Che	mical Con	nounds	in Young Wine					
15 Basic hibliograph	V	Balík I Vinařství I	aboratorní	cvičení	MZLU Brno					
15. Dasie bibliograph	J	Clarke R. L. and Bak	ker I. Wine	e flavour	chemistry Blackwell					
		Publishing lid Oxfor	rd. 2004	114 0 41	enermistry; Druch wen					
		Farkaš, J., Biotechnológia vína, ALFA Bratislava, 1983								
		Ribéreau-Gayon et.at, Handbook of enology volume1.2, Paris,								
		2006								
		Steidl,R., Sklepní hospodářství, Národní salon vín, Valtice 2002								
16. Envisaged learnin	ıg	16.1 Knowledge and	d Curr	ent scier	tific progress in the field					
outcomes		understanding	of w	inemaki	ıg					
		16.2 Application	Impi	oved wi	nemaking skills and					
			mak	ng bette	r wine.					
		16.3 Reflection	Reco	opportunities for						
			impi	chnique.						
		16.4 Transferable s	<i>cills</i> Use of domestic and foreign literatur							
		- not tied to just one	e and den	other inf	ormation resources.					
		subjeci	critic	urying a sal analy	sis of product defects and					
			noss	ible rem	edies critical analysis of					
			liter	ture.	Scies, entited undrysis of					
17. Methods of teaching	ng	Lectures and laborat	tory exercis	ses, excu	rsions					
and learning		England in the	on of the							
10. Conditions for inc	JUSION	Enrolment in the year of the course								
required										
10 Mathada af assass	ment	Totaly 100 points								
and the according to assess	ale	Writton avor	n (10 naint	c)						
and the assessment st	an	• Written exam (40 points)								
		Auenuance a	at laborator		ais (40 points)					
		• Preparation	or laborato	y report	(20 points)					

	Evaluation scale: A-F (A= $91 - 100$; B= $81 - 90$; C= $71-80$; D = $61-70$; E = $51-60$; F = lower than 50 points, unsuccefull
20. Method of evaluation of quality	Institutional on-line self-evaluation by students
21. Curriculum compiler	Dr. Mojmír Baroň, e-mail: mojmirbaron@seznam.cz, phone: +420 519 367 252 MENDELU, Faculty of Horticulture in Lednice

1. Title of u	nit/su	ıbjec	t/modu	ıle	Aplied Plant Biotechnology									
2. Unit code					3. Number of ECTS 6									
					credits									
1 Contact h				Total	т	F		2	Other					
4. Contact nours				10tai 56	L 28	E 28	, i	5	forms					
5. Cycle	Ma	ster	s	6. Yea	r 1st	20 7. Seme	ster	2nd	1011115					
8. Study	1,10		Interi	national I	Master of	9. Branch	of							
programme			Scien	ce in Hor	ticulture	study								
10. Pillar of	the		Comp	oulsory		11.								
programme						Language	En	ıglish						
12. Special														
features					1 0 1 1		<u> </u>							
13. Objective	es an	id su	bject-	Main go	al of this su	bject is to acqu	aint	students v	with basic					
specific com	petei	nces		principle	es of genetic	cs, instability ai	nd cr	anges in j	plant genomes,					
				plant breeding New biotechnology techniques applied in										
14 Descripti	ion o	fcor	tent	The cour	rse will cov	er the following	o ton	ics.						
	ion U			• I	ntroduction	to classical and	5 top d mo	lecular de	enetics					
				(inherit	ance. Mend	lelian rules. mit	tosis	meiosis	alleles					
				interact	ion, OTL's,	genes linkage))	,,						
				 Molecular principles of inheritance (structure and function 										
				of DNA, DNA replication, recombination)										
				• Gene function (genetic code, transcription, translation,										
				proteins: structure and function)										
				• Genes and genome structure (eukaryotic chromosomes,										
				gene regulation, gene interactions; linkage and linkage maps)										
				• Instability and changes in plant genomes (mutations of										
				genes, induction and detection of mutations, repairing process,										
				mutations of genomes, polyploidy, aneuploids, haploids, transpozon elements)										
				Genetic and phenotypic variation (nonvestion genetics)										
				Hardy – Weinberger equilibrium)										
				Principles of basic plant breeding approaches										
				Genetics of pest and disease resistance										
				• Biotechnological tools and methods used in plant breeding (PCR, RT-PCR, Real Time PCR, methods for determination of										
				genome size and its variability, cultivar identification, marker										
				assisted	ussisted selection)									
15. Basic bib	oliogi	raph	y	Urban.	T., Vyhnán	ek, T. Virtuáln	í svě	t genetikv	1. Tištěná					
				forma r ISBN 8	forma multimediálního hypertextu na CD. 1. vyd. Brno: MZLU, 2 ISBN 80 7157 613 1									
				Chloup	Chloupek, O. Genetická diverzita, Šlechtění a semenářství									
				Hraška	Iraška Š a kol <i>Genetika rastlin</i> Príroda Bratislava 1990									
				Kováči	váčik. A. a kol. <i>Genetika rostlin</i> - 1983									
				George	rge Acquaah Principles of Plant Genetics and Breeding,									
				Blackw	Blackwell Publishing, Incorporated; 1st edition (September 27,									
				2006)		-								
				Domini	que De Vie	e <u>nne</u> . <i>Molecular</i>	r Ma	rkers in P	lant Genetics and					

	Biotechnology, Science Publishers (February 2003)							
16. Envisaged learning outcomes	16.1 Knowledge and understanding	 Gain profound knowledge about classical and molecular plant genetics Develop an understanding of the advanced applications of genetic and biotechnological techniques for breeding goals and genetic analysis of plants. 						
	16.2 Application	Based on the understanding of principles of modern plant breeding and biotechnological methods students will be able to implement innovative plant breeding programs in the practice.						
	16.3 ReflectionSignificantly reflect recent tree area of new breeding and biotechnological techniques in of agriculture.							
	16.4 Transferable skills – not tied to just one subject	 Improve skills in the use of accessible scientific informations by applying various interactive searching tools Impair writing abilities by compiling a seminar works Able to understand and explain to growers potential for using of modern biotechnology and breeding approaches. 						
17. Methods of teaching	lessons seminars indiv	idual assignments, workshop						
18. Conditions for inclusion or to undertake work	Enrolment in the year of	the course						
required	Students should attend in Biotechnology in Hortic	parallel: culture - Laboratory Exercises						
19. Methods of assessment and the assessment scale	final written test and oral exam, evaluated presentation during workshop							
20. Method of evaluation of quality	ECTS system							
21. Curriculum compiler	Dr. Miroslav Baránek, M Lednice	ENDELU, Faculty of Horticulture in						

1. Title of sub	ject/mod	ule/un	it	Biostatistics								
2. Unit code				3. Number of ECTS credits 6								
4. Contact ho	urs		Total	L		Ε			S		Other forms	
- ~ -			48	18		24	4 <u> </u>		6			
5. Cycle	Master	S	6. Yea									
8. Study prog	ramme	Inte	ernational Master of 9. Branch of									
10 DU 0 (1		Scie	nce in Hor	ticul	ture		study					
10. Pillar of t	ne	Con	pulsory				1.	Eng	lish	1		
programme			Language									
12. Special												
13 Objectives	and	I	Vnowladaa about appaimental design and basis statistical approaches to									
subject-specific			Anownedge about experimental design and basic statistical approaches to analyze data collected from experiments and how to handle the data using									
competences		c	omputer so	ftwar	e. Stud	lent wi	ll learn	statis	tica	l functions	built in Excel	
ps		a	nd in dedic	cated	softwa	re, var	ious pr	ocedu	res	of data ma	anagement and	
		i	nterpretation	n of tl	he resul	lts.					C	
14. Descriptio	n of conte	ent F	rinciples of	of da	ata ma	anagem	ent, d	escript	ive	statistics,	measures of	
		V	ariation, ex	kperir	nental	design	, exper	rimenta	al e	errors, hype	othesis testing,	
		r	nethods of	vai	riate c	ompar	ison, a	analysi	s	of varianc	ce, regression,	
		C	orrelation, i	10n-p	arameti	ric test,	explor	atory t	ech	niques.		
15. Basic bibli	ography		Electronic S	tatisti	cal Tex	tbook,	Statsof	t:				
		n	ttp://www.s	statso	ft.com/1	textboc	0K/					
		Т	University of Reading Statistical Service Centre									
		h	http://www.reading.ac.uk/ssc									
1(Freedor and	1		16.1 Knowledge and The student largers matheds of data description									
16. Envisaged	learning	1	10.1 Knowleage and The student knows methods of data description,								description,	
outcomes			<i>understanding</i> available methods of data analysis for company								or comparison	
			of experimental design.								ies, principies	
		1	16.2 Application The student applies rules of data manage							nagement and		
			II		oresenta	ation, de	esigns	exp	periments, u	ises the		
					â	ppropr	iate stat	tistical	me	thods for d	ata analysis.	
		1	16.3 Reflection The student is capable of formulating statisti							g statistical		
			hypotheses, interpreting the output of statis							of statistical		
			analyses.									
		1	<i>16.4 Transferable</i> Teamwork, ability to write reports and present									
		S	kills – not ti	ed to	<i>just</i> t	hem to	the put	olic.				
17 Mathada a	ftooohin		one subject	nroo	ticalan	with oor	nnutora					
and learning	i teaching	5	cetures and	prac	licals w		inputers	•				
18 Condition	for	F	Encolment in the year of the course									
inclusion or to	underta	ke F	Basic compu	iter sk	xills.							
work required	1		usir romp.									
19. Methods o	f assessm	ent -	Written exa	am (4	0%)							
and the assess	ment scal	le -	- Attendance at laboratory practicals and preparation of laboratory									
			Reports (40%)									
		-	- homeworks (20%)									
		H	valuation s	cale:	Grades	from 2	2.0 (wor	st) to f	5.0 ((best)		
20. Method of	evaluatio	on S	Student questionnaire									
of course qua	<u>ity</u>											
21. Curriculu	n compil	er 1	Jr. Katal Ba	ransk	1, Univ	ersity of	of Agric	culture	ın İ	Krakow		
1. Title of	od-la	E	thics in Bio	otechr	nology							
unit/subject/m	ioaule											

2. Unit code					3. Numbe	er of		1					
A Carta at h				T-4-1	credits	1	Б		a				
4. Contact h	ours	5		1otal	L 15		L		5	Other forms			
5. Cvcle	Ma	ster	s	6. Yea	r 1		7. Seme	ester	1st				
8. Study			facult	ative		(9. Branch	of					
programme							study	-					
10. Pillar of	the		Interr	national I	Master of		11.	Eng	glish				
programme			Sciend	ce in Hor	ticulture	L	anguage		8				
12. Special							00						
features													
13. Objective	es an	d su	bject-	The o	course deals	with	the broad s	spectru	um of ethica	al issues in			
specific com	peter	nces	0	biote	chnology, ur	nder	special con	sidera	tion of the	self-responsibility			
-	-			of sc	ience in gene	eral a	and research	ners in	n particular	in a practical			
				problem-solving environment									
14 Descripti	ion o	f.con	tont	Intro	duction to	athi	ne rapatit	ion					
14. Descripti	UII U	I COI	lient	Prob	lem solving	o etr	s – repetit ateories	.1011					
				3 cm	rrent topics i	s su n eth	tics of biote	ch					
				Self-	chosen topic	s by	students	•					
15. Basic bib	liogi	raphy	V	Eckenwi	ler, Lisa A., a	and	Felicia G. C	Cohn, e	eds. The Etl	nics of Bioethics:			
	0		v	Mapping the Moral Landscape. Baltimore: Johns Hopkins University									
				Press, 2007.									
				Describende Triberen II I THE DATE OF COMMENT									
				Engelhar	dt, Tristram	H., J	r. The Four	ndatio	ns of Bioeth	nics. New York:			
				Oxford University Press, 1996									
				Gert, Bernard, Charles M, Culver, and K. Danner Clouser, Bioethics: A									
				Systematic Approach. Oxford University Press, 2006Meilaender.									
				Gilbert. Bioethics: A Primer for Christians. 3nd ed. Grand Rapids:									
				Eerdmans, 2013									
16. Envisage	d lea	rnin	g	16.1 Kn	owledge and	d	Student	knows	s - the ethics	al problems			
outcomes							related to	o cont	emporary b	iochemistry			
				under	standing								
				16.2 Арр	olication		Student	1s abl	able using English on				
							professio	onal le	ever				
				16 3 Pat	Justion		- have a	reflec	ctive attitud	le towards natural			
				10.5 Kej	lection		laws an	d phe	enomena, a	and behaviour of			
							living or	ganisr	ms				
							- will cap	pable	of teamwor	king and changes			
							ithin variable						
						group structures							
						- aware	- aware that biotechnology comes along						
					them unass	and is prepared to							
			16.4 Tra	unsferable s	kills								
				– not tie	d to just on	2							
				subject									
17. Methods	of te	achi	ng	Lectures	5								
and learning	5		8										

18. Conditions for inclusion	
or to undertake work	
required	
19. Methods of assessment	
and the assessment scale	
20. Method of evaluation of	Students present in little groups a self-chosen topic from within
quality	biotechnology and its ethical implications, and introduce their
	conclusions for the practice of science.
21. Curriculum compiler	Dr Gregor Becker

1. Title of subject/module/unit					Integrated Protection of Horticultural Crops							
2. Unit code				3. Number of ECTS credits 7								
4. Contact ho	urs		Total	L			Ε			S		Other forms
			56	2	4		24			8		
5. Cycle	Master	΄s	6. Year	•	1 st		7	. Sem	ester	•	1 st	
8. Study prog	ramme	International M Science in Hort			ter of Iture	f 9. Branch of study						
10. Pillar of tl	ne	Com	oulsory				11.		Eng	lis	h	
programme			•			L	angu	age				
12. Special		-										
features												
13. Objectives subject-specifi competences	entificatior horticultur nd orchard p rinciples of	n of re c pro usi	f the most prop plant grammes ing chem	t imp s (ve for ical	oortar egetal integr prote	nt dise bles, o rated <u>p</u> ction i	ases orchai plant in IPI	ano rds pro M.	d insects age). Introduction otection (IPN	ints occurring on of vegetable A systems).		
14. Descriptio	n of cont	ent G in di	Betting to know with the occurrence, harmfulness and economically mportant pests and diseases in integrated production systems and liscusses how prevent and control them.									
15. Basic bibli	A L Si an Sv U L Pl Po M D Pr	Agrios G. N.: Plant Pathology. Academic Press. San Diego, London, Boston, N. York, Sydney. Tokyo, Toronto 1997, ss. 635. Snowdon A. L.: Post-Harvest Diseases and Disorders of Fruits and Vegetables. Vol. 1: General Introduction and Fruits. Wolfe Scientific Ltd. London 1990, ss. 302. Vol. 2: Vegetables. Wolfe Scientific Ltd. London 1990, ss. 416. Learning Plant Pathology. The Plant Health Instructor. American Phytopathological Society, 2006. www.apsnet.org/education. Peshin, Rajinder; Dhawan, Ashok K. (Eds.). Integrated Pest Management . Volume 1. 2009 D.P. Abrol., U. Shankar. Integrated Pest Management: Principles and Practice. CABI, 2012 - Electronic books – 512 pp.							. 635. its olfe 416. erican 1. st inciples and			
16. Envisaged outcomes	learning	; <i>1</i> 0	5.1 Knowled understa	<i>dge and</i> Examines methods and techniques of plant protection, has knowledge in the selection of the appropriate pesticides. It has the ability to associate elements of biology and the development of pests and pathogens to the proper selection of monitoring methods and the selection of the most favorable techniques for the prevention and control of pests and pathogens from the point of view of integrated pest								

	16.2 Application	Draws up a programs to protect fruit and vegetable crops from diseases and pests. Identifies pathogens and pests, the symptoms of disease and injury and beneficial organisms present in the fruit and vegetable crops. Knows how to properly use the right equipment used for forecasting and monitoring of pathogens (signaling plots) and pests (pheromone, sticky and volatile traps).
	16.3 Reflection	The student is capable of formulating opinions on the use of integrated pest management in crop improvement.
	16.4 Transferable	Teamwork, ability to present and defend personal
	skills – not tied to just one subject	opinions.
17 Mothods of topohing	Lacturas laboratory pr	acticals field practicals
17. Methous of teaching	Lectures, laboratory pra	acticals, field practicals
and learning		
18. Conditions for	Enrolment in the year of	of the course
inclusion on to undertake		
work required	Pre-requisite is a basic science.	course in biology of insect and bacteria and fungi
	Basic computer skills.	
19. Methods of assessment	- Oral presentation (40)	%)
and the assessment scale	- Attendance at laborate	ory practicals and preparation of laboratory (40%)
	- Reports (20%)	
	10ponts (2070)	
	Evaluation scale: Grade	es from 2.0 (worst) to 5.0 (best)
20. Method of evaluation	Student questionnaire.	
of course quality	1	
21. Curriculum compiler	Dr hab. Jacek Nawrock	ti, University of Agriculture in Krakow
· · · · · · · · · · · · · · · · · · ·	Dr. Maria Pobożniak, I	Iniversity of Agriculture in Krakow

1. Title of sub	ject/m	odule/1	unit		0	rnamer	tal	Plants				
2. Unit code					3. Number of ECTS credits 6							
							n					
4. Contact ho	urs			Total	L	-		E		S		Other forms
				<u>48</u>	2	4		24		-	4-4	
5. Cycle	Mast	ers		6. Yea	r			7. Sen	nester		1 st	
8. Study prog	ramme	e In	itern	ational I	Ma	ster of		9. Branc	n or			
10 Dillon of 4	ha		cienc	e in Hor	tic	ulture		5100y	F	1	1.	
rogramme Compulsory							L	11. nguage	Eng	<u>giis</u>	n	
12 Special							L	inguage				
features												
13. Objectives	s and		The	e program	n is	a bi-disci	plin	ary study	of orn	am	ental horticu	ulture resources
subject-specif	ïc		(tre	es and sh	nrut	os, pereni	nials	, annuals)	, as w	ell	as the ident	ification of cut
competences			flo	wers, pot	and	l balcony	plan	ts and its	logisti	c. 7	The course i	nclude study of
			pla	nts propa	igat	ion, in v	itro	technique	es, orr	nam	nental plants	s requirements,
			ma	intenance	, an	nd aesthet	ic va	alue. The	aims i	s to	o develop kn	owledge of the
	er-expand	ing	variety	ot	ornament	als w	ell-	-suited for	Northern and			
			Cer	ntral Euro	ope	regions	and	their cor	nposit	ion	in historic	al and modern
14 Descriptio	n of co	ntont		uells.								
14. Descriptio		писти		<u>e orname</u>	nta	l nlants ir	n the	context o	f their	ori	igin (subtror	vical rain
			fo	rests tem	ner	ature broa	adlea	of forests	stenne	e ni	rairies sava	nna
			M	editerrane	ean	vegetatio	n, te	mperate d	eciduo	ous	and conifer	ous forests,
			se	mi-desert	s an	d deserts	, xer	ic shrubla	nd) 2h	1		
			Th	ne variety	of o	ornament	al pl	ants in the	conte	ext	of the period	dicity of their
			de	velopmen	nt. 2	2h	_				_	-
			Pr	oduction	tecł	nnology c	f the	e most imp	ortant	t or	mamental pla	ant species (cut
			flo	owers, bal	con	y plants,	pot j	plants) and	d cut f	low	vers vase life	e prolongation,
			lo	gistic of o	rna	mental pl	ants	6h				
			In	vitro proj	paga	ation of c	rnar	nental pla	nts 2h	1	1 . 41	
			Ba	asics of de	end	rology for	r gar	den desig	n and	lane	dscaping 4h	• 1 \ •
			Oi	namental	pla	ints assor	tmer	it (Annual	s, Biei	nnı	als and Pere	nnials), its
			va Po	lue, requi	ren	rden art	app b	incation if	garde	en c	design and la	indscaping. on
			F	ercise	s ga		.11					
			In	vitro tech	nnia	ues in pr	onag	ation of o	rname	nta	al plants - lał	ooratory
			cla	asses, 4h		I I I	-r2	,			- F	,j
			Pr	ofessiona	l to	urs to inn	ovat	ive plant g	grower	rs a	and ornamen	tal nurseries of
			Kı	akow as v	wel	l as Silesi	a are	ea (South	of Pol	and	d) – one of th	ne most
			im	portant h	orti	cultural r	egio	n in Polan	d. 16 l	h		
			Gu	uided visit	to	the Histo	rical	Gardens	of Roy	al ۱	Wawel Castl	e in Krakow.4h
15. Basic bibli	iografy		Do	le J.M., W	/ilki	ins H. F. 2	004.	Floricult	ure: Pi	rinc	ciples and Sp	pecies (2nd
			Edi	ition), Pea	irso	n						
			Jair	n S. M., O	cha	tt S. J. 20	10. F	Protocols	for In \	Vitr	ro Propagati	on of
			Orr	namental	Pla	nts, (Met	hods	s in Molec	ular B	iolc	ogy), Springe	er
			RH	IS 2013.	Pro	pagation	tech	niques. Ro	oyal H	orti	iculture Soc	iety
			Bri	ckell C. 2	010). Encycle	opae	dia of pla	nts and	d fl	owers. DK,	London
			Bro	ooks J., 20)07.	. Well-de	sign	ed garden	DK.	Lor	ndon	
			Ric	e G. 2006	5. F	ncvclopa	edia	of perenn	ials. D)K	London	
							- and	J. Pereim				

16. Envisaged learning	16.1 Knowledge and	The student recognize the geographical origin of							
outcomes	<i>understanding</i> ornamental plants, defines the production technology of the most important floriculture								
	technology of the most important floriculture crops, identify major ornamental plants species of								
		crops, identify major ornamental plants species of							
		the modern horticulture industry, presents							
		techniques of plants propagation including in vitro							
		techniques, presents basic issues on plant selection							
		ın garden design.							
	16.2 Application	The student applies basic horticulture techniques							
		for plant care and propagation, uses in vitro tools							
		for efficient plant micropropagation, interprets							
		observations of plants phenology and its aesthetical							
		and ecological application in garden design, uses							
		online resources and reports results.							
	16.3 Reflection	The student is capable of formulating unbiased							
		opinions on the importance of various groups of							
		ornamental plants in garden design, urban							
		ecosystems as well as landscaping.							
	16.4 Transferable	Teamwork, ability to present and defend personal							
	skills – not tied to just	opinions.							
	one subject								
17. Methods of teaching	Lectures, laboratory pra	, laboratory practicals, and professional study tours.							
and learning									
18. Conditions for	Enrolment in the year of	of the course.							
inclusion or to undertake	Pre-requisite is a basic course of botany and plant physiology.								
work required	Basic computer skills.								
19. Methods of assessment	- Written exam (50%)								
and the assessment scale	- Attendance at laboratory practicals (25%).								
	- Attendance at professional study tours (25%).								
	Evaluation scale: Grades from 2.0 (worst) to 5.0 (best)								
20. Method of evaluation	Student questionnaire.								
of course quality									
21. Curriculum compiler	Dr. inż. Bożena Szewcz	zyk-Taranek, University of Agriculture in Krakow							

1. Title of sub	ject/mod	ule/uni	t	Plant M	olecu	lar Gene	etics a	nd Genomi	cs			
2. Unit code				3. Numb	er of]	ECTS cre	dits	7				
				_	n			~				
4. Contact ho	4. Contact hours		Total			E		5	Other forms			
5 Create		/	50	24		24) 1 ct				
5. Cycle	Master	S	6. Yea			/. Sen	nester	1 ³¹				
8. Study prog	ramme	Inte	mational I	viaster of		9. Branci	1 01					
10 Dillon of 4	ho	Scier	ence in Horticulture study									
10. Pillar of the	ne	Com	mpulsory 11. English									
12 Special					La	inguage						
features												
13. Objectives	and	k	Inowledge	on structu	ire an	d functio	n of 1	olant genom	es. Arabidopsis			
subject-specif	ic	t	haliana as	a model	plant	genome,	experi	mental meth	ods of genome			
competences		a	nalysis, ger	nome evolu	ition,	comparati	ve gen	omics, pract	ical applications			
-		0	f plant mole	ecular gene	tics ar	nd genomi	cs.					
14. Descriptio	n of cont	ent S	tructural, f	inctional, and comparative genomics, genetic mapping and								
		a	association mapping of plant genomes, whole genome sequencing -									
		n	methods and perspectives, structure of plant genomes, repetitive DNA -									
		0	origin and function, mechanisms of genome evolution, comparative									
		g	enomics, i	unctional	genoi	nics, gen	le exp	ression and	its regulation,			
			alobal gene expression analysis molecular assessment of genetic diversity									
		e g	enomics-as	sisted crop	impro	ovement	ulai ase	cosment of g	genetic diversity,			
15. Basic bibli	ografy	I	ankenau D	-H. Volff	J-N ((eds.), 200	09. Tra	insposons ar	nd the Dynamic			
100 20010 2121	···B- •·-)	Ċ	Genome. Spi	ringer, Dor	drecht			moposons m	<i>ia uno 25 juanno</i>			
		Ν	Meksem K, Kahl G (eds.), 2005. The Handbook of Plant Genome									
		Ν	Mapping. Wiley-VCH, Weinheim.									
		S	Sensen CW (ed.), 2005. Handbook of Genome Research. Wiley-VCH,									
		V	Weinheim, vol. 1 and 2.									
		1	he Arabid	opsis Ger	ome	Initiative,	2000.	Analysis	of the genome			
		S	equence of	the flowe	ring p	lant Arab	idopsis	thaliana. N	ature 408: 796-			
		0 \	815. Varshnev RK, Tuberosa R (eds.) 2007 Genomics-Assisted Cron									
		I	Improvement. Springer, Dordrecht, vol. 1 and 2.									
		K	Krebs J.E., Goldstein E.S, Kilpatrick S.T. (2011) Lewin's Genes X. 10th									
		E	Ed. Jones and Bartlett Publishers.									
		Т	rends in Pla	ant Science	- Cel	l Press.						
16. Envisaged learning			16.1 Knowledge and The student defines the scope of mole									
outcomes			understa	inding	gene	tics and	genom	ics, describ	es structure of			
			the eukaryotic genome, presents strategie						s strategies and			
					techniques of genome sequencing and							
					annotation, presents basic issues on genome							
					evolution, describes genomics-based							
					appro	baches to	crop in	mprovemen	t			
			6.2 Applica	tion	The student applies basic bioinformatic tools for							
					the ar	halysis of 1	DNA s	equence, inte	erprets results of			
			bioinformatic analyses, uses online resources						resources and			
		1	<u> </u>		repor	ts results.		of former 1				
		1	u.s Kejlecti	on	ine s	ons on the		of formulati	ng undiased			
					opini	mics in cre	use OI	noiccular g	andues and			
					genol		y mp	ovenient.				

	16.4 Transferable	Teamwork, ability to present and defend personal						
	skills – not fied to just	opinions.						
	one subject							
17. Methods of teaching	Lectures, laboratory pra	acticals and seminars.						
and learning								
18. Conditions for	Enrolment in the year of	of the course.						
inclusion or to undertake	Pre-requisite is a basic course in genetics and biochemistry.							
work required	Basic computer skills.							
19. Methods of assessment	- Written exam (40%) a	and oral presentation (40%)						
and the assessment scale	- Attendance at laboratory practicals and preparation of laboratory							
	reports (20%)							
	Evaluation scale: Grades from 2.0 (worst) to 5.0 (best)							
20. Method of evaluation	Student questionnaire.							
of course quality								
21. Curriculum compiler	Dr. Dariusz Grzebelus,	University of Agriculture in Krakow						
_	Dr. Marek Szklarczyk,	University of Agriculture in Krakow						

1. Title of sub	ject/mod	ule/unit		Polymers in Horticulture								
2. Unit code				3. Numbe	3. Number of ECTS credits 5							
4. Contact ho	urs		Total	L	Ε		S	5		Other forms		
- ~ .			40	15	15			1		Prof. trip 10		
5. Cycle	Master	S T	6. Year	$r 1^{st}$	7.	Semest	ter	1 st				
8. Study prog	ramme	Interi	national I	Master of	9. Br	anch of	Ĺ					
10 D'llan ef 4		Scienc	<u>ce in Hor</u>	ny 11 English								
10. Pillar of u	ie	Comp	ouisory		II. Longue		ngu	isn				
12 Special					Langua	ige						
features												
13. Objectives	and	Po	lymeric	materials	nethods o	of appl	icati	ion in	the r	production of		
subject-specif	ic	ho	rticulture	culture plants.								
competences				L								
-												
14. Descriptio	n of conte	ent Ki	nds of po	lymeric ma	terials use	d as co	vers	in horti	icultur	re, production,		
		ba	basic physical characteristic. Biodegradable polymeric materials. Methods									
		of	applicatio	on (mulchi	ng, direct	coverii	ng,	tunnels,	greer	nhouses, pots,		
		1rr	igation, pa	ickaging, st	rings etc.).	Microc	lima 14	atic cond	litions	under covers,		
		no	number on the plants growth and yield. Collecting and recycling of polymeric materials used in agriculture. Examples of horticulture plants									
technology with the polymeric materials.									foundatio plants			
15. Basic bibli	ografy	Lo	pez J.C.,	Perez Parra	a J., Moral	les M.A	A. 20	010, Plas	stics i	n Agriculture,		
	01	Al	Almeria									
		Pa	paseit P.,	Badiola J	., Armeng	ol E. 1	1997	7, Plastic	es and	d Agriculture,		
		M	adrid	06 0 1								
		Sr	wek P. 19	96, Osłony	z tworzyv	v sztucz	znyc	h w przy	yspies	zonej uprawie		
		Wa Sir	rzyw, Hoi web P 201	tpress, wai	szawa a pod folia	i włókr	ina	Hortpre	ss We	0 * 8793399		
	Siwek P. 2010, warzywa pod iolią i włokniną, Hortpress, Warszawa									aiszawa		
16. Envisaged	learning	16	16.1 Knowledge and The student recognised basic polyme									
outcomes	0		<i>understanding</i> materials on the form of nonwoven an							ven and film,		
			describes their physical characterictic, pr							ctic, presents		
			possibility of application of poly							polymeric		
			materials in horticulture, knows techno							technological		
					elements	of	son	ne ho	rticul	ture plants		
					cultivatior	n, dese	crib	es tech	nical	aspects of		
					recycling process.							
		16	.2 Applica	tion	The studen	t polym	eric	ric materials for horticulture,				
					uses p.m. f	or appro	opria	ate horticulture plants, planes				
					technology of cultivation. applies basic tools for							
		16	3 Pofloati	011	The student is canable of improving ecologically							
		10	.5 Κεμετιί	on	the cultivation of horticultural crops							
		16	16.4 Transferable Teamwork ability to present and defend pe							end personal		
		ski	skills – not tied to just opinions.							. I		
		on	e subject	-	_	<u> </u>						
17. Methods o	f teaching	g Le	ctures, exe	ercises and	professiona	al trips.						
and learning												
18. Conditions	s for	En	rolment ir	the year of	the course	.						
inclusion or to	o undertal	ke Ba	sic compu	ter skills.								
WORK required	1 f 000000000	ont	Vaittan			ain a - f		1	mad -	volo and the		
19. Methods 0	i assessm	ent -	written e	xam (60%)	, recogni	zing of	po.	iymeric	mater	and their		

Title of subject/module/unit	Principles of Plant Cell and Tissue Cultures					
and the assessment scale	characteristic and application (20%)					
	- Attendance at laboratory practicals and professional trips (20%)					
	Evaluation scale: Grades from 2.0 (worst) to 5.0 (best)					
20. Method of evaluation	Student questionnaire.					
of course quality						
21. Curriculum compiler Dr hab. Piotr Siwek, University of Agriculture in Krakow						
-						

2. Unit code				3. Number of ECTS credits			5				
4. Contact hours			Total	L 18		E 20			S 2		Other forms
5. Cycle	Master	5	6. Year	r 1 st 7. Semester 1 st							
8. Study programme Inter Scien			national Master of ce in Horticulture				9. Branch of study				
10. Pillar of theOpticprogramme			nal	11. English Language							
12. Special feature	s										
13. Objectives and competences	pecific	To impart knowledge to the students on the various techniques of plant tissue cultures and their role in crop improvement. Valuable hands-on training to those interested in careers in plant breeding and biotechnology.									
14. Description of o		Major concepts and importance of plant tissue cultures, plant hormones, in vitro pollination and fertilization, micropropagation and somatic embryogenesis, haploid production, meristem culture and pathogen-free plants, interspecific crossing and embryo-rescue, somatic hybridization, in vitro selection and somaclonal variation									
15. Basic bibliogra	fy		1. Sa N 2. Pl G 3. Pl A 4. E D 5. Pl	athya ew E lant P eorge lant C nthor xperin odds, lant E	narayar xperim ropaga e, Mich Cell Cul ny P. W ments i J.H., F Cmbryo	na B enta tion ael A ture Tilley n Pla Robe	N. 2007 l Protocol by Tissue A. Hall, G Essentia 7-Blackwe ant tissue rts L.E. C	. Plant s I. K. Cultur eert-Ja l Metho ell,. culture ambric	Tissue C Internation e. 2008. n De Kle ods. 2010 . 1985. S lge Unive d Protoc	Culture onal P Editec erk. Sp D. Ed. I Secon I ersity I	e: Practices and vt Ltd d by Edwin F. ringer Davey M.R., Edition. Ed. Press 011. Thorpe T.A.,
16. Envisaged learn	Y 16.1 Knov under	Yeung E.C. Humana PressKnowledge and inderstandingThe student explains the nature of plant growth processes, which are relevant to tissue culture. Differentiate between different types of plant tissue cultures. Understand the management of environmental control in tissue culture.							plant growth sue culture. es of plant tissue ent of ture.		

	16.2 Application	The student is able to use the tissue culture lab equipment. Prepares growing media. Applies appropriate tissue culture methods and procedures for different purposes and determinates commercial applications for tissue culture. Interprets and reports obtained results.					
	16.3 Reflection	The student expresses unbiased opinions on the role of the tissue cultures in crop improvement.					
	16.4 Transferable skills – not tied to just one subject	Teamwork					
17. Methods of teaching and learning	Lectures, laboratory practicals and seminars.						
18. Conditions for inclusion or to undertake work required	Enrolment in the year of the course. Pre-requisite is a basic course in biology.						
19. Methods of assessment and the assessment scale	 e - Written exam (70%) - Attendance at laboratory practicals (30%) Evaluation scale: Grades from 2.0 (worst) to 5.0 (best) 						
20. Method of evaluation of course quality	Student questionnaire.						
21. Curriculum compiler	Dr. Agnieszka Kiełkowska, University of Agriculture in Krakow Dr. Alicja Chuda, University of Agriculture in Krakow						

1. Title of unit/subject/mo	dule		Rural cu	ıltural tour	ism						
2. Unit code				3. Numbe	r of ECT	S	4				
4. Contact hours			Total	L 15	Е	E			Other forms		
5. Cycle M	[aster´	΄s	6. Year	6. Year 1 7. Semester 1st							
8. Study			tory 9. Branch of								
programme		-	J	study							
10. Pillar of the	;	Interr	national N	Master of	11.	E	nglis	sh			
programme		Science	ce in Hor	ticulture	Langua	nge	0				
12. Special						0					
features											
13. Objectives a	nd su	bject-	Presenta	tion of prod	cesses rel	ated to c	lem	ographic c	hanges in the		
specific compete	ences	9	world a	nd its con	sequence	s to the	e ru	ural areas	in terms of		
· ·			sustainal	ole develop	ment, with	n special	atte	ention to ru	ral tourism in		
			the econ	omic and s	social asp	ects, i.e.	cu	ltural herit	age values in		
			different countries, in developed and developing economies.								
14. Description	of con	tent	1. Demographic changes in the world								
-			2. F	Functions of	rural are	as					
			3. S	ustainable	rural deve	elopment					
			4. <i>I</i>	nternationa	l tourism	trends					
			5. S	ources of in	formation	1 on inte	rnat	tional touri	sm		
			6. 0	Cultural her	itage of ri	ıral area	s -	Armenia e.	xample		
			7.7	raditional c	and region	nal food	in le	ocal EU cu	ltures (Italy,		
			F	France)							
			8. E	Enotourism							
			9. A lesson from BSE and rural tourism - Scotland								
			10. C	Cultural her	itage and	rural to	ırisi	m – Ireland	đ		
			11. 0	Cultural her	itage and	rural to	ırisi	m – Norwa	У		
			12. C	Cultural her	itage and	rural to	ırisi	m – Roman	nia and		
			L.	Iungary							
			13. U	JS rural tou	rism, dud	e ranche	S				
			14. Tourism in developing economies, Doxey's Irritation Index								
			15. Summary, additional information on selected topics								
			r	elated to rur	al cultura	l heritag	e an	nd tourism			
15. Basic bibliog	graphy	у	Publicati	ions of V	World T	ourism	Or	ganization	(UNWTO),		
			Europea	n Commissi	on, Worl	d Bank					
16. Envisaged le	earnin	g	16.1 Kno	owledge and	<i>l</i> Stu	dent kno	WS	the basic c	oncepts of		
outcomes					sus	tainable	dev	elopment o	f rural areas,		
			1		SOC	$\operatorname{and}_{\cdot}$	con	omic value	s of cultural		
			under	standing	her	itage;	1.				
					Kno	ws good	I rur	al tourism	practices		
					Iro		ent C	countries, 11	i developed		
						al evelop	omg	economies	s, preserving		
					100	dont	ts;	anda tha !-	and of alab-1		
					stu	de but	ersta alco	anus ule 1s	of local rural		
						ius dul	a150	meaning	or local rural		
					cur	lures.					

17. Methods of teaching	16.2 Application 16.3 Reflection 16.4 Transferable skills – not tied to just one subject Lectures	Student is able to link economic and social aspects relating to changes in rural areas, can interpret the information on tourism tendencies, can analyze applicability of examples from different countries to his/ her regional development opportunities. Student is aware of the social aspects of rural tourism complexity, including tourists needs and local rural dwellers perspective in the contemporary world; understands the necessity to compromise between economic needs and the necessity to preserve local culture				
and learning						
18. Conditions for inclusion or to undertake work required	Enrolment in the year of the course					
19. Methods of assessment and the assessment scale	Written: three questions an Total: max. 4 x 5 points = 2 Grades as the below: 2,0: 10 points or less 3,0 11-12 points 3,5 13 - 14 4,0 15 - 16 4,5 17 - 18 5,0 19 - 20	id one issue analysis. Each for 2 – 5 points: 0 points				
20. Method of evaluation of quality	Institutional self-evaluation	on by students				
21. Curriculum compiler	Prof. dr hab. Czesław No	wak				

1. Title of sub	ject/	modu	le/unit		Social I	nsect	Ecology						
2. Unit code					3. Numb	er of	ECTS cre	dits	5				
				<u> </u>			n <u> </u>						
4. Contact ho	urs			Total			E		S		Other forms		
				40	20		20		4.4				
5. Cycle	Ma	ster	5	6. Year	r I st	<u> </u>	7. Sen	iester	150	L			
8. Study prog	rami	me	Inter	national I	Master of		9. Branch	1 Of					
40 DU 60			Scien	ce in Hor	ticulture		study						
10. Pillar of t	he		Facul	ultative 11. English									
programme							anguage						
12. Special													
12 Objective	and		V	Knowledge on ecology and life history of bees, ants and wasps, their									
13. Objectives	s anu ie		he	Knowledge on ecology and life history of bees, and wasps, their behaviour nest structure communication and importance in agriculture									
competences	ĸ		00	benaviour, nest structure, communication and importance in agriculture.									
14. Descriptio	n of	conte	nt Ex	Evolution of social behaviour, comparison between social and solitary									
1 in 2 compris		0011001	in	insects, division of labour in social insects, communication between colony									
			m	members, importance of social insects for pollination of corps and pest									
			co	control, biology of honey bees, bumble bees, ants and wasps.									
15. Basic bibli	iogra	fy	W	Wilson, E. (1971) The insect societies. Belknap, Cambridge, MA.									
				Hölldobler, B., Wilson, E. O. (2009). The superorganism: the beauty,									
			ele	elegance, and strangeness of insect societies. WW Norton & Company.									
16. Envisaged	ning	16	.1 Knowle	dge and	The	student d	efines	soci	al and s	olitary insects,			
outcomes				understa	inding	desc	ribes biol	ogy	of b	ees, ant	s and wasps,		
						unde	erstands ev	olutio	n of	social in	sects, presents		
						exan	nples of	SOC1	al 11	nsects c	communication,		
				agriculture.					tal insects in				
			16	2 Applica	tion	The	student kno	we ho	w to	behave ir	order to avoid		
			10	.2 дрриси	uon	stinging by bees, analyse data in order to				er to			
						unde	erstand beh	aviour	of be	es. is abl	e to plan		
				pollination of crops.						r i r			
			16	<i>16.3 Reflection</i> The student is capable of formulat						ormulatin	g unbiased		
						opinions on the use of different species for							
						pollination of crops.							
			16	.4 Transfe	rable	Teamwork, ability to present and defend persona							
				<i>skills – not tied to just</i> opinions.									
	0.4		One subject										
17. Methods of	of tea	ching	Le	ectures, lab	oratory pra	actica	ls.						
and learning	a fam		E		41	files							
inclusion or to	s ior 5 und	ortak		Enrolment in the year of the course. Basic computer skills									
work required	d und	ici tan		basic computer skins.									
19. Methods o	- f ass	essme	ent - V	- Written exam (100%)									
and the assess	ment	t scale	- /	- Attendance at laboratory practicals and preparation of laboratory									
			Ev	aluation so	cale: Grade	es fro	m 2.0 (wor	st) to $\frac{1}{2}$	5.0 (b	est)	- 5		
20. Method of	eval	uatio	n St	udent ques	tionnaire.		*						
of course qua	lity			1									
21. Curriculu	m co	mpile	r Di	: Adam To	ofils <u>ki,</u> Uni	versi	ty of Agric	ulture	in Kr	akow			

	1. Title of subject/module/unit	Soiless Cultivation Systems
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2. Unit code	2. Unit code				3. Numbe	r of l	ECTS cre	dits	5			
4. Contact ho	urs			Total	L		Е		S	Other forms		
				25 15			10		0			
5. Cycle	Mast	terís		6. Year 1 st			7. Sen	1ester	1 st			
8. Study prog	gramme	e Ir	ntern	ational I	Master of		9. Branci	1 01				
10 Dillon of f	ha	5	cienc	e in Hor	ticulture		5100y	T 1				
10. Fillar of t	ptio	nai		Ia	11. nguaga	Eng	isn					
12 Special						La	inguage					
features												
13. Objectives	s and		То	acquaint	the studen	t wit	h the late	est tech	niques of	plant cultivation		
subject-specif	ïc		une	der cove	er. Studen	t ge	ts the k	nowle	dge abou	at physical and		
competences			che	emical p	roperties o	fgro	wing m	edium	for prope	er selection of a		
			pla	nt cultiv	ation techi	nique	s. Stude	nt aqu	ires the a	bility to prepare		
			nut	rient sol	ution and a	adjus	t its com	positi	on to a sta	age of growth of		
			pla	nt.								
14. Descriptio	n of co	ontent	Ov	erview of	of soilless	culti	vation m	nethod	s. Types	and selection of		
			gro	wing m	edium. Th	e ch	emical p	ropert	ies of wa	ter intended for		
			fer	tigation.	Collecting	of s	amples o	f wate	er and nut	rient solution for		
			che	chemical analysis. Methods for chemical analysis of water and								
			nut	nutrient solutions. Water treatment methods. Cleaning of the								
			irri	irrigation system. Fertilizers used on crops with fertigation.								
			Pre	Preparation of nutrient solution. Preparation of glasshouse for								
			cul	cultivation in rockwool. Methods of nutrient solutions disinfecting.								
15. Basic bibli	iograph	hy	Ba	Barker A.V., Pilbeam D.J. (eds.) 2007. Handbook of plant nutrition.								
			Ta	ylor&Fra	Incis	r•	1	61				
			Ma	urschner I	H. 1995. M	linera	al nutritio	n of n	igner plan	ts. Academic		
			Pre	Press Inc.								
				Chmel H. 1994. Uprawa roslin ozdobnych. PWRiL.								
				Chochura P. 2007. Podłoża ogrodnicze. Plantpress w-w.								
			I U W	Pudelski 1. (praca zb.) 1993. Uprawa warzyw pod osłonami. PWRiL								
			Pri	W-Wa. Dribyl I 1990 Hydroponika dla każdogo DWDiI W wa								
			W	Wysocka-Owczarek M 2001 Pomidory pod osłonami Hortpress								
			W	W-wa								
			Wy	ysocka-O	wczarek M	1. 200	07. Ocena	a wzro	stu i aktyv	wności roślin		
			ora	z ważnie	siszych para	amet	rów klim	atyczn	o-uprawo	wych. Hortpress		
			Sp.	.Z 0.0.	5 5 1			2	1	2		
			Ūp	rawa ogć	orków pod	osłor	nami (pra	ca zb.)). 1999. W	'yd. Instytut		
			Wa	arzywnic	twa w Skie	rniev	vicach.					
16. Envisaged	learni	ng	16.	1 Knowle	dge and	Student describes various techniques of soilless						
outcomes				<i>understanding</i> cultivation, indicates their usefulness. Diff						ness. Differentiates		
				between growing medium and assigns them spectrum properties. Demonstrates general knowledge a								
				irrigation systems. Demonstrates kno						s knowledge of		
					(cultiva	ation, fertil	ization	and fertigat	ion of selected plant		
					5	specie	s.					

	16.2 Application	Student is able to collect nutrient solutions' sample for analysis and is able to determine their chemical composition. Student can choose optimal nutrient solution for selected plant species. Student knows the rules for determining the composition of the nutrient solution and the rules of selection of fertilizers.					
	16.3 Reflection	Students understands the need to formulate the views on achievements in advanced technologies in horticulture and their influence on the environment.					
	16.4 Transferable skills – not tied to just one subject	Teamwork, ability to present and defend personal opinions, responsibility for team realized projects.					
17. Methods of teaching and learning	Lectures, laboratory practicals.						
18. Conditions for inclusion or to undertake work required	Pre-requisite is a basic	course in nutrition of horticultural plants.					
19. Methods of assessment and the assessment scale	 Written exam (60%) Attendance at laboratory practicals and preparation of laboratory reports (40%) Evaluation scale: Grades from 2.0 (worst) to 5.0 (best) 						
20. Method of evaluation of course quality	Student questionnaire.						
21. Curriculum compiler	Dr. Iwona Kowalska, U MSc. Anna Konieczny,	University of Agriculture in Krakow University of Agriculture in Krakow					

1. Title of subject	/mod	ule/unit		Grape and Wine Evaluation						
2. Unit code	5417	Z501		3. Number of ECTS credits 4						
4. Contact hours			Total	L	E		S	Other forms		
5 Cruele M		~	36		36		4 th			
5. Cycle Ma 8 Study program	aster :	5 Intorn	0. Yeal	c 2	0 Brand	h of	4			
o. Study program	me	Scienc	e in Horti	iculture	study	,				
10. Pillar of the		Option	al 11. Slovak / English							
programme		•			Language		8			
12. Special					·					
features			1							
13. Objectives and	d subj	ect-	Providing	g student wit	h knowledge a	about e	xploitation	of classification		
specific competen	ces		paramete	rs of grape u	vological anal	lysis, th	neoretical	. 1 .		
			and practical expertness in laboratory analyses of must and wine.							
14 Decorintion of	oonto	nt	Contont	g of sensoria	ubstances in a		roduction	and accumulation		
14. Description of	conte	-111	of conter	it substances	in the ripenin	g proce	ess			
			of grapes	The require	ements for tab	le grap	es, uvologio	cal analysis.		
			sensorial	evaluation o	of table grapes	. Asses	sment	j ,		
			of grapev	vine, basic ch	emical analys	is of m	ust. Influer	ice of		
			fermentation, racking need, application of SO2 (sulphuring),							
			clarification and stabilization of wine on its quality. Basic chemical							
			analysis of wines, natural and extraneous components of wine. Standards related to the quality of grapes and							
			wine Ser	vine. Sensorial evaluation of wine.						
15. Basic bibliogr	afv		Chemica	Analysis o	of Grapes and	Wine	: Technia	ues and Concents.		
10. Dusie sisilogi	ury		2004. P.	Iland, N. Bru	ier, G. Edward	ds, S. V	Veeks, and	E. Wilkes. Patrick		
			Iland Wine Promotions, Campbelltown, South Australia.							
			Chemistry of Wine Flavor. 1998. A.L. Waterhouse and S. E. Ebeler							
			(eds.). American Chemical Society, Washington, D.C.							
			Concepts in Wine Chemistry, 2nd Edition. 2004. Y. Margalit. Wine Appreciation Guild San Francisco, California							
			Appreciation Guild. San Francisco, California. Cooperage for Winemakers: A manual on the construction							
			maintenance, and use of oak barrels. 1992. G. Schahinger and B.							
			Rankine. Ryan Publications, Adelaide, South Australia.							
			Handbook of Enology Volume 1: Microbiology of Wine and							
			Vinifications. Second Edition. 2006. P. Ribereau-Gayon, D.							
			Dubourd	ieu, B. Done	eche, and A. I	Lonvau	d (eds.), Jo	ohn Wiley & Sons,		
			New Yor	K. Wing Ou	olitza Volum		analagy a	nd Wing Quality		
			2010Δ	G Reynolds	(ed.) Woodh	e 2, U ad Puł	venology a	ambridge UK		
			Wine Microbiology: Practical Applications and Procedures Second							
			Edition.	2007. K.Č. F	ugelsang and	C.G. E	dwards. Sp	oringer Science and		
			Business	Media, New	v York.					
			Wine Ta	asting: A P	rofessional H	landbo	ok, 2nd E	Edition. 2009. R.S.		
			Jackson.	Academic Pi	ress.	h Editi	on 2011	P. Zoooklain CD		
			format P	ractical Win	erv & Vineva	rd San	Rafael CA			
			Methods	For Analys	is of Musts a	nd Wir	ies. Second	- d Edition. 1988.		
			C.S. Oug	h and M.A.	Amerine. J. W	'iley &	Sons, New	VYork.		
16. Envisaged lear	rning		16.1 Kno	wledge and	Studen	ts will	get know	vledge on content,		
outcomes			unde	rstanding	nutritic	onal sub	ostances in	grapes, production		
					and ac	cumula	tion of con	ntent substances in		
					the ripe	ening p	rocess			
			1		of grap	es.				

	16.2 Application	Lab activities will focus on basic chemical					
	I I I I I I I I I I I I I I I I I I I	analysis of wines, natural and extraneous					
		components of wine. Standards related to					
		the quality of grapes and wine. Sensorial					
		evaluation of wine. Methods of evaluation					
		will be oriented toward the future practical					
		activities of graduate students.					
	16.3 Reflection	Graduate of the subject manages basic					
		chemical analysis of wines, natural and					
		extraneous components of wine, and is able					
		to design their use within the system of					
		wine and grape evaluation. Manages					
	Standards related to the quality of grapes						
	and wine.						
	16.4 Transferable skills – This knowledge has applications hroug						
	not tied to just one subject the food industry, and could extend						
		management of wine and grape.					
17. Methods of teaching and	Excercises.						
learning							
18. Conditions for inclusion	Enrolment in the year of the	e course.					
or to undertake work	-						
required							
19. Methods of assessment	- Written exam (100%)						
and the assessment scale	Evaluation scale: Grades from	om A (best) to FX (worst)					
20. Method of evaluation of	Student questionnaire.						
course quality							
21. Curriculum compiler	Ing. Eduard Pintér, PhD., S	lovak University of Agriculture in Nitra					

1. Title of subject	/module/unit		Integrated systems of fruit production					
2. Unit code	622Z410		3. Number of	ECTS credits	6			
4. Contact hours		Total	L	Ε	S	Other forms		
		48	24	24		5		

5. Cycle M	laster 's	S	6. Year 2 nd		7. Sen	nester	4 th			
8. Study program	nme	Intern	ational Master of	9.	9. Branch of					
		Scienc	e in Horticulture	study						
10. Pillar of the		Compu	ılsory	1	11.	Sloval	x / English			
programme	1			Lan	guage					
12. Special										
Teatures	<u> </u>						. 10			
13. Objectives an	d subj	ect-	Promation of a student to a specialist in integrated fruit growing							
specific competer	ices		systems uncerny applicable in placified. I earning outcomes – The graduate of the subject is able to impelement							
			technological practises of integrated fruit production asserting the							
			established legislative of integrated fruit production.							
14. Description o	f conte	ent	The subject advises s	tudents	s of integ	prated fi	uit production systems			
	I COIIC		implementation into t	the orc	hards of	Slovak	republic. Includes the issues			
			of optimal fruit tree	growing	g by thri	fty inlet	s on environment with the			
			emphasis on integrate	ed pest	managa	mant ag	ainst the most important			
			pest and diseases with	h the u	se of aut	omatica	al meteorological stations			
			and software program	nmes.						
			Cluster 1: Definition	of tern	ns. Aims	and de	notations of inegrated			
			production. Legislatives in IFP.							
			Cluster 2: Signalizations and prognoses. Function of 11 in IFP. Role of pesticides in IFP.							
			Cluster 3: Biological control, natural enemies of pests and diseases							
			Cluster 4: Integrated production of pome fruits.							
			Cluster 5: Integrated production of stone fruits.							
			Cluster 6: Integrated production of beery fruits and nut fruits.							
15. Basic bibliog	rafy		Ohlendorf, B. 1999. Integrated Pest Management for Apples and Pears,							
			2nd Edition, University of California, Agricultural and natural							
			resources, ISBN-13: 978-1-879906-42-6, 231pp.							
			Strand, L. 1999. I	ntegra	ted Pes	t Mana	agement for Stone Fruits,			
			University of Califor	mia, A	gricultu	ral and	natural resources, ISBN-13:			
			7/0-1-0/9900-30-3, Strand I 2008 Int	∠04pp.	d Dect 1	Managa	ment for Strawbarrias and			
			Suanu, L. 2008. Integrated Pest Management for Strawberries, 2nd Edition University of California. Agricultural and natural recourses							
			ISBN-13. 978-1-60107-489-8 176pp							
			Strand, L. 2003. Integrated Pest Management for Walnuts-Third							
			Edition, University	of Cali	ifornia,	Agricul	tural and natural resources,			
			ISBN-13: 978-1-879	906-62	-4, 136p	p.				
				1	~ .					
16. Envisaged lea	rning		16.1 Knowledge and		Student	ts will g	get knowledge on integrated			
outcomes			understanding		into the	roductio	on systems implementation			
			into the orchards of Slovak republic, and							
			on environment with the emphasis of							
					integrat	ted pes	t managamant against the			
					most in	nportan	t pest and diseases with the			
					use of a	utomati	ical meteorological stations			

	16.2 Application	Activities will focus on definition of terms				
	10.2 Application	Activities will focus of definition of terms.				
		All said denotations of megrated				
		production. Legislatives in IFP,				
		signalizations and prognoses. Function of				
		IT in IFP. Role of pesticides in IFP,				
		biological control, natural enemies of pests				
		and diseases, integrated production of				
		beery fruits and nut fruits, integrated				
		production of pome fruits, integrated				
		production of stone fruits. Methods of				
		integrated systems of fruit production will				
		be oriented toward the future practical				
	activities of graduate students.					
	16.3 Reflection	The graduate of the subject is able to				
	5	impelement technological practises of				
		integrated fruit production asserting the				
		established legislative of integrated fruit				
		production				
	16 1 Transforable skills	This knowledge has applications				
	not tied to just one subject	throughout the integrated system of fruits				
	noi ilea io jusi one subject	unoughout the integrated system of funds				
		production, and could extend into rood				
		industry.				
17. Methods of teaching and	Lectures, exercises, field pr	actices				
learning	_					
18. Conditions for inclusion	Enrolment in the year of the	e course.				
or to undertake work						
required						
19. Methods of assessment	- Written exam (100%)					
and the assessment scale	Evaluation scale: Grades fro	om A (best) to FX (worst)				
20. Method of evaluation of	Student questionnaire.					
course quality	*					
21. Curriculum compiler	doc. Ing. Oleg Paulen, PhD.	, Slovak University of Agriculture in Nitra				

1. Title of subject	/modu	ule/unit	Post-harvest technology of horticultural crops							
2. Unit code	6227	2410		3. Number	of ECTS cre	dits	6			
4. Contact hours			Total 36	L 12	E 24	\$	S	Other forms		
5. Cycle M	aster´s	5	6. Year	· 2 nd	7. Sem	nester	3 rd			
8. Study program	nme	Intern	ational M	laster of	9. Branch	ı of	Horticultur	re		
		Scienc	e in Horti	culture	study					
10. Pillar of the		Compu	ılsory		, 11. ,	Slova	ık / English			
programme					Language					
12. Special features										
13. Objectives and	d subi	ect-	Get infor	mation on th	e nost-harvest	techno	logy of hortic	ultural crops		
specific competen	ices		adjustme	nts, storage,	packaging and	transp	orting.	unturur erops		
14. Description of 15. Basic bibliogr	afy	201t	verma	equirements, on systems, gical disorde s shelf crop of storage, ma	management post-harvest ers of horticu os, post harve arket adjustmen	of qu physio ltural est ope nts.	ality, losses a logy of horti crops, interna erations, types	logy of Fruits		
 production systems, post-harvest physiology of f physiological disorders of horticultural crops, int conditions shelf crops, post harvest operations, ty process of storage, market adjustments. 15. Basic bibliografy VERMA, L.R JOSHI, V.K. Postharvest Tecl and Vegetables. New Delhi : Indus Pub. Co., 200 81-7387-108-6 KADER, A.A. Postharvest technology of hortical edition. University of California, Agriculture and Publication 3311, 2002, 535p. ISBN 1-879906-51-1 KITINOJA, L. – KADER, A.A Small-scale po practices: A manual for horticultural crops (4th ed Postharvest Horticulture Series No. 8E, 2002, 2600p. MAYNARD, D.N. – HOCHMUTH G.J. – KN0 Handbook for Vegetable Growers. New Jersey Sons, Inc. 2007, fifth edition, 621 p. ISBN 978-0 SUDHEER, K.P. – INDIRA, V. Post Harve. Horticultural Crops. New India Publishing Age ISBN 81-89422-43-X REES, D FARRELL, G. – ORCHARD, J. C Science and Technology, Perishables. Blackwell Pt Sussex, UK, 2012, 464 p. Online ISBN 97814443546 BOKOR P., ČERNÝ I., EFTIMOVÁ J., HABÁN KOHAUT P., KOVÁČIK P., MEZEY J., VALŠÍ Ochrana a pestovanie rastlín. Obrazovo a te multimediálne. (Protection and plant cultivation. Te processed multimedia) DVD. Agroinštiút v Nitre, IS 140-1. JAKÁBOVÁ, A., KOBZA, F.: 2008. Kvetinárstv. (Floriculture, A, JAKÁBOVÁ, A., MEZEY, J. 20 (Horticulture), Vydavateľstvo SPU v Nitre, 162 s., I 						 b. Co., 2000, b. f horticulture lture and Natu 906-51-1 l-scale postha ps (4th edition 02, 260pp. d.J. – KNOTT w Jersey : Jo BN 978-0471 st Harvest The hing Agency ARD, J. Cropackwell Publis 81444354652 d., HABÁN M. J., VALŠÍKO povo a textov ivation. Texture v Nitre, ISBN d. VALŠÍKO povo a textov ivation. Texture v Nitre, ISBN d. VALŠÍKO povo a textov ivation. Texture v Nitre, ISBN d. VELNÁN SEN (1990) d. SPU v Nitter Y, J. 2007. e, 162 s., ISBN d. ANDREJIC 	1229 p. ISBN al crops. Third ural Resources, arvest handling h). Univ. Calif. F, J.E. Knott's ohn Wiley and I-73828-2 <i>Technology of</i> , 2007. 290 p. b) <i>Post-Harvest:</i> Shing Ltd, west I., KAZDA J., VÁ M.: 2010. VO spracované al and pictorial :978 - 80-7139- Jčebné skriptá, dra biotechniky re, 161 s. Záhradníctvo. N 978-80-8069- DVÁ A.: 2009.			

	Zeleninárstvo – poľné pestovanie. Vysokoškolská učebnica, Vydavateľstvo SPU v Nitre, 212 s., ISBN 978-80-552-0199-3. VALŠÍKOVÁ, M., KOPEC, K.: 2009. Pozberová technológia záhradníckych plodín. Vydavateľstvo SPU v Nitre, 158 s., ISBN 978- 80-552-0313-3.							
16. Envisaged learning	16.1 Knowledge and	Students will get knowledge on post-						
outcomes	understanding	harvest technology of horticultural crops						
		adjustments, storage, packaging and transporting.						
	16.2 Application 16.3 Reflection 16.4 Transferable skills – not tied to just one subject	Activities will focus on quality of horticultural crops, effects on quality, quality requirements, management of quality, losses and reserves in production systems, post harvest operations and machine lines, types of stores, the process of storage, market adjustments. Methods of post-harvest technologies will be oriented toward the future practical activities of graduate students. Graduate of the subject manages post harvest operations, the process of storage, and market adjustments This knowledge has applications throughout the horticultural crops production, and food industry.						
17. Methods of teaching and	Lectures, exercises							
learning								
18. Conditions for inclusion	Enrolment in the year of the	e course.						
or to undertake work								
required								
19. Methods of assessment	- written exam (100%) Evaluation scale: Grades fr	$\Delta m \Lambda$ (bast) to EV (worst)						
20 Mathad of evoluation of	Student questionnaire							
course quality	student questionnaire.							
21. Curriculum compiler	Prof. Ing. Magdaléna Valšíl Agriculture in Nitra	cová, PhD., Slovak University of						

2. Unit code	6222	Z209		3. Number	r of l	ECTS cre	dits	3		
4. Contact hour	:s		Total 24	L 0		E 24	5	5	Other forms	
5. Cycle	Master	s	6. Year	· 2 nd		7. Sen	nester	3 rd	11	
8. Study progra	mme	Intern	national Master of			9. Branch	ı of	Horticultur	re	
••••••••••••••••••••••••••••••••••••••		Scienc	e in Horti	culture		study				
10. Pillar of the		Option	al	al 11. Slovak / English						
programme					La	inguage		C		
12. Special										
features										
13. Objectives a	nd subj	ject-	The aim	of subject is	to te	ach studei	nts the l	basic methods	of production	
specific compete	ences		of vegeta	ble and flow	er se	eds.				
14. Description	of conte	ent	The use of	of genetic re	sour	ces in see	d produ	ction, legislat	tion, the quality	
-			and char	acteristics o	f the	e seeds, e	ffects	on seed quali	ty, the general	
			condition	is of vegeta	ables	and flo	wer se	ed production	n, post-harvest	
			treatment	t of seeds,	stora	age and t	reatme	nt of seeds	before sowing,	
			production	on of vegetat	oles s	eeds, proc	luction	of flowers see	eds.	
15. Basic bibliog	grafy		GEORG	E RAYMC	ND	A. T. V.	egetab	le Seed Prod	uction. UK by	
			MPG B	ooks Group), B	odmin, 2	009.3	20 p. ISBN	978-1-84593-	
			521-4	-				-		
			MAYNARD, D.N. – HOCHMUTH G.J. – KNOTT, J.E. Knott's							
			Handbook for Vegetable Growers. New Jersey : John Wiley and							
			Sons, Inc. 2007, fifth edition, 621 p. ISBN 978-0471-73828-2							
			LOEWER. H. P. Seeds: The Definitive Guide to Growing.							
			History and Lore UK · Timber Press 2005 229 n ISRN 0-							
			88192-682-5							
			SRIVASTAVA I P SIMARSKI I T Seed Production							
			Technology Aleppo · International Center for Agricultural							
			Research in the Dry Areas 1086 287 n							
			HEBRI	FTHWAIT	F D	D See	d nrod	uction UK ·	Butterworths	
			1980, 694 p.							
			(Floricult	ure Teachir	DLr	(1, 1 2000)	$\mathbf{D} \mathbf{I} \mathbf{F} \mathbf{T}$	IIIai Stv0. Occi KI Katadra h	viotechniky	
			(FIORCULUTE: Leaching Lexibook), SPU, FZKI, Katedra Diotechniky							
			KÓŇA	[Množiteľs]	cé te	chnológie	v záhra	adníctve (The	multiplication	
			technolog	y in horticu	lture) Vydava	teľstvo	SPU v Nitre.	132 s. ISBN	
			978-80-8	069-884-3.	itare). • j'aa • a		Si e villie,	102 5, 1021	
		UHER A	., KÓŇA J.,	VAI	LŠÍKOVÁ	M., A	NDREJIOVÁ	A.: 2009.		
			Zeleniná	rstvo – poľne	é pes	tovanie. V	ysokoš	skolská učební	ica (Vegetable	
		growing	- field cultiv	ation	. Universi	ty textl	book) Vydava	teľstvo SPU v		
			Nitre, 21	2 s., ISBN 9	78-8	0-552-019	9-3.	-		
			VALŠÍKOVÁ, M., KOPEC, K.: 2010. Semenárstvo zeleniny a kvetín.							
			(Seed production of vegetables and flowers). Vydavatel'stvo SPU							
			v Nitre, 131 s., ISBN 978- 80-552-0487-1.							
16. Envisaged le	earning		16.1 Kno	wledge and		Studen	ts will g	get knowledge	e on methods of	
outcomes			unde	rstanding		produc	tion of	vegetable and	flower seeds.	

	16.2 Application	Activities will focus on use of genetic resources, legislation, the quality and					
		characteristics of the seeds, storage and					
		of seed production and treatment of seeds					
		before sowing will be oriented toward the					
		future practical activities of graduate					
	16.3 Reflection	Graduate of the subject manages basic and					
	miscellaneous methods seed production						
		and treatment. Manages activities related to horticultural crops seed production					
	16.4 Transferable skills –	This knowledge has applications					
	not tied to just one subject	throughout the horticulture, seed					
		production.					
17. Methods of teaching and	Excercises.						
learning							
18. Conditions for inclusion	Enrolment in the year of the	e course.					
or to undertake work							
required	W/:// (200/)						
19. Methods of assessment	- Written exam (30%)	(700)					
and the assessment scale	- Presentation of seminar pa	$\frac{1}{100} \left(\frac{100}{100} \right)$					
	Evaluation scale: Grades fro	om A (best) to FX (worst)					
20. Method of evaluation of course quality	Student questionnaire.						
21 Curriculum compiler	prof Ing Magdalána Valčíl	zová PhD Slovak University of					
	A griculture in Nitra	Sova, 1 IID., Slovak Olliveisity of					
	Agriculture in Mua						

1. Title of sub	ject/m	ıodu	le/unit		Special Fruit Growing							
2. Unit code	6	22Z	314		3	. Number	r of I	ECTS cre	dits	6	j	
				r			<u> </u>					
4. Contact ho	urs			Total	L			E		S		Other forms
5 Coole	ъл			52	2	4 1 st		24		_	1 et	5
5. Cycle 8. Study proc	Masi	ter s	5 T	0. Yeal	U. 1 car 1 ⁵⁵ /. Semester 1 ⁵⁵							
o. Study prog	ramm	le	Interr	autorial Master of 5. Dranch of								
10 Piller of t	ho		Comp	lleory 11 Clovek / English								
programme	iic		Comp	uisoiy			La	nguage	5101	van	C/ Eligiisii	
12. Special								88.				
features												
13. Objectives	s and s	subje	ect-	Gaining	stı	udent's a	bility	to real	ize n	netl	hodology of	f fruit orchard
specific comp	etences	S		establishi	ing	g – practio	cal re	alization	and a	adv	visory servic	e, commanding
				technolog	gy	of the mo	st up	-to-date g	rowin	ng s	systems of a	If the basic fruit
				realize a	Lea	arning ou ahly inten	sive	fruit orch	gradi ard wi	ith	the use of the	project and to
				technolog	pic:	al equipm	ents	for select	ed frui	it s	pecies and v	ariety.
14. Descriptio	n of co	onter	nt	Growing	tec	chnology	of se	lected fru	it spec	cies	s - site select	tion,
				investme	nts	for vario	us op	erations,	soil pi	rep	aration. Suit	able rootstocks
				and cultiv	var	rs for com	merc	ial orchar	ds. Da	ates	s and plantin	g techniques.
				gricultural operations during vegetation. Training and pruning systems.								
				Weed elimination. Fertilizing and irrigation. Pest and disease								
				outplanting								
				Cluster 1: Extensive and intensive fruit plantings Intesification of fruit								
				production.								
				Cluster 2: Particularity of growth, yielding and trainig and pruning of								
				fruit trees.								
				Cluster 3: The most important pests and diseases of fruit trees.								
				Cluster 4: Intensive growing technology of pome fruits.								
				Cluster 5: Intensive growing technology of stone fruits.								
15. Basic bibli	inorafy	v		Pike B	201	11 The fr	nit tr	ee handbo	logy (iree	en Books Da	artington Space
13. Dusic bibl	lograry	y		Dartingto	on	Hall, Tot	nes.	Devon, T	096E	EN,	ISBN 978-	1-900322-74-4,
				350pp.		,	,	,		,		
				Lespinas	se,	JM., L	eterr	ne, É. 20)11. (Gro	owing Fruit	Trees - Novel
				Concepts and Practices for Successful Care and Management, W. W.								
				Norton & Company, ISBN 978-0-393-73256-6, 352 pp.								
				– Blažek I	ิล	kol · Ovo	cnict	ví Praha	Květ	- 10	998 ISBN 8	0-85362-33-3
				Hričovsk	ý I	. a kol.: D	robn	é ovocie.	Príroc	da.	Bratislava 2	000.
			Hričovsk	ý, 1	I a kol.: P	omol	ógia I., N	ezávis	slos	sť, Bratislava	a 2001	
				Hričovsk	ý,	I a kol.: P	omol	ógia II., N	Vezávi	islo	osť, Bratislav	va 2003
				Hričovsk	ý,	I. a kol.: I	rakti	cké ovoc	inárstv	vo.	Bratislava:	Príroda, 1990.
1(•		636 s. IS	180-07 00	0024-0						
16. Envisaged	learni	ıng		10.1 Kno	wle	edge and	Students will learn the pri			arn the princ	tical realization	
outcomes				unde	i Sl	anaing		and	adviso	orv	sinng – prac	commanding
								technol	ogy o	of th	he most up-1	to-date growing
								system	<u>s of a</u> l	<u>1 tł</u>	ne basic fruit	species.

	16.2 ApplicationActivities will focus on lethal and inhibitory agents in relation to extensiv and intensive fruit plantings. Intesifica of fruit production, particularity of gro yielding and trainig and pruning of fru trees, the most important pests and dis of fruit trees, intensive growing technology of stone fruits, intensive growing technology of berry and stone fruits. Methods of special fruit growin will be oriented toward the future prace activities of graduate students.16.3 ReflectionGraduate is able to project and to reali highly intensive fruit orchard with the					
		of the most modern technological equipments for selected fruit species and				
	variety.					
	16.4 Transferable skills – not tied to just one subject	This knowledge of preventing possible microbial spoilage has applications throughout the fruit growing technoligies,				
		production of modern biological material.				
17. Methods of teaching and learning	Lectures, seminars, excursion, field practices.					
18. Conditions for inclusion or to undertake work required	Enrolment in the year of the course.					
19. Methods of assessment	- Written exam (100%)					
and the assessment scale	Evaluation scale: Grades from A (best) to FX (worst)					
20. Method of evaluation of	Student questionnaire.					
course quality		<u> </u>				
21. Curriculum compiler	doc. Ing. Oleg Paulen, PhD., Slovak University of Agriculture in Nitra					

1. Title of subj	ject/mod	ule/unit		Pruning a	nd Tr	aining o	f Fru	it 7	Frees	
2. Unit code	6222	Z209		3. Number of ECTS credits 4						
			·							
4. Contact hou	irs		Total			E		S		Other forms
5 Cyclo	Magtar		30 6 Voor	0 n 2nd		13 7 Son	aastan		2rd	23
S. Cycle 8 Study progr	amme	<u>s</u> Intern	o. 1 eal	0.1 car 2 7. Semester 5 otional Master of 0 Branch of						
o. Study progr	annic	Scienc	e in Horticulture study							
10. Pillar of th	10. Pillar of the Comput			11. Slovak / English						
programme		1	2		Language					
12. Special										
features			ir							
13. Objectives	and sub	ject-	Providing students with knowledge on physiological conditioning of							
specific compe	tences		growth and yielding and its exploitation in fruit woods pruning and							
			training,	and with p	actica	l experie	ence r	elat	ted to fruit	woods pruning.
			Learning	outcomes	– gra	iduate o	of the	SU	ubject mana	iges basic and
			miscellaneous methods of pruning, and is able to design their use within							
			expected	results Ma	nages	activitie	s rela	ted	to training	and pruning of
			fruit woo	ds independ	lently.	uetrvitte	5 1010	icu	to training	and prunning of
14. Description	of cont	ent	Terminol	logy related	to the	field. C	lassifi	cat	tion of tree f	forms. Goals of
			fruit woo	ds pruning.	Basic	principle	es reg	ula	ting growth	and yielding of
			fruit woo	fruit woods. Physiologically based pruning. Basic and miscellaneous						
			pruning	methods, c	lassifi	cation of	of pru	ınir	ng accordin	g to tree age
			(forming, regulating and rejuvenation pruning), material and tools used							
			for fruit	for fruit woods pruning and training. Contribution of pruning and						
			forming	forming to fruit production intensity. Pruning and training of individual						
fr			fruit species – apple tree, pear, quince, medlar, sweet and sour cherries,							
			apricot, peach tree, plum tree, currants, gooseberry, raspberries,							
		blackberries, miscellaneous and shell truit species – typical tree (bush)								
			selected tree (bush) forms and regulating pruning							
15. Basic hiblid	Brunner	, T.: Physiological Fruit Tree Training for Intensive Growing.								
15. Dusic biblic	-51 ary		Budapest: Akadémiai Kiadó, 1990, 286 pp. ISBN 963-05-5345-7							
			Somerville, W.: Pruning and Training Fruit Trees. Australia : eed							
			International Books Australia, 1996. 144 p. ISBN 0750689315							
			_							
			Blažek, J	ažek, J. a kol.: Ovocnictví. Praha: Květ, 1998. ISBN 80-85362-33-3						
			Brunner,	Brunner, T.: Physiological Fruit Tree Training for Intensive Growing.						
	udapest: Akadémiai Kiadó, 1990. 286 pp.									
	ISBN 963-05-5345-7					7/11ada analistata Nito ODU 2001				
				Covic, JPaulen, U.: Zaklady ovocinarstva. Nitra: SPU, 2001.						
			137 8.13	00-/13/	51N 8U-/15/-85U-X					
16. Envisaged	learning		16.1 Kno	wledge and		Studen	ts v	vill	l get ki	nowledge on
outcomes	_		unde	rstanding		physiol	ogical	l c	onditioning	of growth and
						yieldin	g and	its	exploitation	in fruit woods
						pruning	g and	tr	aining, and	with practical
			experience related to fruit woods pruning.							

	16.2 Application	Activities will focus on terminology related to the field, classification of tree forms, goals of fruit woods pruning, basic principles regulating growth and yielding of fruit woods, physiologically based pruning.Methods of pruning will be				
	activities of graduate students.					
	16.3 Reflection	Graduate of the subject manages basic and miscellaneous methods of pruning, and is able to design their use within the system of fruit woods care in dependence of plantation state and expected results. Manages activities related to training and pruning of fruit woods independently.				
	16.4 Transferable skills – not tied to just one subject	This knowledge has applications throughout the food industry, and fruit production.				
17. Methods of teaching and	Lectures, excursion, field practices.					
18. Conditions for inclusion or to undertake work required	Enrolment in the year of the course.					
19. Methods of assessment	- Written exam (100%)					
and the assessment scale	Evaluation scale: Grades from A (best) to FX (worst)					
course quality	Student questionnane.					
21. Curriculum compiler	Ing. Ján Mezey, PhD., Slovak University of Agriculture in Nitra					

1. Title of subject/module/unit			Horticultural dendrology								
2. Unit code 622Z217		3. Number of ECTS credits			dits	5					
				-		-	n	<u>a</u>			
4. Contact ho	4. Contact hours		Total			E		S		Other forms	
5 Cyclo	Magta	n 's	48 6 Voor	24		<u>24</u>	actor	⊿rd			
S. Cycle 8 Study prog	ramme	Inter	u. 1 eal	ester of		9 Branch	1ester	4			
o. Study programme miternation			re in Horti	iculture study			1 01				
10 Pillar of the Ontional			nal	11. English							
brogramme				Language							
12. Special											
features											
13. Objectives and subject-			The Hor	ticulture stu	dents	s will lea	arn bas	sic assort	ment	of deciduous,	
specific compe	etences		coniferous and evergreen species of decorative plants. They will learn								
			morphological marks, ecological needs and landscape use of the most								
			used decorative, native and introduced woody plant species, forms and								
			cultivars. Students will learn also multiplication, growing methods and								
			use of w	use of wide assortment of decorative plants. After completion of the							
			subject the student is able to identify basic assortment of woody plants								
			and then apply kno	wledge of d	lendr	ology in t	he land	dscape cre	eus,		
apply knowledge of definition of content Terminology related t					to	the field	d Mo	rphologic	al s	systematic and	
ecological characteristics of deciduous evegreen and cor							and coniferous				
			domestic	domestic and exotic woods. Basic morphological features of trees and							
their			their imp	heir importance for mutual differentiation and systematic distribution.							
		Characteristics and properties of trees, spatial and functional division of									
of trees			trees the conditions of application and development of healthy plants								
in hortice				rticultural creation.							
15. Basic bibli	ografy		DEBREC	ZY, Z RÁ(CZ, I.	Conifers a	around	the world ((I., II.). edited by	
			Kathy Musial Budapest : DendroPress Ltd., 2011. Two volumes - 1,089 pages, 474 range maps 1 300 line drawings 3 700 color photographs ISBN 978-963-								
			219-061-7								
		DIRR, M.A. Dirr's Hardy Trees and Shrubs. Timber Press, Portland, 1998.									
		493 p. ISBN 0-88192-404-0									
		CULLEN, J. Hardy Rhododendron Species. Timber Press, Portland, 2005. 496									
			p. ISBN 0-88192-723-6 Hillier Nurseries Winchester, The Hillier manual of these & should Newton								
			Abbot: David & Charles, 1991.								
			FITSCHEN, J. <i>Gehölzflora</i> . Ed. Franz H. Meyer. Quelle und Meyer, 2002.								
HARI			HARDIN	HARDIN, JAMES W., DONALD J. LEOPOLD, AND FRED M. WHITE.							
	"Textbook of dendrology." New York: McGraw-Hill (2001).										
		HARDIN, JAMES WALKER, DONALD JOSEPH LEOPOLD, AND FRED						D, AND FRED			
			Hill 2001								
16. Envisaged	learnin	Ig	16.1 Kno	wledge and		Studen	ts will	get know	wledg	e on different	
outcomes		-9	unde	rstanding	standing characteristi		eristics	is of woody plants and their			
				0		needs a	and wa	ys of usin	g.		
			16.2 App	lication		Activit	ies wil	l focus on	term	inology related	
						to the f	ield, cl	assificatio	on of	tree forms,	
						goals o	f wood	ls using w	vithin	horticulture	
					creation. Dendrology knowledge			edge will be			
						oriented toward the future practic			ractical		
				activities of graduate students.				ts.			

	16.3 ReflectionGraduate of the subject is able to identif basic assortment of woody plants and the					
	cultivars, understands eco-cultivation					
	needs, and is able to apply knowledge of					
	dendrology in the landscape creation.					
	16.4 Transferable skills – This knowledge has applications					
	not tied to just one subject throughout the multiplication and					
		conservation of woody plants, and				
		horticultural creation.				
17. Methods of teaching and	Lectures, excercises.					
learning						
18. Conditions for inclusion	Enrolment in the year of the course.					
or to undertake work						
required						
19. Methods of assessment	- Written exam (100%)					
and the assessment scale	Evaluation scale: Grades from A (best) to FX (worst)					
20. Method of evaluation of	Student questionnaire.					
course quality	_					
21. Curriculum compiler	Ing. Katarína Rovná, PhD., Slovak University of Agriculture in Nitra					