

### DESCRIPTION OF A STUDY COURSE – SYLLABUS

Title of a course	Plant growing in protected areas				
Head of course	PhD Slavica Dudaš, Senior Lecturer				
Study programme	Professional undergraduate study Mediterranean Agriculture				
Status of a course	Obligatory				
Year of study	3.	Semester	V	ECTS credits	6
Teaching plan (L + E + S+ Pr)					
Goals of a course					
Introduce students to the importance and function of protected space, advantages and disadvantages, elements of the construction plan, materials for construction, types of protected space: individual protection, covering of soil and crops (mulching, perforated foils), protected beds, mini tunnels, low and high tunnels, greenhouses, germane, greenhouses. Introduce students to plant growing systems in protected areas - ground cultivation (advantages and disadvantages), the importance of light and additional lighting in plant cultivation, equipment and needs calculation, heat, heating systems, heat sources. Introduce students to the methods, equipment and possibilities of reducing heat loss, ventilation systems, relative humidity, application of CO2, the importance of water and the specifics of irrigation. Introduce students to soil characteristics, substrate mixtures and inert media, specifics of fertilization in protected areas, crystalline fertilizers and fertilizers for foliar preparation. Introduce students to the cultivation technologies of selected plant species in greenhouses and greenhouses.					
Conditions for enrolling course					
No conditions					
Learning outcomes on a level of a study programme which includes course					
Outcome 1: Assess the quality of planting material and produce planting material by the appropriate propagation method.					
Outcome 2: Recommend the production technology for vegetables and medicinal plants outdoors and in protected areas according to the requirements of a certain species, and evaluate the quality of vegetables and aromatic herbs on the basis of internal and external quality.					
Outcome 3: Prepare a plan for the cultivation of Mediterranean crops, including economic and cultivation elements.					
Outcome 5: Design irrigation models based on water balance and apply classic and special irrigation models.					
Outcome 6: Determine economically significant pests and implement preventative and curative methods of plant protection with respect to the production system.					
Expected learning outcomes on a level of a course					
1. Interpret the types, systems, uses and growing options in selected protected spaces.					
2. Analyse crop requirements for cultivation conditions in protected spaces.					
3. Recommend systems, types of substrates and fertilizers for cultivation in protected spaces.					
4. Select the technology of cultivation of selected species and assortments of plants in protected spaces.					
5. Interpret the needs for foils, additional lighting and heat for selected species cultivated in protected spaces.					
Content of a course					
Importance and function of protected areas. Elements required for preparation of building plan: selection of location, needed surface and arrangement of premises, workforce, and investment sources. Building materials: bearing (types, features, advantages and disadvantages) and transparent (panels and foils - optical, thermal and mechanical features). Types of protected areas (description, function and application in cultural and climate conditions): individual protection, soil mulching, covering with perforated materials, protected beds, mini tunnels, high and low tunnels, polythene greenhouses, hotbeds, hothouses, etc. Light, equipment and requirement estimation. Heat, heating systems, calculation of losses and fuel need: sealing, energetic curtains, lower regimes of temperature, distribution systems, automatics, alternative sources of heat. Ventilation systems (methods of lowering temperatures), relative air humidity. Application of CC>2 Soil, mixtures of substrate and inert media. Specific features of fertilization and irrigation, calculation of requirements for hydroponic technique, examples of					

nutritive solutions. Specific features of crop protection. Growing systems.						
<b>Teaching modes</b>	<input checked="" type="checkbox"/> lectures	<input checked="" type="checkbox"/> individual assignments				
	<input type="checkbox"/> auditory exercises	<input type="checkbox"/> multimedia and network				
	<input checked="" type="checkbox"/> seminars and workshops	<input type="checkbox"/> laboratory				
	<input type="checkbox"/> distance learning	<input type="checkbox"/> supervisor's work				
	<input type="checkbox"/> field classes	<input type="checkbox"/> other _____				
<b>Comments</b>						
<b>Students' obligations</b>						
<b>Grading, evaluation and monitoring of students' work continuously during lectures and exams</b>						
Grading is based upon evaluation of course's learning outcomes' adoption. Grading is performed continuously during lectures and/or during exam, in compliance with the provisions of Regulation on the assessment of students.						
<b>Continuous check-up:</b>						
<b>Outcomes</b>	<b>Pre-exam I</b>	<b>Test 1</b>	<b>Presentation</b>	<b>Home assignment</b>	<b>Threshold</b>	<b>Max</b>
<b>Outcome 1</b>	10				5	15
<b>Outcome 2</b>	10				5	15
<b>Outcome 3</b>	15				7,5	15
<b>Outcome 4</b>	20		10		15	30
<b>Outcome 5</b>		10		15	12,5	25
<b>Percentage of ECTS</b>	4	0,5	0,5	1		
<b>Total</b>	55	10	10	15	50%	100 %
A student has passed the exam if he has acquired a percentage of credits for each learning outcome higher or equal to defined threshold.						
<b>Exam term:</b>						
<b>Outcomes</b>	<b>Written exam</b>	<b>Oral exam</b>	<b>Max</b>			
<b>Outcome 1</b>	15		15 %			
<b>Outcome 2</b>	15		15 %			
<b>Outcome 3</b>	15		15 %			
<b>Outcome 4</b>	0	30	30 %			
<b>Outcome 5</b>	25		25 %			
<b>Percentage of ECTS</b>	4	2				
<b>Total</b>	70 %	30 %	100 %			
A student has passed the exam if he has acquired a percentage of credits for each learning outcome higher or equal to defined threshold.						
<b>Grading:</b>						
A student has passed the exam if he has acquired at least 50% of anticipated credits of a specific learning outcome.						
If a student has passed learning outcomes of all courses, the accomplished credits (percentages) of all passed learning outcomes are being added, while the final grade is defined upon following table:						
<b>Range of credits (percentages)</b>	<b>Numerical grade</b>	<b>ECTS grade</b>				
90,00 – 100,00	Excellent (5)	A				
75,00 – 89,99	Very good(4)	B				
60,00 – 74,99	Good(3)	C				
50,00 – 59,99	Sufficient (2)	D				
0,00 – 49,99	Insufficient (1)	F				

Obligatory literature	
1.	Internal script and teaching materials
Additional literature	
1.	Paradić i Kraljić, 2008.: Zaštićeni prostori – plastenici i staklenici, Poljoprivredni fakultet Osijek.
2.	Lešić et al., 2004.: Povrćarstvo, Zrinski, Zagreb, ISBN 953-155-082-4
3.	Matotán, Z. 2004.: Suvremena proizvodnja povrća, Globus, Zagreb, ISBN 953-167-165-6
4.	Kurtović, O. 2004.: Proizvodnja u plastenicima, Etix, Tuzla
5.	Karasek, K. 2007.: Platenici u cvećarstvu i rasadničarstvu. Partenon
6.	Đurovka, M. i sur. 2006.: Proizvodnja povrća i cveća u zaštićenom prostoru. Poljoprivredni fakultet Novi Sad
7.	Maksimović, P. 2007.: Proizvodnja povrća u zaštićenom prostoru. Partenon

