

### DESCRIPTION OF A STUDY COURSE – SYLLABUS

Title of a course	Beekeeping				
Head of course	PhD Damir Šekulja, College Professor				
Study programme	Professional undergraduate study Mediterranean Agriculture				
Status of a course	Elective				
Year of study	2.	Semester	IV	ECTS credits	4
Teaching plan (L + E + S+ Pr)	2+1+0+0				
Goals of a course					
To acquaint students with the basics of beekeeping, the functioning of beekeeping production in the Mediterranean climate, and the possibility of practical beekeeping within the Mediterranean farm.					
Conditions for enrolling course					
No conditions					
Learning outcomes on a level of a study programme which includes course					
Outcome 3: Prepare a plan for the cultivation of Mediterranean crops, including economic and cultivation elements.					
Outcome 7: Recommend manners of breeding and processing indigenous breeds of domestic animals in order to increase the profitability of family farms.					
Outcome 9: Recommend raw materials, tools and method of preserving Mediterranean crops and bee products.					
Expected learning outcomes on a level of a course					
1. Evaluate the possibilities for commercial use of bees, individual bee products and manners of obtaining them					
2. Analyse the application of selection in apiculture, the characteristics of our grey bee and the reasons for keeping precisely this breed of bees					
3. Identify the symptoms of bee diseases and the manners of their treatment					
4. Analyse modern methods of queen bee breeding and different types of apicultural production depending on the end product to be obtained					
5. Assess the possibilities of increasing the profitability of apiculture using modern apicultural methods					
Content of a course					
Introduction into apiculture, benefits from bees. Systematisation and extension. Biological characteristics of honey bee, society members and bee's flat. Morphology and anatomy of bee. Sexual organs and fertilization, laying eggs, sex identification, brood. Labour division, mutual communication and outdoor orientation. Reproduction within bees' society, winter spending and spring development. Beehives, tools, types of apiaries, accommodation and manners of bee-keeping. Selection, production of queen bees and clusters. Production of gelee royale, wax and comb basis. Production of honey, analyses, falsification. Production of pollen, propolis and bees' poison. Pollination and honey-producing plants. Diseases and enemies of bees. Poisoning of bees, technological mistakes, and special issues.					
Teaching modes	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> auditory exercises <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> distance learning <input type="checkbox"/> field classes		<input checked="" type="checkbox"/> individual assignments <input type="checkbox"/> multimedia and network <input type="checkbox"/> laboratory <input type="checkbox"/> supervisor's work <input type="checkbox"/> other		
Comments					
Students' obligations					
The prerequisite for passing the comprehensive exam, i.e. the recognition of the assessment during the course is the completion of fieldwork exercises.					
Grading, evaluation and monitoring of students' work continuously during lectures and exams					

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.

**Continuous check-up:**

Outcomes	Pre-exam I	Pre-exam 2	Test	Threshold	Max
Outcome 1	5%		5%	5%	10%
Outcome 2	15%		5%	10%	20%
Outcome 3	5%	5%	20%	15%	30%
Outcome 4		15%	5%	10%	20%
Outcome 5		5%	15%	10%	20%
Percentage of ECTS	1,0	1,0	2,0	-	-
Total	25%	25%	50%	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.

**Exam term:**

Outcomes	Written exam	Oral exam	Max
Outcome 1	8%	2%	10%
Outcome 2	24%	6%	30%
Outcome 3	24%	6%	30%
Outcome 4	16%	4%	20%
Outcome 5	8%	2%	10%
Percentage of ECTS	3,2	0,8	4,0
Total	80%	20%	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.

**Grading:**

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:

Range of credits (percentages)	Numerical grade	ECTS grade
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. Laktić, Z. i Šekulja, D. (2008): Suvremeno pčelarstvo, Nakladni Zavod Globus, Zagreb.
2. Pohl, F. (2016): Suvremeno pčelarstvo : njega i razmnožavanje pčelinjih zajednica, Mozaik knjiga, Zagreb.

**Additional literature**

1. Belčić i sur. (1982): Pčelarstvo, Znanje, Zagreb
2. Koeniger, G., Koeniger N., Ellis, J., Connor, L. (2014): Mating biology of honey bees (APIS MELLIFERA), Wicwas Press LLC, Michigan (eng).
3. Laktić, Z. i sur. (2005): Pčelarski priručnik, Grafika, Osijek
4. Tiesler, F-K., Bienefeld K., Büchler R. (2016): Selektion bei der Honigbiene, Buschhausen Druck und

Verlagshaus, Herten (njem).

5. Tiesler, F-K., Englert,E. (2013): Aufzucht und Verwendung von Königinnen, Buschhausen Druck und Verlagshaus, Herten (njem).

