

DESCRIPTION OF A STUDY COURSE – SYLLABUS

Title of a course	Microbiology of must and wine				
Head of course	PhD Urška Kosić, Lecturer				
Study programme	Professional undergraduate study Winemaking				
Status of a course	Obligatory				
Year of study	2.	Semester	III	ECTS credits	4
Teaching plan (L + E + S+ Pr)	2+1+0+0				
Goals of a course					
Introducing students to the role and importance of microorganisms important in winemaking, their metabolism, growth and reproduction. Adopt the foundations of chemistry during vinification.					
Conditions for enrolling course					
No conditions					
Learning outcomes on a level of a study programme which includes course					
<p>Outcome 5: Interpret the role of microorganisms and apply adequate cultures in wine production.</p> <p>Outcome 7: Recommend and implement methods of eliminating disease and wine defects.</p> <p>Outcome 8: Apply the appropriate vinification technology for white, rose and red wine with monitoring and determining technological processes, and carry out physic-chemical and biological stabilization of wine.</p> <p>Outcome 10: Apply basic technologies in the production of sparkling wine, liqueur wine and dessert wine by selecting the appropriate equipment and packaging for the production, processing and finalization of these wines</p>					
Expected learning outcomes on a level of a course					
<ol style="list-style-type: none"> 1. Adopt the basic concepts of microbiology. 2. Distinguish different types of microorganisms and their metabolism. 3. Adopt microorganisms important in winemaking. 4. Distinguish the impact of using selected or native microflora. 5. Adopt the foundations of chemistry during vinification. 					
Content of a course					
<p>Introduction into role and importance of microorganisms. Structure of procariotic and eucariotic ones. Metabolism of microorganisms (catabolic and anabolic reactions, catabolism of carbohydrates, aerobic respiration, anaerobic respiration, fermentation). Growth and propagation of microorganisms (ways of their nourishing, bacterial growth curve). Microorganisms important in wine making (yeasts, moulds and bacteria). Yeasts: Classification of yeasts. Characteristics of most important types of yeasts. Selected yeasts. Autochthonous flora and alcoholic fermentation. Selection of autochthonous yeasts. Current knowledge about role and importance of autochthonous yeasts in emphasising so-called 'typical' features of wine in some terroir. Bacteria. Bacteria of malolactic fermentation. Impact of malolactic fermentation on wine quality. Causing and preventing malolactic fermentation. Acetic bacteria. Some more important representatives. Prevention of acetification bacteria growth. Moulds, mould-agents of negative changes in wine.</p>					
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					
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	Checking the correctness of the results	Threshold	Max
Outcome 1	10 %		5 %	10 %
Outcome 2	20 %		10 %	20 %
Outcome 3	20 %	10 %	15 %	30 %
Outcome 4	10 %		5 %	10 %
Outcome 5	20 %	10 %	15 %	30 %
Percentage of ECTS	3	1	-	-
Total	80 %	20 %	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	Threshold	Max
Outcome 1	10 %		5 %	10 %
Outcome 2	20 %		10 %	25 %
Outcome 3	20 %	10 %	15 %	30 %
Outcome 4	10 %		5 %	10 %
Outcome 5	20 %	10 %	15 %	25 %
Percentage of ECTS	3	1	-	-
Total	80 %	20 %	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.

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. Duraković S. i Redžepović S. (2003) "Uvod u opću mikrobiologiju." Kugler, Zagreb.
2. Duraković. S. i Duraković L. (2001) "Mikrobiologija namirnica – osnov i dostignuća." Kugler, Zagreb.

Additional literature

1. Graham H. Fleet (1993) "Wine Microbiology and Biotechnology". Department of Food Science and Technology, The University of New South Wales, Sidney, Australia.

