

DESCRIPTION OF A STUDY COURSE – SYLLABUS

Title of a course	Instrumental analysis methods				
Head of course	PhD Igor Lukić, Senior lecturer				
Study programme	Specialist Professional Study of Winemaking				
Status of a course	Obligatory				
Year of study	1	Semester	II	ECTS credits	
Teaching plan (L + E + S+ Pr)					
Goals of a course					
Introduce students to the basic principles of analytical chemistry and instrumental analysis. Distinguish particular techniques and methods of instrumental analysis in grape must and wine. Learn how to choose the proper techniques for instrumental analysis.					
Conditions for enrolling course					
No conditions					
Learning outcomes on a level of a study programme which includes course					
<p>Outcome 3: Compare and evaluate the results of instrumental evaluation of sensory properties of wine.</p> <p>Outcome 7: Choose a specific production technology of autochthonous wine in order to preserve the variety specificities.</p> <p>Outcome 8: Substantiate the influence of significant factors on the processes and concentration of the most significant wine components.</p> <p>Outcome 9: Evaluate and determine the origin of the aromatic constituents and types of wine aroma.</p> <p>Outcome 10: Define individual groups of chemical compounds and explain their influence on the characteristics and quality of wine</p>					
Expected learning outcomes on a level of a course					
<ol style="list-style-type: none"> 1. Describe and define common basic principles of analytical chemistry and instrumental analysis. 2. Describe and distinguish theoretical and practical principles of individual techniques and methods of instrumental analysis in grape must and wine analysis. 3. Define the specific applicability of particular techniques and methods of instrumental analysis in grape must and wine. 4. Interpret the operating principle of the basic instrument configurations used for instrumental analysis. 5. Distinguish different techniques of sample preparation for instrumental analysis with a focus on the preparation of grape must and wine samples 					
Content of a course					
Chemical content of must: water, sugars, acids, nitrogen compounds, phenol compounds, volatile compounds and aroma compounds, enzymes, vitamins, minerals. Mechanisms of reaction for synthesis of basic ingredients of must. Transformation of must to wine – fermentation: alcohol fermentation, small size alcohol fermentation, small size lactic fermentation. Mechanisms of chemical reactions during fermentation. Chemical ingredients of wine: sugars, alcohols, acids, nitrogen compounds, phenol compounds, volatile compounds and aroma compounds, minerals, wine's Ph. Oxygen-reduction potential of wine. Colloids in must and wine. Role of sulphur dioxide (SO ₂). Specifying physical and chemical parameters of wine.					
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	Pre-exam II	Laboratory exercise	Threshold	Max
Outcome 1	10	10	-	10 %	20 %
Outcome 2	10	10	-	10 %	20 %
Outcome 3	5	10	5	10 %	20 %
Outcome 4	5	5	10	10 %	20 %
Outcome 5	5	5	10	10 %	20 %
Percentage of ECTS	1,5	2,5	1,0	-	-
Total	35	40	25	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	20	-	20 %
Outcome 2	20	-	20 %
Outcome 3	15	5	20 %
Outcome 4	15	5	20 %
Outcome 5	15	5	20 %
Percentage of ECTS	4	1	-
Total			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

Additional literature

