Course Unit Descriptor

Study Programme: Biotechnology

Course Unit Title: Grape and Wine Chemistry

Course Unit Code: PBI302

Name of Lecturer(s): Assistant professor Uroš D. Miljić, Associate professor Vesna Tumbas Šaponjac,

Type and Level of Studies: Undergraduate Academic Degree

Course Status (compulsory/elective): Elective

Semester (winter/summer): Winter

Language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): Face-to-face

Number of ECTS Allocated: 5

Prerequisites: None

Course Aims:

Gaining of basic scientific and academic skills and knowledge in the field of uvology and understanding the connection between the chemical composition of the grape and the wine quality. This course enables to understand transformation of grape derived compounds during chemical processes that take place into the vinification process. Also, gaining creative skills for wine production optimization taking into account characteristics of the grape as a raw material and the requirements of the final product quality are the main aims of this course.

Learning Outcomes:

Understanding the connection and the influence of the grape and must chemical composition on the wine production as well on the final product quality. Knowledge and understanding of basic technological parameters of the grape quality in order to select the appropriate grape processing and wine making steps. Understanding the chemical processes during the wine aging, as well as the processes that take place when different types of wine faults and spoilages occur.

Syllabus:

Theory

Influence of agro-ecological conditions on the grape chemical composition. The process of grape growing and the accumulation of important components essential for the wine quality. Chemical composition of grape as a precondition for the production of certain type of wine. Chemical composition of wine including primary and secondary products of alcoholic and malolactic fermentation. Changes in the specific wine components during aging and maturation of wine such as compounds responsible for wine color, phenolic matter and bouquet. Stabilizing and protective agents in wine technology. Compounds responsible for different wine faults and spoilages and approaches for their impact minimization.

Practice

Laboratory exercises in the field of physico-chemical analysis of grape, must and wine.

Required Reading:

1. **A. L. Waterhaous, G. L. Sacks, D.W. Jeffery: Understending Wine Chemistry. John Willey & Sons, Chichester, 2016.**

2. **C. Galanakis: Handbook of Grape Processing By-Products, 1st Ed., Sustainable Solutions, Elsevier, Academic Press, 2017.**
3. **P. Ribéreau-Gayon, Y. Glories, A. Maujean, D. Dubourdieu: Handbook of Enology Vol. 2: The Chemistry of Wine Stabilization and Treatments, John Willey & sons, New York, 2006.**
4. **J.L. Jacobson: Introduction to Wine Laboratory Practices and Procedures. Springer Science & Business Media, Inc., New York, 2006.**

Weekly Contact Hours:5	**Lectures: 3**	**Practical work: 2**

Teaching Methods:

Lectures and students group work

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points
Active class participation	5	written exam	
Practical work	20+5	oral exam	40
Preliminary exam(s)	30	…….	
Seminar(s)			

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.