Course Unit Descriptor

Study Programme: Biotechnology

Course Unit Title: Advances in Wine Technology

Course Unit Code: DPBI02

Name of Lecturer(s): assistant professor Uroš Miljić

Type and Level of Studies: Master 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: 7

Prerequisites: None

Course Aims:

Gaining of basic scientific and academic skills and knowledge in the field of modern winemaking. More detailed introduction to specific chemical processes that take place during vinification. Learning about novel trends in wine production in traditional and new wine regions in the world. Gaining creative abilities to optimize the process of wine production in accordance with the properties of the raw material and the placed quality of the product.

Learning Outcomes:

Knowledge and understanding of technological requirements for grape quality and selection of appropriate wine vinification procedure in accordance with wine quality requirements and starting raw material quality. Understanding of specific characteristics, proper selection and application of procedures and devices in wine cellar. Ability to independently perceive the technical characteristics of the process, the effect on the finished product and the operational management of the wine cellar. Knowledge and training for the application of modern oenological preparations and techniques, the ability to organize and control the production of wine in small, medium and large scale wineries.

Syllabus:

Theory

The impact of climate changes on grape harvest planning in order to be able to make projections of individual stages of processing, depending on the quality of the raw material, and to obtain the wine of a predetermined quality and category. Yeasts, bacteria and molds as working and production microorganisms. Killer yeast strains. Spontaneous and controlled alcoholic fermentation. Indigenous and non-*Saccharomyces* yeasts in wine production. Lactic acid bacteria in wine production. Spontaneous and induced malolactic fermentation. Immobilization of the yeasts and bacteria in the production of certain types of wine. Detailed knowledge of the maturation and stabilization (physico-chemical and microbiological) of wine. Controlled guidance for aging of wines. Application of modern equipment and procedures in order to decrease the necessary time for releasing wine at the market.

Practice

Laboratory analyses of physical and chemical parameters of distilled beverages. Production of grape and fruits spirits in laboratory conditions.

Required Reading:

1. H. König, G. Unden, J. Fröhlich: Biology of Microorganisms on Grapes, in Must and in Wine. Springer-Verlag. Berlin, 2009.

2. 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.
3. C. Butzke. Winemaking Problems Solved. Elsevier, 2010.

Weekly Contact Hours: 6	**Lectures: 3**	**Practical work: 3**

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	10	oral exam	30
Preliminary exam(s)	25	…….	
Seminar(s)	30		

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