**DESCRIPTION OF A STUDY COURSE – SYLLABUS**

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| **Title of a course** | **Biochemistry** | | | | |
| **Study programme** | **Professional undergraduate study Winemaking** | | | | |
| **Status of a course** | Obligatory | | | | |
| **Year of study** | 1. | **Semester** | S | **ECTS credits** | 4 |
| **Goals of a course** | | | | | |
| To acquaint the students with the basic chemical structures in the body, to explain the functioning of the organism at the molecular level, and to show the students the biochemical basis of the processes that occur during the processing of the most important Mediterranean cultures. Exercises allow developing the ability to solve tasks, experiment, record results, and draw conclusions from the measurements performed. | | | | | |
| **Conditions for enrolling course** | | | | | |
| No conditions | | | | | |
| **Learning outcomes on a level of a study programme which includes course** | | | | | |
| Outcome 6: Analyse the basic chemical composition of grape must and make corrections of crushed grapes, grape must and wine.  Outcome 7: Recommend and implement methods of eliminating disease and wine defects.  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  Outcome 9: Finalize the wine by selecting the appropriate equipment and packaging and bottling the wine.  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.  Outcome 11: Present the wine professionally, using professional terminology in describing and evaluating the wine, and lead wine tasting by interpreting the sensory experiences of the wine. | | | | | |
| **Expected learning outcomes on a level of a course** | | | | | |
| 1. Describe the principles of construction and the role of macromolecules in biochemical processes. 2. Distinguish and explain useful and harmful biochemical processes occurring in the processing of Mediterranean crops. 3. Explain the basic metabolic pathways and functioning of the organism at the molecular level. 4. Use laboratory techniques applied in the organic matter analysis. 5. Explain the meaning of a genetic message and describe the basibiochemical processes of its transmission and protein synthesis. | | | | | |
| **Content of a course** | | | | | |
| Biochemistry as a study of molecular structures and chemical reactions in the organism. Macromolecules: principles of organisation, conformation and molecular interactions. Amino acids and peptides: properties and functions. Proteins: structure and function, enzymes as biological catalysts. Action of biocides as enzyme inhibitors. Coenzymes, prosthetic groups and vitamins. Carbohydrates: structure and function, main categories in grapes. Lipids: structure and function. Neutral fats, oils and lipids in Mediterranean cultured plants and products. Waxes and complex lipids. Metabolism: basic concepts and regulation. Photosynthesis: reactions on the light and the dark reactions. Glycolysis. Alcoholic, lactic and glycerol-pyruvic fermentation. Biochemical transformations that occur during vine production and in cases of vine defects. Citric acid cycle and oxidative phosphorylation. Nitrogen fixation and biosynthesis of amino acids. Nucleic acids and the genetic code. Protein synthesis and genetic engineering. Characteristics of GMO and problems associated with their production and utilisation. | | | | | |
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