**DESCRIPTION OF A STUDY COURSE – SYLLABUS**

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| **Title of a course** | **Chemistry** | | | | |
| **Study programme** | **Professional undergraduate study Winemaking** | | | | |
| **Status of a course** | Obligatory | | | | |
| **Year of study** | 1. | **Semester** | W | **ECTS credits** | 4 |
| **Goals of a course** | | | | | |
| Introduce students to the structure, properties and chemical changes of substances and the basics of chemical calculus. Specify in particular the compounds and reactions used in viticulture and winemaking. Exercises allow developing the ability to solve tasks, experiment, record results, and draw conclusions from performed measurements. | | | | | |
| **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 carries 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. | | | | | |
| **Expected learning outcomes on a level of a course** | | | | | |
| 1. Adopt basic chemical terms and solve computational problems. 2. Distinguish types of solutions and carry out measurements in a chemical laboratory. 3. Use methods to analyse the composition of solutions. 4. Describe the properties of chemical reactions and their significance in the processing of agricultural products. 5. Describe the properties and state the use of the elements and their inorganic compounds based on their   chemical properties.   1. Distinguish organic compounds by their constitution and properties. 2. Evaluate the properties and use of selected organic compounds. | | | | | |
| **Content of a course** | | | | | |
| Introduction to chemistry: matter and its chemical transitions. Structure of an atom and periodical system of elements. Chemical laws of bonding related to mass and volume. Characteristics of solid matter, liquid and gaseous substances. The relative atomic and molecular mass and definition of mol as a measure of matter quantity. The chemical bond and structure of molecules. Types of solutions and quantitative definitions of their content. Colloids, electrolytes, acids and bases. pH of solution and buffers. Methods of purification and chemical analysis used in vine and olive oil production technology. Types of chemical reactions. Redox-reactions and redox potential of vine. The harmony, velocity and energetics of chemical reactions. Chemical composition of earth and biogenic elements. Properties of important elements and compounds used in viticulture and vine and olive oil production. Types and properties of hydrocarbons. Organic compounds with different functional groups: composition and properties. Common organic compounds found in the goring of the main Mediterranean plants and agricultural products. | | | | | |
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| **Obligatory literature** | | | | | |
| 1. Filipović, I., Lipanović, S. Opća i anorganska kemija I i II. Školska knjiga, Zagreb. 2. Biffl: Osnove kemije za studente šumarskog fakultet. Školska knjiga, Zagreb. 3. Sikirica, M. Stehiometrija. Školska knjiga, Zagreb 4. Amić, D. Organska kemija za studente agronomske struke. Školska knjiga, Zagreb. | | | | | |