**DESCRIPTION OF A STUDY COURSE – SYLLABUS**

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| **Title of a course** | **Grape and wine polyphenols** | | | | |
| **Study programme** | **Specialist Professional Study of Winemaking** | | | | |
| **Status of a course** | Obligatory | | | | |
| **Year of study** | 2 | **Semester** | W | **ECTS credits** | 5 |
| **Goals of a course** | | | | | |
| Introduction to various poly-phenolic compounds in grapes and wine, changes during grape ripening, extraction and influence of the vinification technique, chemical reactions during maturation and aging to realize the possibility of the technologist’s influence on the organoleptic properties of wine. | | | | | |
| **Conditions for enrolling course** | | | | | |
| No conditions | | | | | |
| **Learning outcomes on a level of a study programme which includes course** | | | | | |
| Outcome 2: Evaluate the impact of the terroir, technological maturity and harvesting technology to achieve the targeted quality of grapes and wine.  Outcome 4: Evaluate the physiochemical composition of grape must and wine and evaluate their impact on the characteristics and quality of wine.  Outcome 5: Select the appropriate techniques and methods, determining the technological processes in the vinification of white, rose and red wine.  Outcome 7: Choose a specific production technology of autochthonous wine in order to preserve the variety specificities.  Outcome 11: Substantiate the development stage of wine and evaluate its commercial value. | | | | | |
| **Expected learning outcomes on a level of a course** | | | | | |
| 1. Describe grape and wine polyphenols. 2. Define basic groups of polyphenols, describe their properties, and link the structure of polyphenols and their antioxidant effect. 3. Define the technological processes that affect changes in particular groups of polyphenols during wine vinification and processing. 4. Describe the procedures for polyphenols analysis by sensory analytical methods | | | | | |
| **Content of a course** | | | | | |
| Polyphenolic composition of grapes and wine. Division of polyphenolic compounds. Biosynthesis of flavonoids and non-flavonoids. The influence of environmental factors on the quantitative and qualitative composition. Location and distribution of different polyphenols in grapes. Changes in anthocyanins and tannins during grape ripening. Influence of the vinification technique on the extraction of anthocyanins and tannins from grapes. The influence of temperature and weather. Oxidative degradation of anthocyanins. Chemical equilibrium of anthocyanins dependent on sulphur dioxide and pH. Reactions of tannins, proteins and polysaccharides. Condensation reactions of tannins and anthocyanins. Co pigmentation of anthocyanins. Organoleptic properties of polyphenolic compounds in red wine. Chemical reactions during maturation and aging of wine: reactions of anthocyanins and their influence on colour, reactions of tannins and their influence on taste. Origin of colour in white wine. Enzymatic and non-enzymatic browning of white wine. | | | | | |
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