**DESCRIPTION OF A STUDY COURSE – SYLLABUS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Title of a course** | **Instrumental analysis methods** | | | | |
| **Study programme** | **Specialist Professional Study of Winemaking** | | | | |
| **Status of a course** | Obligatory | | | | |
| **Year of study** | 1 | **Semester** | S | **ECTS credits** | 5 |
| **Goals of a course** | | | | | |
| Introduce students to the basic principles of analytical chemistry and instrumental analysis. Distinguish particular techniques and methods of instrumental analysis in grape must and wine. Learn how to choose the proper techniques for instrumental analysis. | | | | | |
| **Conditions for enrolling course** | | | | | |
| No conditions | | | | | |
| **Learning outcomes on a level of a study programme which includes course** | | | | | |
| Outcome 3: Compare and evaluate the results of instrumental evaluation of sensory properties of wine.  Outcome 7: Choose a specific production technology of autochthonous wine in order to preserve the variety specificities.  Outcome 8: Substantiate the influence of significant factors on the processes and concentration of the most significant wine components.  Outcome 9: Evaluate and determine the origin of the aromatic constituents and types of wine aroma.  Outcome 10: Define individual groups of chemical compounds and explain their influence on the characteristics and quality of wine | | | | | |
| **Expected learning outcomes on a level of a course** | | | | | |
| 1. Describe and define common basic principles of analytical chemistry and instrumental analysis. 2. Describe and distinguish theoretical and practical principles of individual techniques and methods of instrumental analysis in grape must and wine analysis. 3. Define the specific applicability of particular techniques and methods of instrumental analysis in grape must and wine. 4. Interpret the operating principle of the basic instrument configurations used for instrumental analysis. 5. Distinguish different techniques of sample preparation for instrumental analysis with a focus on the preparation of grape must and wine samples | | | | | |
| **Content of a course** | | | | | |
| Chemical content of must: water, sugars, acids, nitrogen compounds, phenol compounds, volatile compounds and aroma compounds, enzymes, vitamins, minerals. Mechanisms of reaction for synthesis of basic ingredients of must. Transformation of must to wine – fermentation: alcohol fermentation, small size alcohol fermentation, small size lactic fermentation. Mechanisms of chemical reactions during fermentation. Chemical ingredients of wine: sugars, alcohols, acids, nitrogen compounds, phenol compounds, volatile compounds and aroma compounds, minerals, wine’s Ph. Oxygen-reduction potential of wine. Colloids in must and wine. Role of sulphur dioxide (SO2). Specifying physical and chemical parameters of wine. | | | | | |
|  | | | | | |