

Study Programme: Food Engineering
Course Unit Title: Quality Control of Malt, Beer, and Wine Technologies
Course Unit Code: KKI301
Name of Lecturer(s): Full Professor Jelena Pejin and Assistant Professor Uroš Miljić
Type and Level of Studies: Undergraduate 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: 5
Prerequisites: Analytical Chemistry and Microbiology
<p>Course Aims:</p> <p>Acquisition of basic scientific and academic skills of raw materials in malt, beer, and wine technologies; influence of process parameters on quality of intermediate, and final products in malt, beer, and wine technology; regulations, normative acts and standards for the products of these technologies and specific methods for quality control of intermediate, and final products in malt, beer, and wine technology.</p>
<p>Learning Outcomes:</p> <p>The student should show the knowledge about the characteristics of the obtained product of malt, beer and wine technologies in order to independently assess the quality of these products. Also, the student should be familiar with the regulations, normative acts and standards in order to independently provide expert opinion and quality assessment of malt, beer, and wine.</p>
<p>Syllabus:</p> <p><i>Theory</i></p> <p>Stages of malt production. Brewer's barley quality. Standards and regulations for brewer's barley quality. Quality of water and unmalted raw materials for beer production. Malt quality as raw material for beer production. Malt quality standards and regulations. Control of the malt production process. Controlling the production of wort and hopped wort. Quality and analyses of wort and hopped wort. Quality and analyses of hops. Stages of beer production and process control of primary and secondary fermentation. Assessment of beer quality. Beer types. Beer quality standards. Variety of wines and basic classification. Basics of enology, definition and division of wine. Quality of grape as a raw material. Quality of must and wines. Grape and wine chemistry. Technological scheme of wine production. Ageing and stabilization of wine. Wine quality standards and regulations.</p> <p><i>Practice</i></p> <p>Laboratory practical lessons in the field of quality control of raw materials for the production of malt, beer and wine and intermediate and final products of malt, wort, beer, and wine technologies.</p>
<p>Required Reading:</p> <ol style="list-style-type: none"> 1. C. Bamforth: Brewing: New Technologies, CRC Press and Woodhead Publishing Ltd., Cambridge, 2006. 2. K. Ockert, Raw Materials and Brewhouse Operations, MBBA Practical Handbook for the Speciality Brewer, The Master Brewers Association of the Americas, St. Paul, Minnesota, USA, 2006. 3. K. Ockert, Fermentation, Cellaring, and Packaging Operations, MBBA Practical Handbook for the Speciality Brewer,

The Master Brewers Association of the Americas, St. Paul, Minnesota, USA, 2006.

4. Analytica-EBC (2008) European Brewery Convention, Verlag Hans Carl Getränke-Fachverlag, Nürnberg, Germany.

5. Mitteleuropäischen Brautechnischen Analysenkommission (MEBAK) (2011) Collection of Brewing Analysis Methods, Raw Materials: Barley, adjuncts, malt, and hops and hops Products, Self-published by MEBAK, 85350 Freising-Weihenstephan, Germany.

6. Mitteleuropäischen Brautechnischen Analysenkommission (MEBAK) (2013) Collection of Brewing Analysis Methods, Wort, Beer, Beer-based Beverages, Self-published by MEBAK, 85350 Freising-Weihenstephan, Germany.

7. J. Jacobson, Introduction to wine laboratory practices and procedures, Springer Science + Business Media Inc., NY, US, 2006.

8. A. L. Waterhaous, G. L. Sacks, D.W. Jeffery: Understanding Wine Chemistry. John Willey & Sons, Chichester, 2016.

9. 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.

Weekly Contact Hours: 5

Lectures: 3

Practical work: 2

Teaching Methods:

Interactive lectures using video presentations, individual laboratory practical lessons and consultations.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	Final exam	points
Active class participation	5	written exam	
Practical work	25	oral exam	30
Preliminary exam(s)	20+20	
Seminar(s)			

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