Biotechnical Faculty / FOOD SAFETY / WINE AND SPIRITS QUALITY CONTROL

Course:	WINE AND SPIRITS QUALITY CONTROL			
Course ID	**Course status**	**Semester**	**ECTS credits**	**Lessons** (Lessons+Exercises+Laboratory)
12342	Mandatory	2	5	2+2+0
Programs	FOOD SAFETY			
Prerequisites				
Aims	Students will be familiar with: the technological process of wine and spirit production; the most important classical and modern chemical and sensory methods of analysis of wine and alcoholic beverages; with the possibility of applying methods in monitoring during different production processes, as well as in quality and safety control in the technology of wine and alcoholic beverages.			
Learning outcomes	After the student passes the exam, will be able to: Recognize the basic technical and technological conditions of production, and elements of quality wine and strong alcoholic beverages; Realize classic and modern chemical methods in quality control, and in the production processes of wine and alcoholic beverages; Recognize basic defects and spoilages of wine alcoholic beverages and apply technique for their elimination; Sensory evaluation the quality of wine and alcoholic beverages; To apply an engineering approach in defining and solving problems related to the production and quality of wine and alcoholic beverages.			
Lecturer / Teaching assistant	Prof dr. Radmila Pajovic-Scepanovic			
Methodology	Lectures, exercises in the oenological laboratory, visits to wineries, breweries and distilleries, consultations, seminar work, colloquiums and final exam.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Introduction and definition the main topic of the subject. History of wine and spirits production and analysis.			
I week exercises	A visit to the Experimental Winery of the Biotechnical Faculty to get acquainted with the technological process of wine and brandy production.			
II week lectures	Fundamentals, and application of classical methods of chemical analysis of wine and alcoholic beverages.			
II week exercises	Familiarization with the basic methodology of chemical analysis of wine and alcoholic beverages.			
III week lectures	Raw materials for the production of wine and alcoholic beverages.			
III week exercises	Analysis of the mechanical composition of grapes; Analysis of the chemical composition of must (specific density, sugar content, acid content and pH);			
IV week lectures	Chemical and polyphenolic composition of wine.			
IV week exercises	Analysis of: content of alcohol, total acids and pH of wine.			
V week lectures	Chemical composition of alcoholic beverages.			
V week exercises	Measuring density and alcohol content in alcoholic beverages.			
VI week lectures	Colloquium I			
VI week exercises	Analysis of the total and volatile acidity content in alcoholic beverages.			
VII week lectures	Laboratory for testing the quality and safety of wine and alcoholic beverages.			
VII week exercises	Visit to the production lab.			
VIII week lectures	Quality control during the technological process of wine and beer production.			
VIII week exercises	Monitoring the process of alcoholic fermentation, malic-lactic fermentation during producing wine and beer;			
IX week lectures	Quality control during the process of production of alcoholic beverages.			
IX week exercises	Monitoring the experimental distillation procedure.			
X week lectures	Fundamentals, and application of spectrophotometric methods of chemical analysis of wine and strong alcoholic beverages.			
X week exercises	Spectrophotometric methods of wine analysis (anthocyanins, total phenols, color intensity, hue of color).			

XI week lectures	Fundamentals, and application of chromatographic methods and chemical analysis of wine and alcoholic beverages.
XI week exercises	Legal regulation on the quality and health suitability of wine and strong alcoholic beverages. Laboratories for quality control of wine and alcoholic beverages.
XII week lectures	Understanding label of wine's and alcoholic's beverage labels and proper labelling.
XII week exercises	Labelling and interpretation of labels on wine and alcoholic beverages.
XIII week lectures	Colloquium II
XIII week exercises	Visit to the brewing industry.
XIV week lectures	Sensory properties of wine and alcoholic beverages.
XIV week exercises	Sensory methods for the evaluation of wine and alcoholic beverages according to the OIV.
XV week lectures	Defects and spoilage of wine and alcoholic beverages.
XV week exercises	Getting to know the main defects and spoilage of wine and strong alcoholic beverages.
Student workload	

Per week	**Per semester**
5 credits x 40/30=6 hours and 40 minuts 2 sat(a) theoretical classes 0 sat(a) practical classes 2 excercises **2 hour(s) i 40 minuts** of independent work, including consultations	Classes and final exam: **6 hour(s) i 40 minuts x 16 =106 hour(s) i 40 minuts** Necessary preparation before the beginning of the semester (administration, registration, certification): **6 hour(s) i 40 minuts x 2 =13 hour(s) i 20 minuts** Total workload for the subject: **5 x 30=150 hour(s)** Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) **30 hour(s) i 0 minuts** Workload structure: **106 hour(s) i 40 minuts (cources), 13 hour(s) i 20 minuts (preparation), 30 hour(s) i 0 minuts (additional work)**
Student obligations	Students are required to attend classes, complete lab tests, colloquium and seminar work, as well as the final exam.
Consultations	Tuesday 12-14h.
Literature	1. Radovanović V., 1986: Tehnologija vina, , Građevinska knjiga, Beograd. 2.C. Flanzy(1998). Oenologie. Fondements scientifiques et technologiques Tech.& Doc./Lavoisier, Paris., 4. P. Ribereau-Gayon et al (2000)., Handbook of enology, Vo1 2. The Chemistry and wine stabilization and treatments, Chapman&Hall; Dunod, Paris. 5. B. W. Zoecklein, K. C. Fugelsang, B. H. Gump, F. S. Nury, Wine Analysis and Production, The Chapman-Hall Enology Library, June 1995. 3. Nikićević N., Tešević V.(2008): Jaka alkoholna pića – analitika i praksa (udžbenik), Beograd. 4. T. Košmarel (2003): Senzorično ocenjivanje vina; Študijsko gradivno za pokusevalce vina, mošta indrugih proizvodov iz grožña i vina, Biotehnički falultet, Univerzitet u Ljubljani. 5. Lučić R.(1987): Proizvodnja jakih alkoholnih pića, Nolit, Beograd.
Examination methods	Activities in lectures and exercises 5 points; Seminar 5 points (oral); Two colloquiums of 20 points each; Final exam 50 points. Grades and points: A (≥ 90 to 100 points); B (≥ 80 to < 90); C (≥ 70 to < 80); D (≥ 60 to < 70); E (≥ 50 to < 60) F < of 50
Special remarks	
Comment	

Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points