

Study Programme: Food Engineering, Pharmaceutical Engineering, Biotechnology			
Course Unit Title: Instrumental Method of Analysis			
Course Unit Code:			
Name of Lecturer(s): Professor Jaroslava Švarc-Gajić, Professor Snežana Kravić, Associate Professor Zorica Stojanović			
Type and Level of Studies: Bachelor Degree			
Course Status (compulsory/elective): Compulsory and Elective			
Semester (winter/summer): Summer			
Language of instruction: English			
Mode of course unit delivery (face-to-face/distance learning): Face-to-face			
Number of ECTS Allocated: 7			
Prerequisites: Analytical Chemistry			
Course Aims: The course aim is to gain knowledge and skills related to the theory of instrumental methods of analysis and their practical application in the analysis and quality control of various types of samples.			
Learning Outcomes: Practical experience in the application of instrumental methods of analysis. Training for the independent application of qualitative and quantitative analysis by using separation methods, electroanalytical and optical methods, together with appropriate sample preparation procedure as well as adequate interpretation of the obtained results.			
Syllabus: <i>Theory</i> The role and significance of the instrumental methods of analysis. Basic principles of chromatographic, optical, and electroanalytical techniques. Gas chromatography. High-performance liquid chromatography. Emission and absorption optical methods (AAS, FP, UV/VIS, IR). Chromatography coupled with spectroscopic techniques. Basic principles of electroanalytical techniques: potentiometry, voltammetry, electrochemical stripping analysis. Statistical analysis and measurement uncertainty. <i>Practice</i> Independent laboratory exercises and application of chromatographic, optical, and electrochemical methods in the analysis of various kinds of samples. Sample preparations. Calculations and presentations of the results.			
Required Reading: 1. K.J.Hyver: High Resolution Gas Chromatography, 3rd ed., Hewlett-Packard 1989 2. Barbara H. Stuart: Infrared spectroscopy: fundamentals and applications, Wiley, 2004. 3. Wang, J.: Analytical Electrochemistry, 2nd ed., Wiley-VCH, 2000. 4. Corradini, D.: Handbook of HPLC, CRC Press, 2011.			
Weekly Contact Hours:	Lectures: 3	Practical work: 4	
Teaching Methods: Lectures and students group work.			
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)	40		
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.			