

<b>Study Programme:</b> Food Engineering, study field Quality Control
<b>Course Unit Title:</b> Advances in Chemical Analysis
<b>Course Unit Code:</b> M1KK4
<b>Name of Lecturer(s):</b> Full professor Radomir Malbaša, Associate professor Jasmina Vitas
<b>Type and Level of Studies:</b> Master Academic Degree
<b>Course Status (compulsory/elective):</b> Compulsory
<b>Semester (winter/summer):</b> Winter
<b>Language of instruction:</b> English
<b>Mode of course unit delivery (face-to-face/distance learning):</b> Face-to-face
<b>Number of ECTS Allocated:</b> 7
<b>Prerequisites:</b> None
<p><b>Course Aims:</b></p> <p>The aim of the course is to provide students with a higher level of knowledge in the theory and application of thin layer chromatography and high pressure liquid chromatography, microanalysis, as well as mastering some specific methods of separation and purification of samples for analysis, in accordance with the modern directions of development of these areas.</p>
<p><b>Learning Outcomes:</b></p> <p>After mastering the contents of the subject, the student should be able to work independently, to select the method of sample preparation and apply the appropriate liquid chromatography method, as well as microanalytical methods. In addition, current modes of interpretation and presentation of experimental results in accepted protocols, expert and scientific papers should be in progress.</p>
<p><b>Syllabus:</b></p> <p><i>Theory</i></p> <p>General course of chemical analysis. Introduction to modern high performance thin layer chromatography (HPTLC), stationary and mobile phases, practical aspects of the application of the method, quantitative analysis. Application of high pressure liquid chromatography (HPLC) for preparation purposes (purification and isolation of components), chemical separation, identification and quantitative determination, selection of stationary and mobile phases and detectors. Microanalysis. Application and techniques. Modern semi-micro and micro extraction techniques, solid phase extraction and liquid-liquid extraction.</p> <p><i>Practice</i></p> <p>Examples of the determination of antioxidants, amino acids, antibiotics, food additives, mycotoxins, pesticides, sugars, water-soluble and fat-soluble vitamins, analysis and discussion of results.</p>
<p><b>Required Reading:</b></p> <ol style="list-style-type: none"> <li>1. Malbaša, Radomir. Chemical Characterization of Kombucha Products. Monograph, ISBN: 978-86-80-995-68-7, University of Novi Sad, Faculty of Technology Novi Sad, 2009 (in Serbian).</li> <li>2. Malbaša, Radomir. Antioxidant Characteristics of Kombucha Products. Monograph, ISBN: 978-86-6253-031-8, University of Novi Sad, Faculty of Technology Novi Sad, 2014 (in Serbian).</li> <li>3. Kromidas, Stavros. The HPLC Expert. Wiley-VCH, 2016.</li> <li>4. Wellings, Donald A. A Practical Handbook of Preparative HPLC. Elsevier, 2006.</li> </ol>

5. Moldoveanu, Serban C.; David, Victor. Selection of the HPLC Method in Chemical Analysis. Elsevier, 2017.

**Weekly Contact Hours:** 6

**Lectures:** 3

**Practical work:** 3

**Teaching Methods:**

Lectures and laboratory exercises.

**Knowledge Assessment (maximum of 100 points):**

<b>Pre-exam obligations</b>	points	<b>Final exam</b>	points
Active class participation	5	written exam	50
Practical work	25	oral exam	
Preliminary exam(s)			
Seminar(s)	20		

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