

Study Programme: Food Engineering, Pharmaceutical Engineering, Biotechnology, Materials Engineering, Chemical Engineering
Course Unit Title: Liquid Chromatography-Theory and Practice
Course Unit Code: DZ02
Name of Lecturer(s): Full Professor Radomir Malbaša, Associate Professor Jasmina Vitas
Type and Level of Studies: PhD Academic Degree
Course Status (compulsory/elective): Elective
Semester (winter/summer): Winter or Summer
Language of instruction: English
Mode of course unit delivery (face-to-face/distance learning): Face-to-face
Number of ECTS Allocated: 10
Prerequisites: None
<p>Course Aims:</p> <p>The objective of this course is to acquire the latest scientific and academic knowledge and skills in the theory and practice of analytics related to liquid chromatography, as well as to master some specific methods of separating analytes and purifying samples for analysis in accordance with modern trends.</p>
<p>Learning Outcomes:</p> <p>Training students to master all the necessary knowledge for scientific and professional work, practical application of acquired knowledge in identifying and determining different analytes, applying liquid chromatography, as well as the most up-to-date methods of sample preparation and isolation of components of significance. Students should be able to compare and select the optimal method of liquid chromatography and sample preparation, to process and present the obtained results with modern methods and to disseminate them in the form of scientific article.</p>
<p>Syllabus:</p> <p><i>Theory</i></p> <p>Introduction and modern trends in the development of liquid chromatography methods. Instrumentation. Practical aspects of the application of methods in the analysis of samples of the food, pharmaceutical and chemical industry, as well as the samples from the environment. Processing results. Preparative liquid chromatography. Modern semi-micro and micro extraction techniques; solid phase extraction, liquid-liquid, microwave, ultrasonic and accelerated liquid extraction.</p> <p><i>Practice</i></p> <p>Examples of sample preparation for analysis and qualitative and quantitative analysis of vitamins, preservatives, artificial sweeteners, organic acids, phenolic compounds, digoxin, amphetamine and antipsychotic drugs, chloramphenicol and estrogen derivatives, polycyclic aromatic hydrocarbons, pesticides; statistical analysis and discussion of results. Gaining selective use of information on the topic being processed, with the independent search of library funds and data available on the Internet. Selection of available data, with particular reference to the comparison of contradictory views within the selected topic.</p>
<p>Required Reading:</p> <ol style="list-style-type: none"> 1. Kromidas, Stavros. The HPLC Expert. Wiley-VCH, 2016. 2. Wellings, Donald A. A Practical Handbook of Preparative HPLC. Elsevier, 2006. 3. Moldoveanu, Serban C.; David, Victor. Selection of the HPLC Method in Chemical Analysis. Elsevier, 2017.

4. Orčić, D. (2016). HPLC: Theory and Application in Biochemical Sciences-textbook. ISBN: 978-86-7031-394-1, University of Novi Sad, Faculty of Sciences (in Serbian).

Weekly Contact Hours: 6

Lectures: 4

Practical work: 2

Teaching Methods:

Interactive lectures, individual and group consultations, creation and presentation of seminar.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	Final exam	points
Active class participation	20	written exam	
Practical work		oral exam	50
Preliminary exam(s)			
Seminar(s)	30		

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