Course Unit Descriptor

Study Programme: Fruit science, viticulture and horticulture

Course Unit Title: Residues and contaminants of agricultural products

Course Unit Code: 19.VIV011

Name of Lecturer(s): Prof. Vojislava Bursić and Prof. Dušan Marinković

Type and Level of Studies: Undergraduate academic studies

Course Status (compulsory/elective): Elective course

Semester (winter/summer):IV

Language of instruction:

Mode of course unit delivery (face-to-face/distance learning): face-to-face and distance learning

Number of ECTS Allocated: 6

Prerequisites: none

Course Aims: Mastering knowledge and skills from the content of the course, which provides the basis for possible residues in food contaminants, as well as familiarization with the methods of their qualitative and quantitative determination in various agricultural products.

Learning Outcomes: The student is qualified for independent theoretical, practical, field and scientific research work by applying the acquired knowledge in the field of residue and contaminant analysis in order to check the healthiness of food and the burden on the environment.

Syllabus:

Theory: Familiarization with possible residues and contaminants. Generation and fate of residues and contaminants in food. The latest techniques for qualitative and quantitative determination of pesticides, mycotoxins, growth regulators, tropane alkaloids and biogenic amines in agricultural products. National and European legal regulations regarding maximum residue levels and monitoring. Acquaintance with the latest techniques of extraction and detection of the mentioned analytes in fruits and vegetables. Mastering the process of validating analytical techniques in order to obtain valid results of the analyses.

Practice: Familiarization with the entire process of analysis of agricultural products in order to obtain valid results of detected analytes in the tested matrices: proper sampling (in accordance with national and EU regulations), homogenization of samples, sample preparation for analysis, setting of validation parameters, use of internal standards, extraction procedures of certain analytes, detection procedures (chromatographic techniques with mass and tandem mass spectrometry). Verification of the correctness of agricultural products by comparing the detected values with National and EU regulations.

Required Reading: Fanali C., Haddad П.P. (2017). Liquid Chromatography: Fundamentals and Instrumentation (Handbooks in Separation Science), Elsevier; 2 edition.
Schrenk D. (2012). Chemical Contaminants and Residues in Food, Woodhead Publishing
Grushka E., Grinberg N. (2012). Advances in chromatography, Volume 50, CRC Press, Taylor & Francis Group
Belitz H.D., Grosch W., Schieberle P. (2009). Food Chemistry, 4th revised and extended ed., Springer

Weekly Contact Hours:	**Lectures: 30**	**Practical work: 30**

Teaching Methods: Teaching is conducted with the use of modern technology (computer, video beam). Oral presentation. The theoretical part of the teaching is conducted in the faculty lecture halls and the experimental part in the laboratories.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Active class participation	5	written exam	30
Practical work		oral exam	50
Seminar(s)	15		

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