Course Unit Descriptor

Study Programme: Fruit growing and viticulture

Course Unit Title: Biomolecules of fruits and vines

Course Unit Code: 19.VI1041

Name of Lecturer(s): prof. dr Djordje Malenčić

Type and Level of Studies: Master Academic Degree

Course Status (compulsory/elective): 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: 6

Prerequisites: none

Course Aims:

To gain knowledge on molecular aspects of structural, nutritive and aesthetic characteristics of fruits and vines. Chemical composition of the most important primary and secondary biomolecules of fruits and vines of importance for human nutrition and food industry.

Learning Outcomes:

The contribution of new knowledge in the field of biochemistry and phytochemistry of fruits and vines.

Syllabus:

Theory

Primary biomolecules – carbohydrates: mono- and disacharides, polysacharides, sugar acids, polyoles, pectins. Organic (fruit) acids. Vitamins and provitamins. Secondary biomolecules (natural products) of plants – phenolics (phenolic acids and phenylpropanoids, coumarines, lignans and lignins, flavonoids (anthocyanins); Terpenoids – mono- and sesquiterpenes (essential oils). Fruits and vines as a source of functional food. Biochemical and ecological role of the flower color and scent in polination. Toxins and repellents in in fruits (cyanogenic glycosides and glucosinolates).

Practice

Carbohydrates (qualitative reactions, determination of fructose content in plant material); Organic acids (determination of total acidity in apples); Lipids (detemination of saponification and iodine number of plant oils); Vitamins and provitamins (determination of vitamin C in kiwi and carotenoids in apricot); Secondary biomolecules: isolation of essential oils and TLC chromatography); Isolation and determination of total phenolics and tannins in plant material. Determination of flavonoids in grapes. Determination of anthocyanins in fruits of sweet and sour cherry.

Required Reading:

1. Dr Milan Popović: Biohemija biljaka (Plant biochemistry), Faculty of agriculture, Novi Sad, 2008
2. Dr Đorđe Malenčić, dr Milan Popović: Praktikum iz Biohemije biljaka (Plant biochemistry handbook), Faculty of agriculture, Novi Sad, 2011

Weekly Contact Hours: 4	**Lectures: 2**	**Practical work: 2**

Teaching Methods:

Lectures, Practical classes, Consultations, research work (optional)

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points
Active class		written exam	30

participation			
Practical work		oral exam	60
Preliminary exam(s)		…….	
Seminar(s)	10		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			