

<b>Study Programme: Field and vegetable crops, Fruit growing and viticulture, Phytomedicine, Organic agriculture</b>		
<b>Course Unit Title: Plant biochemistry</b>		
<b>Course Unit Codes: 19.FTM005</b>		
<b>Name of Lecturer(s): Prof. dr Djordje Malenčić</b>		
<b>Type and Level of Studies: Undergraduate academic studies</b>		
<b>Course Status (compulsory/elective): compulsory</b>		
<b>Semester (winter/summer): summer</b>		
<b>Language of instruction: english</b>		
<b>Mode of course unit delivery (face-to-face/distance learning): face-to-face</b>		
<b>Number of ECTS Allocated: 6</b>		
<b>Prerequisites: none</b>		
<b>Course Aims:</b> To gain knowledge on molecular aspects of biochemical processes and interactions in plants. Study on primary and secondary biomolecules in plants and their metabolism.		
<b>Learning Outcomes:</b> The contribution of new knowledge in the field of Plant biochemistry.		
<b>Syllabus:</b> <i>Theory</i> Chemical composition of plant organs and tissues. Water, mineral composition, primary and secondary biomolecules. Properties, structures and function of amino acids, peptides and proteins; Amino acids and protein biosynthesis; Enzymes, functions classification and nomenclature; Kinetics of enzyme catalysis; Isoenzymes and multienzyme complexes; Coenzymes and prosthetic groups: structures, functions and classification; Vitamines: structures, functions and classification; Carbohydrates: structures, functions and classification; Photosynthesis in C3, C4 and CAM plants; Catabolism of carbohydrates: glycolysis and Krebs cycle; Pentosophosphate pathway; Lipids: structure and classification, fatty acids; Lipid metabolism; Nucleic acids: classification, structures and functions, DNA and RNA replication; Plant membranes and transport of metabolites; Respiratory electron-transport chain and oxidative phosphorylation; Secondary biomolecules: properties, structures and function of plant phenolics, isoprenoids, alkaloids, cyanogenic glycosides and glucosinolates.  <i>Practice</i> Proteins (qualitative reactions, determination of isoelectrical point of amino acids and proteins); Enzymes (effect of temperature, pH, substrate and enzyme concentration on enzyme activity, kinetics of enzyme reactions, antioxidant enzymes activity); Carbohydrates (qualitative reactions, determination of aldoses in plant material); Organic acids (determination of total acidity in apple fruit); Lipids (determination of saponification and iodine number of plant oils); Vitamins and provitamins (determination of vitamin C and carotenoids); Secondary biomolecules: isolation of essential oils and TLC chromatography); Metabolism: glycolysis and alcoholic fermentation.		
<b>Required Reading:</b> 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 3. P.M. Dey & J.B. Harborne: Plant biochemistry, Academic Press, London, 1997.		
<b>Weekly Contact Hours: 6</b>	<b>Lectures: 3</b>	<b>Practical work: 3</b>

**Teaching Methods:**

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

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

<b>Pre-exam obligations</b>	points	<b>Final exam</b>	points
Active class participation	5	written exam	30
Practical work	5	oral exam	60
Preliminary exam(s)		.....	
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.