

<b>Study Programme : PhD in Biology</b>				
Degree level: Doctoral degree				
<b>Course Title:</b> Biochemical and molecular systematics of plants				
<b>Professor:</b> Goran Anačkov, Biljana Božin				
<b>Required/Elective Course:</b> Elective Course				
<b>Number of ECTS:</b> 15				
<b>Prerequisites:</b> passed exam “Special Systematics of Vascular Plants”				
<b>Course Objective:</b> Gaining knowledge about the biochemical taxonomy and biochemical systematics of plants. Understanding the methodologies of chemotaxonomy. Students learn to work independently in the taxonomic laboratories. Molecular level of systematics.				
<b>Course Outcome:</b> Training of taxonomists to use newer techniques in scientific study.				
<b>Course Content:</b> Historical development of chemotaxonomy and biochemical systematics. Chemical polymorphism and importance in plants differentiation. Monoterpenes and sesquiterpenes as taxonomic markers, their significance on different levels of classification. Taxonomic significance of aromatic, aliphatic and sulphur compounds, alkaloids, cyanogenic glycosides, amino acids, iridoids, sesquiterpene lactones and flavonoids. Taxonomic significance of isoenzymes, advantages and disadvantages of isozymes use in plant systematics. Nucleic acids: ribosomal DNA, satellite DNA, ribosomal RNA. Cladistic and phylogenetic analysis. Importance of nucleic acids in the phylogenetic analysis of particular groups of plants. Hybridisation and polyploidy. Terpenes, flavonoids, alkanes, fatty acids and alkaloids as markers in hybridisation detection. Seminar paper includes theoretical preparation for work in laboratory for biochemical systematics.				
<b>Reading List:</b> Harborne, J.B., Turner, B.L. (1984): Plant Chemosystematics. Academic Press, London-Orlando-San Diego-San Francisco-New York. Judd, W.S., Campbell, C.S., Kellogg, E.A., Stevens, P.F., Donoghue, M.J. (2002): Plant Systematics: A Phylogenetic Approach. Sinauer Associates, USA. Marin, P. (2003): Biohemijska i molekularna sistematika biljaka. NNK International, Beograd. Soltis, D.E., Soltis, P.S., Endress, P.K., Chase, M.W. (2005): Phylogeny and evolution of angiosperms. Sinauer Associates, inc. Publishers, Sunderland, Massachusetts. Takhtajan, A. (1991): Evolutionary Trends in Flowering Plants. Columbia University Press, New York. Thompson, J.D. (2005): Plant Evolution in the Mediterranean. Oxford University Press, Oxford.				
Doctoral dissertations and master's theses about taxonomic methods recommended by mentor. Scientific papers and web pages about current problems in plant taxonomy.				
<b>Total hours:</b>				10
Lectures: 5	Practicals:	Other:	Student research work: 5	
<b>Methods of instruction:</b> Lectures, individual consultations, laboratory work, seminar papers.				
<b>Assessment (maximum number of points 100)</b>				
<b>Requirements</b> Oral exam, defended seminar paper, test paper.				
<b>Remark:</b> Mandatory seminar paper				