Biotechnical Faculty / CONTINENTAL FRUIT GROWING AND MEDICAL PLANTS / CHEMISTRY

Course:	CHEMISTRY			
Course ID	**Course status**	**Semester**	**ECTS credits**	**Lessons** (Lessons+Exercises+Laboratory)
2849	Mandatory	1	4	2+0+2
Programs	CONTINENTAL FRUIT GROWING AND MEDICAL PLANTS			
Prerequisites	None			
Aims	Introduction to general chemistry, chemical elements and organic compounds with special emphasis on carbohydrates, lipids and proteins.			
Learning outcomes	After passing this exam, student will be able to: Explain the basic chemical laws; Describe the structure of atoms and molecules and the nature of chemical bonds; Know the factors that influence the rate of chemical reactions; Know the Periodic Table of Elements; Describe the basic characteristics and reactions of the main classes of organic compounds; Solve tasks related to the concentration of solution; Prepare of solutions a certain concentration.			
Lecturer / Teaching assistant	Dr. Ana Topalović, Assistant Professor			
Methodology	Lectures, laboratory exercises, independent work, consultations			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Matter, mass, energy, mixtures, compounds; Basic chemical laws			
I week exercises	Introduction to laboratory tools, glassware and equipment; Performing basic laboratory operations (measuring mass and volume, filtration, distillation, extraction; Mixtures and compounds			
II week lectures	Chemical formulas and equations; Mole and molar mass			
II week exercises	Chemical formulas and equations; Molar mass, molar volume (calculation)			
III week lectures	Structure of atoms; Chemical bonds and structure of molecules			
III week exercises	Substance and its changes (physical and chemical); Calculation of mass and moles of compound by use of chemical formulas and chemical equations			
IV week lectures	Rate of chemical reactions; Chemical equilibrium; Types of inorganic compounds			
IV week exercises	Measuring the rate of the chemical reaction between calcium carbonate and hydrochloric acid			
V week lectures	Solutions, pH, hydrolysis of the salt; Oxide-reduction processes			
V week exercises	Preparation of solution (percent and molar concentration); Determination of the pH by use of universal indicators and pH meters; Preparation of buffer solution; Oxidation of iron(II) sulphate with potassium permanganate			
VI week lectures	Air, hydrogen, oxygen, water; Periodic Table of Elements			
VI week exercises	Quantitative chemical analysis; Volumetry (preparation of the standard solution); Calculations in volumetric analysis			
VII week lectures	Colloquium I			
VII week exercises	Determination of basic quality parameters of water (pH, conductivity, hardness, acidity and alkalinity)			
VIII week lectures	Alkali and alkaline earth metals; Transition elements			
VIII week exercises	Detection of alkaline and alkaline earth elements through flame test colour; "Chameleon" reaction; Test I			
IX week lectures	Properties and classification of organic compounds			
IX week exercises	Detection of carbon, hydrogen, nitrogen, sulphur and halogens			
X week lectures	Hydrocarbons			
X week exercises	Characteristic reactions of hydrocarbons			
XI week lectures	Alcohols, phenols, and ethers			
XI week exercises	Preparation of alcohols; Esterification; Oxidation of ethanol			
XII week lectures	Aldehydes and ketones; Organic acids, derivatives of organic acids			
XII week exercises	Oxidation of aldehydes – Fehlings and Tollens tests			

XIII week lectures	Colloquium II
XIII week exercises	Reaction of formic, acetic, oxalic, lactic, tartaric, salicylic and citric acid
XIV week lectures	Amines and amino acids; Proteins
XIV week exercises	Colour reaction of proteins - Biuret reaction, Xanthoproteic reaction and Ninhydrin reaction
XV week lectures	Carbohydrates
XV week exercises	Quantitative analysis of carbohydrates; Test II
Student workload	

Per week	**Per semester**
4 credits x 40/30=5 hours and 20 minuts 2 sat(a) theoretical classes 2 sat(a) practical classes 0 excercises **1 hour(s) i 20 minuts** of independent work, including consultations	Classes and final exam: **5 hour(s) i 20 minuts x 16 =85 hour(s) i 20 minuts** Necessary preparation before the beginning of the semester (administration, registration, certification): **5 hour(s) i 20 minuts x 2 =10 hour(s) i 40 minuts** Total workload for the subject: **4 x 30=120 hour(s)** Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) **24 hour(s) i 0 minuts** Workload structure: **85 hour(s) i 20 minuts (cources), 10 hour(s) i 40 minuts (preparation), 24 hour(s) i 0 minuts (additional work)**
Student obligations	Attending lectures and exercises
Consultations	By arrangement with students
Literature	1. S. Arsenijevic: General and Inorganic Chemistry, Scientific Book, Belgrade, 1998. 2. S. Arsenijevic: Organic Chemistry, Scientific Book, Belgrade, 1997. 3. D. Rondović, M. Purić: Chemistry, University of Montenegro, Podgorica, 2003. 4. D. Ristanović, V. Ristanović: Practicum in General, Inorganic and Organic chemistry, 2004.
Examination methods	Attendance of lectures and exercises: 5 points; Laboratory tests: 10 points; Colloquiums: (2 x 15) 30 points; Seminary work: 5 points; Final exam: 50 points. Passing grade is obtained when student achieved at least 50 points.
Special remarks	
Comment	

Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points