

Study program: Master chemist – for research and development, Master chemist – professor of chemistry, Master chemist – for environmental				
Type and level of study: Master academic study				
Name of subject: Equilibrium in analytical chemistry				
Professor: Djurdjevic T. Predrag				
Status of subject: Elective				
Number of ECTS: 6				
Condition: Enrollment of first year of study program				
Aim of subject: To familiarize students with the possibility of applying different equilibrium processes in analytical chemistry				
Outcome of subject Students will master the technique of calculating the equilibrium concentration of substances in various types of chemical reactions of analytical importance. Use of computers and commercial software packages for calculating equilibrium concentration of substances in solution.				
Content of subject <i>Theoretical lectures:</i> Steady state in solutions . A stable and metastable equilibrium states. The equilibrium constant of the reaction (definition and expression) . Calculation of the equilibrium concentration in the solution. Acid- base balance. Equilibria deposition. Equilibria in complexing environments. Redox balance. Application of complexing equilibria in analytical chemistry. <i>Practical lecture (laboratory exercises):</i> Determination of dissociation constant of glycine by potentiometric titration. Determination of equilibrium distribution of ionic and non-ionic species in solutions of polybasic acid. Determination of the stability constants of nickel - alanine complex by spectrophotometric measurements. Determination of the acid dissociation constant nitriloacetic acid by NMR measurements.				
Literatures: . J. Inzedy, Analytical Applications of Complex Equilibria, London, Chichester, 1976.				
Number of class active teaching				Rest of classes
Lecture: 2	Exercise: /	Laboratory exercise: 2	Research work: /	
Teaching methods: Lectures, seminars, laboratory exercises.				
Evaluation of knowledge (maximum score 100)				
Pre exam duties:	Points	Final exam		Points
Activity during the lectures	10	Writing exam		20
Practical lecture	30	Oral exam		30
Colloquium	-	-		
Seminar	10			