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| **Course code: FFS5**  | **Course title: ANALYTICAL CHEMISTRY I**  |
| **Level: Integrated studies**  | **Year: I (FIRST)**  | **Semester: I (FIRST)**  | **ECTS credits: 7 (SEVEN)**  |
| **Status: OBLIGATORY** | **Number of hours per week:** **LECTURES (P): 2 (two) hours;** **EXERCISE (V): 4 (four) hours;**  | **Total teaching hours: 90** **(P:30; V:60)**  |
| **Teaching staff:**  | Course coordinator: Prof.dr. AIDA ŠAPĈANIN (aida.sapcanin@ffsa.unsa.ba) Teachers: Doc.dr. ŠAĆIRA MANDAL (sacira.mandal.@ffsa.unsa.ba) Ass. Emina Ramić (emina.ramic@ffsa.unsa.ba)  |
| **1. Course objective** | To acquire basic theoretical and practical knowledge of the chemical and physical principles of Analytical chemistry - classical methods of analysis. |
| **1.1. Course Content**  |
| **a) Theory**Introduction, importance and role of analytical chemistry, qualitative and quantitative analysis. Dissolution of substances. Solution composition, activity and concentration. Protolytic reactions. Complex building reactions, equilibrium in complex solutions. Significant complex compounds, side reactions in the equilibrium structures of complex compounds. Deposition reactions, product of solubility. Side reactions and their effect on the solubility product. Redox reactions, Electrochemical reactions, Calculation of electrode potentials, Equilibrium constant of redox reactions, prediction of redox reactions. Analytical calculations. In general about classical methods of quantitative chemical analysis - role, significance, division; Chemicals, apparatus and basic processes in classical chemical analysis. Introduction - volumetry. Titration curves. Acid-base titrations. Complexometric titrations. Sediment titrations. Redox titrations. Calculations in volumetry. |
| **b) Practice** Introduction, Qualitative and quantitative practicum and rules for laboratory exercises. Individual reactions to cations and analytical groups. Analysis of mixture of cations and analytical group. Individual reactions to cations II of the analytical group. Individual reactions to cations of III and IV of the analytical group. Individual reactions to cations V and VI of the analytical group. Individual reactions to anions I and II of the analytical group. Individual reactions to anions III and IV and V of the analytical group. Analysis of the selected sample. Volumetry - dishes. Weighing, titrating and reading. Oxygen-base titrations, selected samples. Complexometric titrations, selected samples.After each method, the corresponding tasks are processed. |
| **1.2. Learning outcomes**  | Students' ability for independent qualitative and quantitative chemical analysis - based on classical principles, based on theoretical knowledge |
| **2. COURSE ORGANIZATION**  |
| ***Activities*** |
| **2.1. Teaching method**  | 1. ex cathedra 2. laboratory exercises3. computational exercises | 1. 30 % 2. 60 % 3.10 %  |
| ***Participation in the assessment (%)***  |
| **2.2. Rating system** | 1 Attending lectures 2. Activation / Exercise-tests3.Final exam (Test 1+Test 2 ) | 1. 10 % 2. 20 % 3. 70 %  |
| **3. LITERATURA**  |
| **Obligatory :** 1. Savić,J., Savić, M. Osnovi analitiĉke hemije, klasiĉne metode, Svjetlost, Sarajevo, 1987 2. Šapĉanin A, Mandal Š, Imamović A. Praktikum Analitiĉke hemije za studente Farmaceutskog fakulteta, Coron’s, Sarajevo, 2014.  |
| **Additional:** 1. Skoog, D.A., West, D.M., Holler, F.J. Osnovi analitiĉke kemije, šesto Izdanje (englesko), prvo izdanje (hrvatsko), Školska knjiga, Zagreb, 1999 2. Svehla, G. Vogel’s Qualitative Inorganic Analysis,7th ed. Longman, England, 1996  |