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| **Course code: FFS13**  | **Name of the Course: ANALYTICAL CHEMISTRY II**  |
| **Study programme: Integrated study programme** | **Year of the study: FIRST (I)**  | **Semester: SECOND (II)**  | **Number of ECTS credits:** **7 (SEVEN)**  |
| **Status:** **Compulsory** | **Number of hours per week:****LECTURES (L): 2 (two) hours** **EXERCISES/PRACTICE (E/P): 4 (four) hours** | **Total teaching hours: 90****(L: 30; E/P: 60)**  |
| **Teaching staff:**  | Course teacher: Prof.dr. ŠAĆIRA MANDAL (sacira.mandal@ffsa.unsa.ba)Associate teacher: Prof.dr. AIDA ŠAPČANIN (aida.sapcanin@ffsa.unsa.ba) Senior Assistant. Emina Ramić (edina emina.ramic@ffsa.unsa.ba) |
| **1. Course objectives** | Acquisition of basic theoretical and practical knowledge in the field of separation, optical and electrochemical methods of interest for qualitative and quantitative chemical analysis of inorganic ions. |
| **1.1. Content of Course****a) Theoretical lectures**Gravimetry. Errors in quantitative chemical analysis. Introduction, importance and meaning of instrumental methods in, qualitative and quantitative chemical analysis. Preparation and analysis of real samples. Separation methods- basic principles. Application of extraction in the separation and identification of inorganic ions. Chromatography in the separation and identification of inorganic ions. Optical methods - basic principles. Application of UV / VIS molecular absorption spectroscopy in the analysis of metal ions. Flame photometry - application in the analysis of inorganic ions. Element analysis in mono- and multicomponent systems by atomic absorption spectrometry methods. Electrochemical methods - basic principles. Modern voltammetric techniques in the analysis of inorganic ions. Potentiometry in quantitative analytics.**b) Practical classes (laboratory exercises/practice and calculations** exercise**)**Gravimetric determination - selected samples. Application of extraction in the separation and identification of inorganic ions. Chromatography in the separation and identification of inorganic ions. Ionic exchange - selected inorganic samples. Spectrophotometric determination of inorganic ions. Potentiometry - pH determination, potentiometric titration - selected samples. After each term of practical classes, appropriate calculations are processed. |
| **1.2. Learning/Course outcomes** | Acquired theoretical and practical knowledge from this course will enable students to better understand and more easily master the courses in the higher years of study and will enable students to properly select the appropriate instrumental method for the qualitative or quantitative examination of some real samples. |
| **2. MODUS OF TEACHING ORGANIZATION**  |
| ***Description of activities (%)***  |
| **2.1. Modus of teaching** | 1. ex cathedra

4. laboratory exercises/practice3. calculations exercise?  | 1. 30 %
2. 60%

3.10% |
| ***Participation in examination (%)***  |
| **2.2. System of evaluation**  | 1. Regularity of attendance2. Involvement in teaching / exercises-exams3. Final exam (Test 1+Test 2 )  | 1. 10 % 2. 20 % 3. 70 %  |
|  **3. LITERATURE**  **Required :** * Savić, J., Savić, M. Osnovi analitiĉke hemije, klasiĉne metode, Svjetlost, Sarajevo, 1987
* Šapĉanin, A., Mandal, Š., Krešić, D. Radni materijali iz Analitiĉke hemije II za studente

 Farmaceutskog fakulteta, interna skripta, Sarajevo, 2013 **Optional :** * Šapĉanin, A., Rimpapa, Z. Odabrane hemijsko-analitiĉke metode, Kaligraf, Sarajevo, 2011
* Skoog, D.A., West, D.M., Holler, F.J. Osnovi analitiĉke kemije, šesto izdanje(englesko), prvo izdanje

 (hrvatsko), Školska knjiga, Zagreb, 1999 * Fifield, F.W., Kaley, D. Principles and Practice of Analytical Chemistry. 5th ed.Blackwell Science,

 Malden USA, 2000 * Kellner, R., Mermet, J.M., Otto, M., Widmer, H.M. Analytical Chemistry.Wiley –VCH, New York,

 1998 |