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| **Course code: \*** | **Name of the Course: SELECTED CHAPTERS OF ANALYTICAL CHEMISTRY -BIOANALYTICAL CHEMISTRY** | | | |
| **Study programme: Integrated study programme** | **Year of the study: THIRD (III)** | **Semester: SIX (VI)** | **Number of the ECTS credits:**  **2 (two)** | |
| **Status of the course: ELECTIVE** | **Number of hours per week:**  **LECTURES (L): 1 (one) hour**  **EXCERCISES/PRACTICE (E/P): 1 (one) hour** | | **Total teaching hours:**  **30 (L: 15; P: 15)** | |
| **Teaching staff:** | Course teacher: Prof.dr. ŠAĆIRA MANDAL (sacira.mandal@ffsa.unsa.ba)  Associate teacher: Prof.dr. AIDA ŠAPČANIN (aida.sapcanin@ffsa.unsa.ba) | | | |
| **1. The course aims** | Introducing students to the basics of bioanalytical chemistry, problems of chemical and instrumental analysis of complex biological materials such as samples of plant, animal and human tissues, as well as chemical analyzes of foodstuffs. Acquiring knowledge of chemical and instrumental analyzes of samples of plant, animal and human origin. Introduction to the methods of sample preparation for analysis in a bioanalytical laboratory (homogenization, centrifugation, etc.), as well as the storage conditions. Analysis of biomaterials by different chemical methods (spectrophotometric, electrochemical, chromatographic, etc.). Students should be able to make the right choice of method and analysis depending on the type of real biomaterial sample. | | | |
| **1.1. Content of Course**  **a) Theoretical lectures**  Biomolecules, analysis and quantification; Transition metals, role in living organisms; Ions, electrodes and sensors; Biosensors and nanosensors; Application of spectroscopy for matrix characterization; Centrifugation and separation; Chromatography of biomolecules; Principles and application of electrophoresis; Mass application spectrometry in bioanalytics; Immunochemical techniques and biological markers; Bioanalysis using magnetic resonance technologies, NMR and MRI; Validation of bioanalytical methods; Bioanalytical approach to diagnostic, research and pharmaceutical problems. | | | | |
| **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 2. seminars | | | 1. 50 % 2. 50% |
| ***Participation in examination (%)*** | | | | |
| **2.2. System of evaluation** | 1. Regularity of attendance  2. Involvement in teaching /seminars  3. Final exam (Test 1+Test 2 ) | | | 1. 10 %  2. 20 %  3. 70 % |
| 1. **LITERATURE**   **Requiered :**  1.Mikkelsen S.R., Corton E. (2004) *Bioanalytical Chemistry*. Wiley-Interscience, Hoboken, New Yersey  2.Andreas Manz, Nicole Pamme & Dimitri Iossifidis*Bioanalytical Chemistry,* Imperial College London,1998  3.L.B.Wingard Jr., E.Katchalski-Katzir and L. Goldstein, Eds., *Applied biochemistry and Bioengineering,* Academic Press, New York, 1981    **Optional :**  1.Veladžić M, Čaklovica F (2001) Instrumentalne metode u biološkoj analizi. Ljiljan, Sarajevo | | | | |