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| **Study program** Chemistry |
| **Course title** Bioinorganic chemistry (H130C) |
| **Name of lecturer/lecturers** Nenad S. Krstić |
| **Type of course** Elective |
| **Number of ECTS allocated** 4 |
| **Course objectives**We are introducing students to the importance of chemical elements in the living world (biometals and bioligands). Insight into the essence of life-important processes for which, first of all, biometals are necessary(Fe, Cu, Na, K, Ca, Zn, etc.). Acquiring knowledge that can be practically applied in biology, protection human environment, medicine, food production, toxicology. |
| **Course outcomes**Upon successful completion of this course, the student can:looks at the biological significance of chemical elements, primarily metals; understands the role of the same in biochemical and life-important processes that continuously take place in living things organisms; critically approaches and analyzes facts in communication with experts from other disciplines when solving multidisciplinary problems in the protection of the human environment, in biology, medicine, food production, toxicology. |
| **SYLLABUS***Lectures*Introductory lecture on the subject of study. Bioelements. Types of compounds. Non-metal bioelements. Biometals in biological systems and bioligands. Biological importance of Na and K, Mg and Ca. Biologically significant 3d-metals: V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Mo. Biomineralization. Test methods in bioinorganic chemistry. Applied aspects of bioinorganic chemistry. Upon successful completion of this course, the student can: looks at the biological significance of chemical elements, primarily metals; understands the role of the same in biochemical and life-important processes that continuously take place in living things organisms; critically approaches and analyzes facts in communication with experts from other disciplines when solving multidisciplinary problems in the protection of the human environment, in biology, medicine, food production, toxicology.*Laboratory work*Types of compounds of bioelements. Bioelements of non-metals and their compounds. Biometals in biological systems and bioligands Biologically significant s-metals. The role of Ca and Mg in the living world. Test methods in bioinorganic chemistry. Biologically significant d-metals. Supplements. Coordination compounds of bioelements and their role in biosystems. Metals in medicine, application of metal compounds for diagnostic and therapeutic purposes. Independent research and writing seminar papers. Preparation of biomaterials of plant origin. Preparation of biomaterials of animal and human origin. Identification of biometals in biomaterial. |
| **References**1. D. M. Đorđević, R. S. Nikolić, N. S. Krstić, Hemija prelaznih metala, PMF Niš, 2019.
2. R. S. Nikolić, G. M. Nikolić, D. M. Đorđević, N. S. Krstić, KOORDINACIONA HEMIJA –Osnovi, Vežbe i Drugi Oblici Nastave, Prirodno-matematički fakultet Niš, Niš 2010.
3. R. R. Crichton, Biological Inorganic Chemistry An Introduction, Elsevier, 2007
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| **Active teaching classes** | **Lectures** 30 | **Laboratory work** 15 |
| **Teaching modeoral** presentation method, demonstration method, active learning method and experimental work, homework, seminar work, panel discussion. |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** |
| **Pre exam duties** | **Points** | **Final exam**  | **Points** |
| Activity during lectures | 5 | Written examination | / |
| Practical teaching | 5 | Oral examination | 30 |
| Teaching colloquia | 60 |  |  |