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| **Study program** Master Studies |
| **Course title** Advanced Biochemistry Course (H206C) |
| **Name of lecturer/lecturers** Ivan R. Palić |
| **Type of course** Obligatory |
| **Number of ECTS allocated** 5 |
| **Course objectives**The aim of the course is to familiarize students, as future masters of chemistry, with biochemical principles,processes and methods, which are based on modern understandings of the structure and function of molecules as well as on the dynamics of biological systems. |
| **Course outcomes**Upon successful completion of this course, the student is able to interpret and understand the basic concepts of biochemical processes as well as practice the skills of working in a biochemical laboratory. |
| **SYLLABUS***Lectures*Uniqueness and diversity of biochemical processes. Unique specialized features and structures; The cell as aunit of life and its structure. Metabolites and macromolecules with reference to the central role of proteins in biological systems. Thermodynamics of biological systems; Supramolecular structures and their connection; Function of biological membranes - transfer; Metabolism and its regulation, with special reference to enzyme mechanisms (Glycolysis-alcoholic and lactic fermentation. Citric acid cycle, Oxidative phosphorylation.Pentozophosphate pathway and gluconeogenesis, Photosynthesis. Fat and fatty acid metabolism, Amino acid metabolism and urea cycle); Information transfer - replication, transcription and translation.*Laboratory work* Glycolysis and fermentation in yeast; Isolation, purification and spectral characterization of DNA; HPLC separation of proteins; Determination of enzyme kinetics with and without the presence of inhibitors; Protein isolation by sephadex chromatography. |
| **References**1.D. Voet, J. Voet, Biochemistry, John Wiley and Sons, New York, 1995.2. L. Stryer, Biokemija, translation, Školska knjiga, Zagreb, 1995.3. RH Garret, Ch. M. Grisham, Biochemistry, Saunders College, Fort Worth, 1999.4. S. Spasić, Z. Jelić-Ivanović, V. Spasojević-Kalimanska, Fundamentals of biochemistry, Belgrade, 2000.5. D. Marković, S. Cakić, G. Nikolić, Chromatography, Faculty of Technology in Leskovac, SIIC, Niš, 1998.6. M. Popsavin, N. Vukojević, J. Hranisavljević, Practical course in the chemistry of natural products, University of Novi Sad, Faculty of Science, Novi Sad, 1998. |
| **Active teaching classes** | **Lectures**  30 | **Laboratory work**  45 |
| **Teaching mode**Interactive lectures and experimental exercises, consultations |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** |
| **Pre exam duties** | **Points** | **Final exam**  | **Points** |
| Activity during lectures | 5 | Written examination |  |
| Practical teaching | 10 | Oral examination | 50 |
| Teaching colloquia | 35 |  |  |
| Seminar | - |  |  |