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| **Study program** Applied chemistry with the management basics |
| **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 this course is, as future Master of Chemistry, students become familiar with biochemical principles and processes and methods, which are based on modern understandings of the structure and function of molecules as well as on dynamics 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 to practice the skills of working in a biochemical laboratory. |
| **SYLLABUS***Lectures*Uniqueness and diversity of biochemical processes. Unique specialized features and structures. Cell like unit of life and its composition. Metabolites and macromolecules with reference to the central role of proteins in biological systems. Thermodynamics of biological systems. Supramolecular structures and their connection. Function biological membrane-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. Metabolism of fats and fatty acids. Metabolism of amino acid 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 protein. Determination of enzyme kinetics with and without the presence of inhibitors. Isolation of proteins by chromatography with sephadex. |
| **References**1. D. Voet, J. Voet, Biochemistry, John Wiley and Sons, New York, 19952. L. Stryer, Biokemija, prevod, Školska knjiga Zagreb, 1995.3. R. H. Garret, Ch. M. Grisham, Biochemistry, Saunders College, Fort Worth, 1999.4. S. Spasić, Z. jelić-Ivanović, V. Spasojević-Kalimanska, Osnovi biohemije, Beograd, 2000.5. D. Marković, S. Cakić, G. Nikolić, Hromatografija, Tehnološki fakultet u Leskovcu, SIIC, Niš, 1998.6. M. Popsavin, N. Vukojević, J. Hranisavljević, Praktikum iz hemije prirodnih proizvoda, Univerzitet u Novom Sadu, Prirodno-matematički fakultet, Novi Sad, 1998. |
| **Active teaching classes** | **Lectures** 30 | **Laboratory work** 30 |
| **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 |  |  |  |