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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  |  |
| **GENERAL INFORMATION** |
| Study program  | **Pharmacy** |
| Study Module (if applicable) |  |
| Course title | General Biochemistry |
| Level of study | ☐Bachelor ☐ Master’s ☐ Doctoral**☐ Academic integrated study** |
| Type of course | **☐ Obligatory** ☐ Elective |
| Semester  |  **☐ Autumn ☐Spring** |
| Year of study  | 2nd |
| Number of ECTS allocated | 5 |
| Name of lecturer/lecturers | Professor Gordana Kocić MD. PhD, Professor Tatjana Jevtovic-Stoimenov MD. PhD, Assistant Andrej Veljkovic, MD. PhD Assistant Milena Despotovic, MD. Assistant Branka Djordjevic, MD. |
| Teaching mode |  ☐**Lectures**  ☐Group tutorials ☐ Individual tutorials ☐**Laboratory work** ☐ Project work **☐ Seminar** ☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| To provide an introduction to:* Methods of study of biomolecules constituting the structure of cells, tissues, extracellular fluid and extracellular matrix;
* Function of biomolecules (amino acids and proteins; fats; carbohydrates; vitamins), reactions they are involved in and regulation of particular reactions;
* Structure, mechanisms, action conditions, classification, and measurement of activity of enzymes and the significance of coenzymes for the action of enzymes;
* Basic characteristics of anabolic and catabolic processes in the body;
* Modes of production, release, and transformation of energy in the organism and cells (glycolysis, Krebs cycle, β-oxidation of fats);
* Structure of nucleic acids, regulation of gene expression, and biosynthesis of proteins;
* Composition of body fluids and biochemical function of tissues and organs;
* Function of bioelements in the building and regulation of metabolism and function of cells and tissues;
* Structure and mechanism of action of hormones and signal molecules;
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| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| **Enzymes:** Structure and significance; mechanism of action of enzymes; reaction kinetics; **Vitamins:** Classification, roles, and significance of liposoluble and hydrosoluble vitamins; **Carbohydrates**: Types, digestion and resorption; metabolism in the cells: glycolysis, Krebs cycle, pentose pathway, glycogenesis, glycogenolysis, glyconeogenesis, metabolism of galactose, fructose, and lactose, regulation of carbohydrate metabolism, regulation of glycemia; **Lipids:**Classification, digestion, and resorption; metabolism of fats in the body; synthesis of fatty acids, β-oxidation, synthesis and breakdown of triacylglycerol; **Non-protein nitrogen compounds and special metabolism of particular amino acids:**Digestion and resorption; nitrogen balance; metabolic pathways of amino acids and metabolism of ammonia; special transport of individual amino acids and amino acid metabolism disorders; **Simple and complex proteins:** Structure and role of simple proteins. Types of chromoproteids; hemoglobin, nucleoproteids, lipoproteins; **Hormones:**Division; mechanism of action; place and role of hormones in the regulation of biochemical processes in the body; **Metabolism of water, minerals, and acid-base status:**Significance of water, macro- and microelements; regulation of transport of water and minerals, and significance of acid-base status**; Biochemistry of blood and body fluids**: Organic and inorganic components of blood and body fluids (urin, CSF, saliva, etc.) and significance of their determination in medicine; Transport of the matters and biological membranes. |
| **LANGUAGE OF INSTRUCTION** |
| **☐Serbian (complete course) ☐ English (complete course)**  ☐ Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course)☐Serbian with English mentoring ☐Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **ASSESSMENT METHODS AND CRITERIA** |
| **Pre exam duties** | **Points 6** | **Final exam** | **points** |
| **Activity during lectures** | **10** | **Written examination** | **70** |
| **Practical teaching** |  | **Oral examination** |  |
| **Teaching colloquia** | **20** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents**  |