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|  | | | **UNIVERSITY OF EAST SARAJEVO**  Faculty of Medicine Foča | | | | | | | |  | |
| ***Study program: Nursing*** | | | | | | | |
| First study cycle | | | | First study year | | | |
| **Full subject title** | | | БИОХЕМИЈА | | | | | | | | | |
| **Department** | | | Department of Primary Health Care and Public Health, Faculty of Medicine Foča | | | | | | | | | |
| **Subject code** | | | | | **Subject status** | | | | **Semester** | | **ECTS** | |
| NU-05-1-002-1 | | | | | compulsory | | | | I | | 3 | |
| **Professor/ -s** | | Associate Professor Dušan Mihajlović, Assistant Professor Dragana Puhalo-Sladoje, Assistant Professor Dragana Pavlović | | | | | | | | | | |
| **Associate/ -s** | | Associate Professor Dušan Mihajlović, Assistant Professor Dragana Puhalo-Sladoje, Assistant Professor Dragana Pavlović | | | | | | | | | | |
| **Number of lectures/ teaching workload (per week)** | | | | | | **Individual student workload (in hours per semester)** | | | | | | **Coefficient of student workloadSo[[1]](#footnote-1)** |
| **L** | **E** | | | **SP** | | **L** | | **E** | | **SP** | | **L** |
| 1 | 1 | | | 0 | | 1\*15\*0,66 | | 1\*15\*0,66 | | 4\*15\*0,66 | | 0,66 |
| total teaching workload (in hours, per semester)  1\*15 + 1\*15 + 0\*15 =30  15+15+0=30 | | | | | | | total student workload (in hours, per semester)  1\*15\*0,66 + 1\*15\*0,66 + 4\*15\*0,66 =60  10+ 10 +40 =60 | | | | | |
| Total subject workload (teaching + student): 30+ 60 = 90 hours per semester | | | | | | | | | | | | |
| **Learning outcomes** | | 1. The knowledge acquired during the Biochemistry course will enable the health care organizer to identify the type of patient material required for diagnosis and guide it toward specific diagnostic procedures. 2. The student will learn to correctly interpret biochemical reports and apply the principles of rational use of laboratory methods to diagnose diseases, monitor their progression and outcomes, and evaluate the effectiveness of the applied therapy. 3. They will acquire skills in good laboratory practice, develop prerequisites for scientific research through molecular medicine knowledge, and understand the principles of evidence-based medicine. 4. The student will cultivate a personal stance that applying basic knowledge in clinical medicine is one of the fundamental prerequisites for good clinical practice. | | | | | | | | | | |
| **Preconditions** | | No preconditions | | | | | | | | | | |
| **Teaching methods** | | Lectures, exercises, seminar papers and colloquium | | | | | | | | | | |
| **Subject content per week** | | **Lectures:**   1. Types of chemical bonds. Intermolecular interactions. Water and aqueous solutions. 2. Solutions of nonelectrolytes and electrolytes. Equilibria in electrolyte solutions. pH value. 3. Equilibrium processes in biological systems. Biologically important buffers. 4. The role of enzymes in biological transformations; Mechanism of enzyme catalysis. 5. Biological roles and mechanisms of action of liposoluble and hydrosoluble vitamins in the human body. 6. Digestion and absorption of carbohydrates; Glycolysis under aerobic and anaerobic conditions; Tricarboxylic acid cycle. 7. Tissue respiration; Hexose monophosphate shunt of glucose; Gluconeogenesis. 8. Digestion and absorption of fats; Beta-oxidation of fatty acids; Fatty acid synthesis. 9. Cholesterol synthesis; Bile acids; Metabolism of ketone bodies. 10. Digestion of proteins and absorption of amino acids; Transamination and deamination; Urea synthesis. 11. Metabolism of creatine and creatinine; Metabolism of nucleobases. 12. Protein synthesis—biochemical aspects. 13. Hemoglobin—structure and function; Heme metabolism. 14. Organization of the human hormonal system; Mechanism of hormone action; pancreatic hormones, thyroid hormones, and sex hormones. | | | | | | | | | | |

1Коефицијент студентског оптерећења Soсе рачуна на сљедећи начин:

а) за студијске програме који не иду на лиценцирање: So = (укупно оптерећење у семестру за све предмете 900 h – укупно наставно оптерећење П+В у семестру за све предмете h)/ укупно наставно оптерећење П+В у семестру за све предмете h = . Погледати садржај обрасца и објашњење.

б) за студијске програме који иду на лиценцирање потребно је користити садржај обрасца и објашњење.

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|  | 1. Plasma proteins; Plasma lipoproteins; Biochemistry of urine; clinically significant enzymes.   **Exercises:**   * 1. Introductory class: Introduction to work in a clinical laboratory. Sample preparation.   2. Photometry: Measurement of mass and volume. Solutions and solution preparation.   3. Enzymes: Effect of temperature and hydrogen ion concentration on enzyme activity.   4. Determination of amylase activity using the Wohlgemuth method.   5. Urine: Physical and chemical characteristics of urine. Urine sediment.   6. Serum proteins: Determination of total protein and albumin concentration in serum.   7. Determination of fibrinogen concentration in serum.   8. Determination of total cholesterol concentration in serum, HDL cholesterol, and serum triglycerides.   9. Determination of total and direct bilirubin concentration in serum.   10. Determination of total calcium concentration in serum.   11. Determination of glucose concentration in serum using the GOD-PAP method.   12. Determination of urea concentration in serum using the Berthelot method.   13. Determination of creatinine concentration in serum.   14. Basic chemical concepts: Atom, molecule, relative atomic mass.   15. Chemical bonds: Acids, bases, salts. | | | |
| **Compulsory literature** | | | | |
| **Author/s** | | **Publication title, Publisher** | **Year** | **Pages (from-to)** |
| Kevin Ahern, et al. | | Biochemistry: Free For All | 2018. |  |
|  | |  |  |  |
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| **Additional literature** | | | | |
| **Author/s** | | **Publication title, Publisher** | **Year** | **Pages (from-to)** |
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|  | |  |  |  |
| **Student responsibilities, types of student assessment and grading** | **Grading policy** | | **Points** | **Percentage** |
| Pre-exam activities | | | |
| lecture attendance and activity | | 5 | 5% |
| exercises attendance and activity | | 5 | 5% |
| Colloquium | | 20 | 20% |
| Final exam | | | |
| Practical work | | 10 | 10% |
|  | | | |
| Final exam | | 50 | 50% |
| TOTAL | | 100 | 100 % |
| **Certification date** | December 2024. | | | |

1. Coefficient of student workload So is calculated as it follows:

   а) for the study programs not going through the licensing process: So = (total workload in semesterfor all the subjects 900 hrs – total teaching workload L+Ein semester for all the subjects 870 hrs)/ total teaching workload L+Ein semesterfor all the subjects \_\_\_\_\_ hrs = \_\_\_\_. Consult form content and its explanation.

   b) for the study programs going through the licencing process, it is necessary to use form content and its explanation. [↑](#footnote-ref-1)