



**UNIVERSITY OF BANJA LUKA**  
**FACULTY OF MEDICINE**  
 Department of Medical Biochemistry



| School year | Subject                            | Subject code | Study program | Study cycle | Year of studies | Semester | Number of students | Number of groups |
|-------------|------------------------------------|--------------|---------------|-------------|-----------------|----------|--------------------|------------------|
| 2025/2026   | Medical biochemistry and chemistry |              | Medicine      | First       | Second          | III      |                    |                  |

**CLASS SCHEDULE**

| Week                    | Lecture | Subject name                                                                                                                                         | Day | Date | Time | Place | H | Teacher |
|-------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|------|-------|---|---------|
| <i>CHEMISTRY COURSE</i> |         |                                                                                                                                                      |     |      |      |       |   |         |
| VI                      | L6      | Protein structure and function<br>Structure-function relationship in proteins.<br>Regulation of the amount and protein/enzyme quality in the cell    |     |      |      |       | 3 |         |
| VII                     | L7      | Enzymes as catalysts-general aspects<br>Enzyme structure. The role of coenzymes in the enzyme-catalyzed reactions.<br>Mechanisms of enzyme catalysis |     |      |      |       | 3 |         |

|      |     |                                                                                                                             |  |  |  |  |   |  |
|------|-----|-----------------------------------------------------------------------------------------------------------------------------|--|--|--|--|---|--|
| VII  | L8  | Regulation of enzyme activity<br>Enzyme kinetics.<br>Regulation of metabolic pathways: covalent and noncovalent mechanisms. |  |  |  |  | 3 |  |
| IX   | L9  | Diagnostic enzymology                                                                                                       |  |  |  |  | 3 |  |
| X    | L10 | Cellular Bioenergetics: Adenosine triphosphate. Basic aspects of metabolism.                                                |  |  |  |  | 3 |  |
| XI   | L11 | Digestion and absorption of carbohydrates.<br>The central role of glucose in the carbohydrate metabolism: Glycolysis.       |  |  |  |  | 3 |  |
| XII  | L12 | PDH complex.<br>The tricarboxylic acid cycle.                                                                               |  |  |  |  | 3 |  |
| XIII | L13 | The respiratory chain and oxidative phosphorylation                                                                         |  |  |  |  | 3 |  |
| XIV  | L14 | Gluconeogenesis.<br>Glycogen metabolism.                                                                                    |  |  |  |  | 3 |  |
| XV   | L15 | Hexose-monophosphate pathway.<br>Metabolism of fructose, galactose, lactose and                                             |  |  |  |  | 3 |  |

|  |  |                        |  |  |  |  |  |  |
|--|--|------------------------|--|--|--|--|--|--|
|  |  | complex carbohydrates. |  |  |  |  |  |  |
|--|--|------------------------|--|--|--|--|--|--|

| Week                    | Practical | Type of practical | Subject name                                                                                                                                                                                |
|-------------------------|-----------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>CHEMISTRY COURSE</i> |           |                   |                                                                                                                                                                                             |
| VI                      | P6        | PT                | Introduction to Biochemistry:<br><i>Biological material</i><br><i>Sampling of specimens</i><br><i>Interpretation of laboratory tests</i><br><i>Clinical assessment of diagnostic tests</i>  |
| VII                     | P7        | PE                | General properties of enzymes:<br>1. <i>Determination substrate specificity of salivary <math>\alpha</math>-amylase</i><br>2. <i>Determination absolute substrate specificity of urease</i> |
| VIII                    | P8        | PE                | Regulation of enzyme activity:<br>1. <i>Effect of temperature on salivary amylase activity</i>                                                                                              |
| IX                      | P9        | PE                | Regulation of enzyme activity:<br>1. <i>Effect of pH on salivary amylase activity</i>                                                                                                       |
| X                       | P10       | PE                | Enzyme kinetics:<br>1. <i>Effect of inhibitors</i><br>2. <i>Lineweaver–Burk plot</i>                                                                                                        |
| XI                      | P11       | PE                | Diagnostic enzymology.<br>1. <i>Determination of alpha-amylase activity in serum (Wohlgemuth's method)</i>                                                                                  |
| XII                     | P12       | PE                | Digestion.                                                                                                                                                                                  |

|      |     |    |                                                                                                                                                                                         |
|------|-----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |     |    | <ol style="list-style-type: none"> <li>1. <i>Pepsin activity</i></li> <li>2. <i>Hymosine activity</i></li> <li>3. <i>Trypsin activity</i></li> <li>4. <i>Lipase activity</i></li> </ol> |
| XIII | P13 | PT | Basics of spectrophotometry.                                                                                                                                                            |
| XIV  | P14 | PE | Carbohydrates: glucose.<br><ol style="list-style-type: none"> <li>1. <i>Quantitative determination of glucose in serum</i></li> </ol>                                                   |

**Teacher:**

***Marija Matić, M.D., PhD.***

***Professor***